City of Laredo
Hazard Mitigation Plan

09/16/2024

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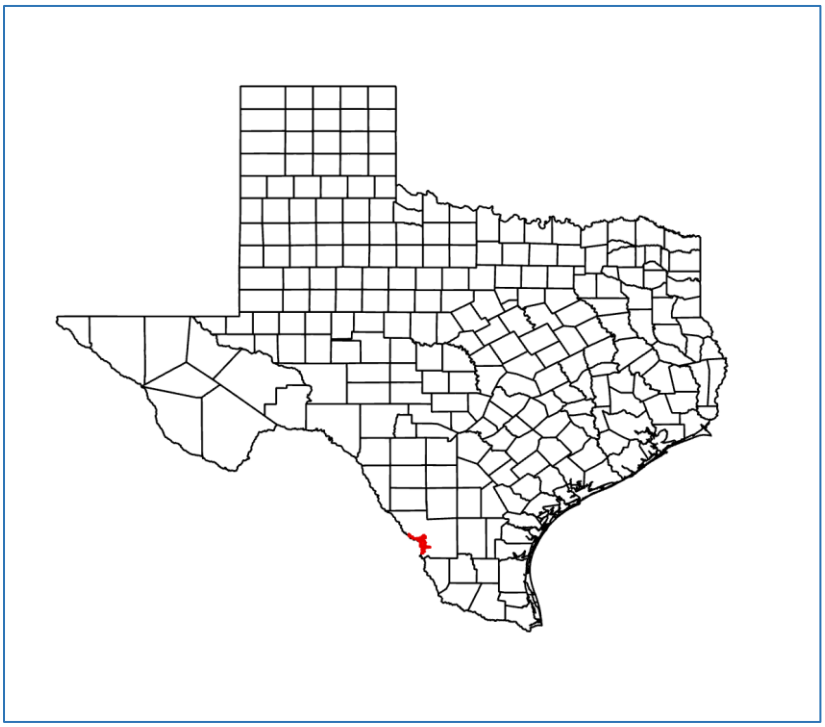
Section 1: Overview

Introduction

Planning Area

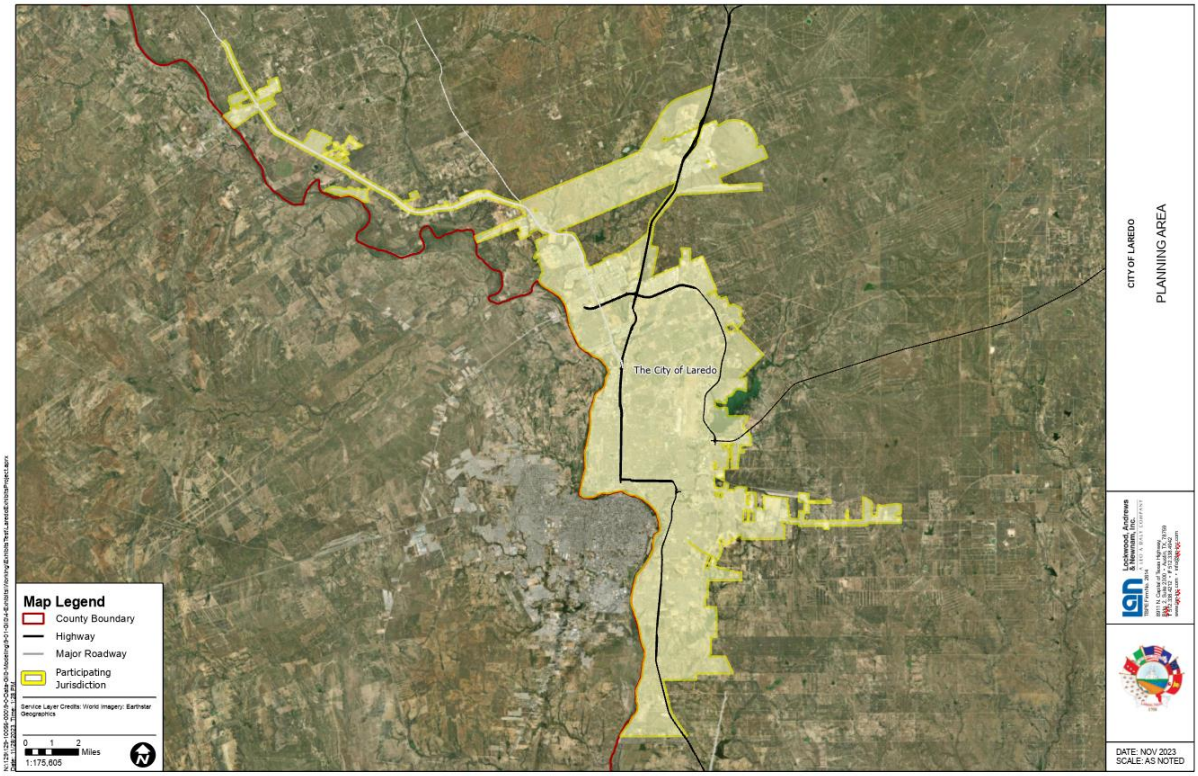
The City of Laredo is located along the south-west border of Texas and has a land area of 107 square miles.

Figure 1-1. City of Laredo Location Map



To be eligible for FEMA post-disaster mitigation funding, including Hazard Mitigation Grant Program funding, hazard mitigation plans must be updated every five years. Therefore, the City of Laredo have chosen to implement a Hazard Mitigation Plan in 2024.

Figure 1-2. Planning Area Map



Plan Participants

Representatives and staff members from the City of Laredo will form the Planning Team. For purposes of defining roles, stakeholders are individuals or groups that are vested in and affected by a mitigation action or policy. Examples of stakeholders include business owners, chamber of commerce, neighborhood associations, Red Cross, hospital districts, and private organizations. Public outreach also plays an important role in the Plan development. Stakeholders and the public were encouraged to participate in the development of the Plan. Section 2 includes a list of Planning Team members and activities and meetings held that involved the Planning Team and the public.

Hazard Mitigation Action Planning

The City of Laredo is susceptible to a wide range of natural hazards, including drought, hurricanes and tropical storms, floods, windstorms, extreme heat, lightning, tornadoes, hailstorms, expansive soils, dam and levee failure, wildfires, and winter storms. These life-threatening hazards can destroy property, disrupt the economy, and lower the overall quality of life for residence. The impact of hazards can be lessened in terms of their effect on people and property through effective hazard mitigation action planning and implementation. This Plan provides an opportunity for the City of Laredo to evaluate successful mitigation actions and explore opportunities to reduce future disaster loss.

Scope

The focus of the mitigation plan is to reduce future losses within the City of Laredo by identifying mitigation strategies based on a detailed hazard risk analysis, including an assessment of both regional hazards and vulnerability. The mitigation strategies seek to identify potential loss-reduction opportunities. The goal of this effort is to work towards more disaster-resistant and resilient communities throughout the City of Laredo.

The scope of the hazards considered herein are those associated with natural hazards. Other planning frameworks exist in the region for hazards not addressed here, including man-made hazards such as security concerns, critical infrastructure protection, hazardous materials response, medical and public health response to terrorism. Agencies and organizations who may be contacted for further information on these topics include local emergency management agencies, Local Emergency Planning Committees (LEPCs), law enforcement agencies, fire departments, state and public health departments, local drinking water suppliers, local offices of the Texas Commission on Environmental Quality, and the South Texas Development Council.

Section 2: Planning Process

Plan Development

Mitigation planning involves bringing together community leaders to identify natural hazards threatening their community and define key actions to implement with the goal of achieving a more disaster-resistant community. This section provides an overview of the planning process, highlighting key steps as well as providing a detailed description of how stakeholders and the public were involved.

Planning Team

A conference call was held on November 11, 2023, with the City of Laredo and Lockwood, Andrews and Newnam (LAN) to identify Planning Team members. The Planning Team identified Plan stakeholders, discussing options for engaging the public, and setting a project schedule. The group also reviewed and discussed the previous hazards and mitigation actions included in the previous Hazard Mitigation Plan.

Planning Team members were asked to attend all workshops during the planning process. Some of the responsibilities of the Planning Team included: completing Capability Assessment Surveys, providing a public survey to the public, providing input regarding the identification of hazards, ranking hazards, identifying mitigation goals, developing new mitigation strategies, and identifying critical facilities.

Table 2-1. Planning Team

JURISDICTION	POSITION OR TITLE	AGENCY
City of Laredo	Community Development Director	Community Development
City of Laredo	Emergency Management Coordinator	Emergency Management
City of Laredo	Assistant Emergency Management Coordinator	Emergency Management
City of Laredo	Epidemiology Administrator	Health & Social Services

Planning Process

The process used to prepare this Plan included following steps outlined in the Local Mitigation Planning Policy Guide. After the Planning Team was organized, a Capability Assessment Survey was developed and distributed at the Kick-Off Workshop on November 11, 2023. Both the Planning Team and the public ranked hazards. Specific mitigation strategies were discussed at the Mitigation Workshop on March 11, 2024. Finally, Plan Maintenance and implementation procedures were developed and are included in Section 18. A schedule of planning activities is included as Table 2-2.

Table 2-2. Schedule of Planning Tasks

Timeline	Service/Deliverable
11/21/2023	Conduct Kickoff Meeting, Capability Assessment; identify and evaluate hazards; begin drafting MAP
3/11/2024	Conduct Risk Assessment Teams Virtual Workshop for Planning Team; begin drafting Risk Analysis; review upcoming Mitigation Strategy objectives, Conduct Mitigation Strategy Teams Workshop for Planning Team, work with planning team to complete mitigation worksheets.
6/05/2024	Provide MAP Draft to Planning Team and public for review and comment
	Submit MAP Draft to TDEM for review and edits
	FEMA Approval of PLAN; participating jurisdictions adopt PLAN by resolution

Kickoff Workshop

The Planning Team Kickoff Workshop and Public Meetings were held virtually on November 11, 2024. The initial meeting provided an opportunity to inform officials and key department personnel about how the planning process pertained to their distinct roles and responsibilities, and also to involve stakeholder groups and the general public. In addition to the kickoff presentation, participants received the following information:

- Project overview regarding the planning process.
- Public Survey access information.
- Hazard Ranking form.
- Capability Assessment survey for completion.

A hazard ranking exercise was conducted at the Kickoff public meeting to get input from residents and rank natural hazards affecting the planning area. Participants ranked hazards in terms of level of risk, frequency of occurrence, and potential impact. Overall, residents ranked Drought and Hurricanes/Tropical Storms as the highest hazard risks followed by Floods, Windstorms, Extreme Heat, Lighting, Tornado, Hailstorm, Expansive Soils, Dam and Levee Failure, Wildfire, and Winter Storms.

The Planning Team Kickoff Workshop was well-attended. Efforts were made to document key participants. The following table highlights planning team participants for the City. For a comprehensive list of meeting attendees, meeting handouts, and documentation refer to Appendix A.

Table 2-3. Kickoff Workshop Participation Summary

KEY PARTICIPANTS		PARTICIPATION
POSITION OR TITLE	AGENCY	
Community Development Director	Community Development, City of Laredo	✓ Present for Plan Overview ✓ Received Public Survey Access Information ✓ Participated in Hazard Ranking Exercise ✓ Received Capability Assessment
Emergency Management Coordinator	Emergency Management, City of Laredo	✓ Present for Plan Overview ✓ Received Public Survey Access Information ✓ Participated in Hazard Ranking Exercise ✓ Received Capability Assessment
Assistant Emergency Management Coordinator	Emergency Management, City of Laredo	✓ Present for Plan Overview ✓ Received Public Survey Access Information ✓ Participated in Hazard Ranking Exercise ✓ Received Capability Assessment
Epidemiology Administrator	Health & Social Services, City of Laredo	✓ Present for Plan Overview ✓ Received Public Survey Access Information ✓ Participated in Hazard Ranking Exercise ✓ Received Capability Assessment

Following the Plan Kickoff Workshop, the City of Laredo posted links to the public survey on its website and social media to solicit public outreach and input for the Plan.

Hazard Identification

Hazard identification and ranking was a major component of the Plan Kickoff Meeting. Following the Kickoff Meeting the Planning Team reviewed the public input received concerning the hazard ranking and formulated the final ranked list of natural hazards to be incorporated into the Plan. Hazards identification is documented in detail in Section 3 of this Plan.

Risk Assessment

A preliminary risk assessment for the City of Laredo Hazard Mitigation Action Plan was presented to Planning Team members via webinar on March 11, 2024. The resulting risk assessment profiled hazard events, provided information on previous occurrences, estimated probability of future events, and detailed the spatial extent and magnitude of impact on people and property. A hazard profile and vulnerability analysis for each of the natural hazards can be found in Sections 5 through 16 in this Plan.

Mitigation Review and Development

The mitigation strategy development for the Plan involved creating mitigation goals and new mitigation actions. Previous mitigation actions from the 2009 plan were reviewed as a baseline for new actions, goals, and objectives. The Planning Team reviewed their respective mitigation actions from the previous plan to determine projects that are still viable and may be included in the new City of Laredo Hazard Mitigation Action Plan.

An inclusive and structured process was used to develop and prioritize mitigation actions for this Plan, including the following steps:

1. Potential mitigation actions were developed, and the list narrowed down to those that were most likely to be implemented, most cost-effective in reducing risk, and most likely to receive political and community support.
2. A Problem Statement was developed for each hazard to determine actions to mitigate the specific problem or risk, background information on why the action is needed was documented as well as who (by title) will oversee implementation of the project. Timeframe for implementation was defined and any obstacles to implementation such as local environmental groups opposing the project or lack of community support was identified.

3. Participants were provided an inventory of federal and state funding sources that could potentially assist in implementing the proposed mitigation actions. Planning Team Members considered benefits that would result from the mitigation actions versus the cost of those projects. Economic impact of implementing one action over another was a consideration.
4. Planning Team Members identified and prioritized proposed actions, costs and benefits, effects on existing buildings and future development, implementation schedules, and potential funding sources.

Table 2-4. Planning Team Meeting Attendance Summary

Jurisdiction	Kickoff & Public Meeting	Mitigation/Risk Assessment Strategy Workshop	Provide MAP Draft to Planning Team for Comments
Meeting Date	November 11, 2023	March 11, 2024	June 2024
City of Laredo	X	X	

X = Attended. Detailed attendance records are included in Appendix A.
C = Did not attend.

Resources and Existing Plans

Resources

A variety of resources were utilized in compiling the data needed to perform the hazard analysis. Resources included FEMA, the United States Army Corps of Engineers (USACE), Texas A&M Forest Service, National Oceanic and Atmospheric Administration (NOAA), the 2021 National Land Cover Database, the Texas Water Development Board (TWDB), the Texas Geographic Society, the Texas State Data Center, the Texas Division of Emergency Management (TDEM), the 2022 Census Bureau Population Estimate, the Webb County Appraisal District, the USDA Webb County Census of Agriculture, and local hazard event reports.

Review of the several plans, including the Comprehensive Master Plan, Stormwater Master Plan, Emergency Operations Plan, Floodplain Management Plan, Capital Improvements Plan, Economic Development Plan, Transportation Plan, and the Wildlife Protection Plan provided essential data for developing actions to implement and incorporate into the mitigation plan.

Incorporation of Existing Plans

Current projects and studies were utilized as a starting point for discussing mitigation actions and how to incorporate the Plan into other local planning mechanisms such as budgetary, administrative, and development initiatives. Previous hazard events, occurrences, and hazard risk data were identified through NOAA's National Climatic Data Center (NCDC), Texas Geographic Society, U.S. Geographic Society, U.S. Department of Agricultural, local reporting, and other sources. The preliminary results were presented at the Risk Assessment webinar in order to facilitate a discussion to help participants develop actions for their jurisdiction. Furthermore, these studies were used as a starting

point for suggesting grant and mitigation activities based on local and FEMA's Hazard Mitigation Assistance (HMA) funding.

Public and Stakeholder Involvement

An important component of mitigation planning is public participation and stakeholder involvement. Input from individual citizens and the community as a whole provides the Planning Team with a greater understanding of local concerns and increases the likelihood of successfully implemented mitigation actions. If citizens and stakeholders are involved, they are more likely to gain a greater appreciation of the hazards present in their community and take steps to reduce their impact. Neighboring communities as well as local and regional stakeholders were invited and were provided an overview of the planning process and how they may work with participating jurisdictions to apply for future project funding to implement mitigation projects relative to their specific hazard risks. All stakeholders were invited by email.

Stakeholders

The following groups represent a partial list of organizations invited to provide input into the Plan.

Table 2-5. Plan Stakeholders

ENTITY	TITLE
City of Laredo	Community Development Director
City of Laredo	Emergency Management Coordinator
City of Laredo	Assistant Emergency Management Coordinator
City of Laredo	Epidemiology Administrator
City of Laredo	Community Development Director
Laredo ISD	Superintendent
Laredo ISD	Assistant Superintendent
Laredo ISD	Chief of Police
Laredo ISD	Executive Director for Health and Occupational Safety Support Services
Laredo ISD	Director of Safety
City of Laredo	Municipal Housing Manager
City of Laredo	City Manager

ENTITY	TITLE
City of Laredo	Deputy City Manager
City of Laredo	Assistant City Manager (1)
City of Laredo	Assistant City Manager (2)
City of Laredo	City Council Member District 1
City of Laredo	City Council Member District 2
City of Laredo	City Council Member District 3
City of Laredo	City Council Member District 4
City of Laredo	City Council Member District 5
City of Laredo	City Council Member District 6
City of Laredo	City Council Member District 7
City of Laredo	City Council Member District 8
Webb County	Emergency Management Coordinator
Webb County	Webb County Emergency Management
City of Laredo	Engineering Department Director
U.S. Customs and Border Protection	Port Director, Laredo Port of Entry
U.S. Border Patrol	Chief Patrol Agent
U.S. Border Patrol	Supervisory Border Patrol
U.S. Border Patrol	Border Patrol Agent
U.S. Border Patrol	Border Patrol Agent
City of Laredo	GIS Analyst
City of Laredo	GIS Analyst
City of Laredo	Epidemiology Supervisor (PHEP)
Doctors Hospital of Laredo	CEO
Laredo Medical Center	CEO
Laredo Specialty Hospital	CEO
Catholic Charities	Executive Director
City of Laredo	Health Director

ENTITY	TITLE
City of Laredo	Health Authority
Holding Institute	Executive Director
Laredo College	President
Laredo College	Chief of Police
Laredo College	Safety and Risk Manager
Texas A&M International University	President
Texas A&M International University	Chief of Police
Texas A&M International University	Director of Environmental Health and Safety
Texas A&M International University	Director of Campus Safety and Planning
Kansas City Southern Railroad Company	Senior District Special Agent
Kansas City Southern Railroad Company	Conductor
Texas Department of Transportation	Executive Administrative Assistant
Texas Department of Transportation	District Engineer
Union Pacific	Supervisor
Union Pacific	Haz-Mat Specialist
Kansas City Southern Railroad Company	Senior District Special Agent
City of Laredo Police Department	Chief of Police
Webb County Sheriff's Office	Sheriff
Texas Parks & Wildlife	Wildlife Biologist
Texas Parks & Wildlife	Webb County Game Warden
United States Department of Agriculture	Natural Resource Manager
Webb County Soil & Water Conservation	TSSWCB Field Representative
Texas State Soil and Water	Webb Soil & Water Conservation District
City of Laredo	Public Works Director
City of Laredo	Environmental Services Director
City of Laredo	Economic Development Director
City of Laredo	Economic Development Administrator

ENTITY	TITLE
City of Laredo	Planning and Zoning Director
City of Laredo	Transit General Manager
City of Laredo	Utilities Director
City of Laredo	Parks and Recreation Director
City of Laredo	Airport Director
City of Laredo	Bridge Director
City of Laredo	Public Works Director
City of Laredo	Environmental Services Director
City of Laredo	Economic Development Director
Texas Division of Emergency Management	District Chief
Laredo Economic Development Corp	President/CEO

Multiple non-profit organizations such as Catholic Charities, Holding Institute, and Laredo Economic Development Corp were invited to provide input to the plan. Catholic Charities is a community-based organization that provides services to those in economically distressed areas. Holding Institute is a community center that supports its community with physical, behavioral, spiritual, social, cultural, and educational initiatives. Laredo Economic Development Corp supports and promotes the economic and industrial development of Laredo.

Public Participation

Public involvement in the development of the plan included two public meetings prior to Plan approval and adoption. Public input was sought using three methods: open public meetings; public survey; and the draft Plan was made available for public review on the City of Laredo website, as well as other social media platforms.

Public Participation Survey

In addition to the open public meetings, the City of Laredo Hazard Mitigation Action Plan participants were able to solicit input from citizens and stakeholders through the use of a Public Survey. The survey was designed to obtain data and information from the residents of the City of Laredo and surrounding areas. The City of Laredo solicited surveys through their website and social media. Links to the surveys were distributed by local officials and at public meetings. A total of 46 responses to the survey were completed which provided

valuable input in the development of the Plan. A summary of the survey findings is provided in Appendix B.

Public feedback assisted in driving the direction of hazard profiling, developing mitigation actions for areas of concern expressed in the survey, and allowed for the community to voice their concerns and involve those interested in the HMP for the City of Laredo. Public feedback was also used in the cost-benefit analysis and prioritization of mitigation actions by factoring public opinion into the ranking criteria.

Section 3: Hazard Identification and Risk Assessment Overview

Hazard Identification

The purpose of this section is to provide background information for the hazard identification process, as well as descriptions for the natural hazards identified.

Upon a review of the full range of natural hazards suggested under FEMA planning guidance, the Planning Team identified twelve hazards that are to be addressed in the Plan. These hazards were identified utilizing input from Planning Team members, and a review of the current Texas State Hazard Mitigation Plan ("State Plan"). Readily available online information from reputable sources such as federal and state agencies was also evaluated to supplement information as needed. Based on this review, twelve hazards were identified as significant, as seen in Table 3-1.

Table 3-1. Hazard Descriptions

HAZARD	RANKING	DESCRIPTION
Drought	1	Droughts can be classified as meteorological, hydrological, agricultural, or socioeconomic droughts. A meteorological drought is a reduction of precipitation from the expected average or typical precipitation patterns. A hydrologic drought occurs when below average rainfall impacts streams, lakes, reservoirs, and groundwater levels. Agricultural droughts are brought on by insufficient moisture in the soil, typically impacting crops. Socioeconomic droughts occur when water demand exceeds supply due to a precipitation-related supply shortfall. Droughts may initiate or exacerbate other hazards, such as extreme heat or wildfires.
Hurricanes/ Tropical Storms	2	Hurricanes and tropical storms are intense tropical weather systems that produce damaging winds, generate storm surge, and heavy rainfall.

Table 3-1. Hazard Descriptions (Cont.)

HAZARD	RANKING	DESCRIPTION
Flood	3	A flood is the accumulation of water within a body of water, which results in the overflow of excess water onto adjacent lands, usually floodplains. The floodplain is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse susceptible to flooding. Flooding is the partial or complete inundation of otherwise normally dry land. Types of flooding include riverine, coastal, and shallow flooding.
Windstorms	4	A windstorm is a storm with high winds or violent gusts with little or no rain. The windstorm hazard excludes extreme wind events that occur with other wind-related natural hazards such as hurricanes, tropical storms, and tornados which are addressed elsewhere in this plan.
Extreme Heat	5	Extreme heat is the condition whereby temperatures hover ten degrees or more above the average high temperature in a region for an extended period. If extreme heat conditions persist, it may be considered a heat wave.
Lightning	6	Lightning is a sudden electrostatic discharge during an electrical storm between electrically charged regions of a cloud, between that cloud and another cloud, or between a cloud and the ground.
Tornado	7	A tornado is a violently rotating column of air extending between, and in contact with, a cloud and the surface of the earth. Tornadoes have wind speeds of 250 miles per hour or more. Damage paths can be more than one mile wide and fifty miles long.

Table 3-1. Hazard Descriptions (Cont.)

HAZARD	RANKING	DESCRIPTION
Hailstorm	8	Hail is a form of precipitation that occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice. Nearly all severe thunderstorms produce hail aloft, though it may melt before reaching the ground. Multi-cell thunderstorms produce many hailstones, but not usually large hailstones. In the life cycle of the multi-cell thunderstorm, the mature stage is relatively short so there is not much time for growth of the hailstone. Supercell thunderstorms have sustained updrafts that support large hail formation by repeatedly lifting the hailstones into the very cold air at the top of the thunderstorm cloud. In general hail two inches (5 cm), a little larger than golf ball, or larger in diameter is associated with supercells. Non-supercell storms can produce golf ball size hail. In all cases, the hail falls when the thunderstorm's updraft can no longer support the weight of the ice. The stronger the updraft the larger the hailstone can grow[1].
Expansive Soils	9	Expansive soils contain minerals such as clay that are prone to large volume changes (swelling and shrinking). Soils with a high content of expansive minerals can shrink in drier seasons forming deep cracks. This shrinkage can remove support from buildings or other structures and result in damaging subsidence.
Dam and Levee Failure	10	A dam is a barrier that is constructed to hold back water. A dam failure is a systematic failure of a dam structure resulting in the uncontrolled release of water, often resulting in floods that could exceed the 100-year flood plain boundaries. A levee is an embankment built to prevent overflow from a body of water. A levee failure is when a levee embankment fails, or is intentionally breached, causing the previously contained water to flood the land behind the levee.

[1] NOAA

Table 3-1. Hazard Descriptions (Cont.)

HAZARD	RANKING	DESCRIPTION
Wildfire	11	A wildfire is an uncontrolled fire almost exclusively fueled by natural vegetative fuels. Fuel may come in the form of grass, brush, or tress. Wildfire risk increases with high concentrations of connected fuels. Meteorological conditions such as high temperatures, low humidity, droughts, and high wind can also increase wildfire risk. Humans are the most common source of initial ignition in wildfires. Sparks from agricultural, industrial, or automobile activity may start a wildfire.
Winter Storms	12	A severe winter storm event is defined as a storm with snow, ice, or freezing rain. Severe winter storms are rare for the Texas Coastal area. Sever winter storms may include snowstorms, blizzards, cold waves, and ice storms. Snowstorms include four or more inches of snow in a 12-hour period. Blizzards are characterized by low temperatures and strong winds in excess of 35 mph with large amounts of drifting snow. A cold wave is a winter cold front with a drastic drop in temperature. An ice storm occurs when rain falls out of the warm upper layers of the atmosphere into a cold and dry layer near the ground.[2]

Risk Assessment Overview

The risk assessment includes seven general parameters that are described for each hazard: description, location, extent, previous occurrences, future probability, vulnerability, and impacts.

Frequency of return, or probability, was calculated by dividing the number of events in the recorded time period for each hazard by the overall time period that the resource database recorded events.

Applicable hazard profiles include a description of a general vulnerability assessment. Vulnerability is the total of assets that are subject to damages from a hazard (based on historic recorded damages). Assets in the region were inventoried and defined in hazard zones where appropriate.

[2] Texas State Hazard Mitigation Plan Update 2023

Section 4: Vulnerability Assessment Overview

Vulnerable Assets Overview

Vulnerable assets are those that are susceptible to damage and loss from hazard events. A community's vulnerability to a natural hazard is measured as a function of that community's existing and future vulnerable assets including, but not limited to, populations, critical and non-critical infrastructure, property, and systems. Quantifying existing assets is the first step in defining a community's vulnerability to natural hazards. Existing assets are defined below for the City of Laredo.

Populations for the City of Laredo are included in the Existing Asset sections below. A description of the City of Laredo land cover is shown in Table 4-1.

Table 4-1. City of Laredo Land Cover[1]

Land Cover Type	Percent of Area
Barren Land	2.27%
Cultivated Crops	0.04%
Deciduous Forest	0.11%
Developed, High Intensity	14.97%
Developed, Low Intensity	10.25%
Developed, Medium Intensity	25.90%
Developed, Open Space	5.75%
Emergent Herbaceous Wetlands	0.75%
Evergreen Forest	0.04%
Hay/Pasture	1.07%
Herbaceous	1.53%
Mixed Forest	0.21%
Open Water	0.72%
Shrub/Scrub	34.63%
Unclassified	0.01%
Woody Wetlands	1.73%

Critical Facilities

For the purpose of hazard mitigation, FEMA defines critical facilities as hospitals, fire stations, police stations, courthouse, communications, and similar facilities where essential programs/services are provided. Other facilities such as public schools may be deemed by a community to be a critical facility as well. These facilities should be given special consideration when formulating regulatory alternatives and floodplain management plans. A critical facility should not be located in a floodplain if at all possible. If located in a floodplain it should be provided a higher level of protection so that it can continue to function and provide services during and after a flood. Hazard mitigation actions to mitigate risk to critical facilities located in the 100-year floodplain, or potentially impacted by future flood conditions, are included in this Plan in Section 17. Critical Facilities are tabulated in Appendix C of the Plan.

[1] USDA Crop Land and National Land Cover Dataset, 2021

City of Laredo Existing Assets

POPULATION*
256,187

* Census Bureau Population Estimate 2022

CRITICAL INFRASTRUCTURE	
Type	**Quantity**
Major Roadways	216 Miles
Rail	70 Miles
Crop Land	765 Acres**; $28,395,000 Value***

** USDA Crop Land and National Land Cover Dataset, 2021

*** USDA Webb County Census of Agriculture, 2017

NON-CRITICAL FACILITIES: PROPERTY****			
Residential		**Non-Residential**	
Parcels	**Total Improvement Value**	**Parcels**	**Total Improvement Value**
61,776	$ 7,916,399,642	14,068	$ 6,368,926,372

**** Webb County Appraisal District, 2022

Vulnerable Future Assets

Future growth and development in the City of Laredo may affect hazard vulnerability. For identification of a community's future assets, it is useful to consider anticipated population growth, development trends, and planning and development management efforts. Based on population projections for the county planning area provided by the Texas State Data Center, the county, overall, is expected to grow approximately 1% annually from 2022 to 2040. The City of Laredo experiences steady growth in development including trade and transportation, port activity, warehousing, and agricultural land.

Future assets are another important matrix to assess the planning area's vulnerability to natural hazards. With development comes the need to address the risk of natural hazards for larger populations and increased numbers of non-critical and critical facilities. Historically, hurricanes, tropical storms, and flooding has been a widespread problem for the Plan area; potential for these hazards creates limitations for urban land uses. A goal of community officials in the Plan area is to develop strategies to ensure that future development has reduced risk of impact by natural hazards while not inhibiting community growth. Vulnerability including potential dollar losses is defined for each hazard.

Section 5: Drought

Drought Hazard Overview

Description

Droughts can be classified as meteorological, hydrological, agricultural, or socioeconomic droughts. A meteorological drought is a reduction of precipitation from the expected average or typical precipitation patterns. A hydrologic drought occurs when below average rainfall impacts streams, lakes, reservoirs, and groundwater levels. Agricultural droughts are brought on by insufficient moisture in the soil, typically impacting crops. Socioeconomic droughts occur when water demand exceeds supply due to a precipitation-related supply shortfall. Droughts may initiate or exacerbate other hazards, such as extreme heat or wildfires.

Location

The spatial extent of a drought tends to be relatively large, often stretching across multiple counties. Consequently, the entire City of Laredo is vulnerable to the impact of a drought. Crops and livestock are vulnerable to drought. The overwhelming majority of crop/pastureland is found in the southernmost portion of the city. Additional information about agricultural vulnerability can be found in the summary table.

Extent

The Palmer Hydrologic Drought Index is a value calculated monthly by NOAA. The PHDI takes the balance between environmental water supplies and demands. The index typically ranges between -6 to +6, as shown in Table 5-1. Negative numbers indicate a period of drought. Positive numbers indicate wet periods.

Table 5-1. Drought Extents (PHDI)

PHDI Value Range	Qualitative Drought Extent
0 - -0.5	Normal
-0.5 – -1.0	Incipient Drought
-1.0 – -2.0	Mild Drought
-2.0 – -3.0	Moderate Drought
-3.0 – -4.0	Severe Drought
< -4.0	Extreme Drought

The Texas A&M Forest Service (TFS) uses the Keetch-Byram Drought Index (KBDI), which is based on a daily water balance and is expressed in hundredths of an inch of soil moisture depletion. It is a closed system ranging from 0 to 800, where 0 represents a saturated soil, and 800 represents an absolutely dry soil. At any point along the scale, the KBDI value indicates the amount of precipitation it would take to bring the moisture level back to zero, or saturation. KBDI was developed to correlate the effects of drought on wildfire potential. This relationship is reflected in Table 5-2. The KBDI Index for the planning area may be viewed in Figure 1.

Table 5-2. Drought Extents (KBDI Index)

KBDI Value Range	Qualitative Drought Extent
0 – 200	Soil moisture and large class fuel moistures are high and do not contribute much to fire intensity.
200 – 400	Fuels are beginning to dry and contribute to wildfire intensity. Heavier fuels will still not readily ignite and burn.
400 – 600	Lower litter and duff layers contribute to fire intensity and will burn actively. Wildfire intensity begins to increase significantly. Larger fuels could burn or smolder for several days.
600 – 800	Often associated with more severe drought with increased wildfire occurrence. Intense, deep-burning fires with extreme intensities can be expected. Live fuels can also be expected to burn actively at these levels.

Occurrences

Droughts in the City of Laredo can be long lasting, or short term. In the City of Laredo, the months of February, August, and October have the lowest average PHDI. PHDI values for the City of Laredo come from a NOAA North American Drought Monitoring station (USC00415060) located near the Texas A&M International University.[1] A summary of drought occurrences recorded by this monitoring station may be viewed in Table 5-3. A list of the average monthly PHDI values from 1965 to 2023 may be viewed in Table 5-4. These monthly average PHDI values were used for the occurrences, extent, and probability analyses present in City of Laredo Drought Hazard Table.

[1] https://www.ncei.noaa.gov/access/monitoring/nadm/indices/palmer/stn

Table 5-3. Summary of the City of Laredo Drought Occurrences

Severity	Months on Record (1965 – 2023)	Percent of Total Time
Incipient Drought	40	5.6%
Mild Drought	168	23.4%
Moderate Drought	139	19.3%
Severe Drought	61	8.5%
Extreme Drought	5	0.7%
Total Months of Drought (PHDI <-1)	413	57.4%

Table 5-4. City of Laredo Historical PHDI Values (1965 – 2023)

Months of drought (PHDI <-1) indicated in red												
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1965	0.02	0.67	1.15	1.57	1.68	0.95	-1.23	-1.51	-1.74	-1.77	-1.64	-0.57
1966	1.08	1.12	0.98	0.78	2.38	2.48	1.76	2.16	2.09	1.5	0.77	-1.23
1967	-1.3	-1.08	-1.32	-1.71	-2.49	-2.74	-3.23	-1.79	2.82	2.1	2.36	2.24
1968	2.35	2.72	3.04	3.66	3.21	3.17	3.08	2.34	2.85	2.89	2.54	1.88
1969	1.25	0.8	-1.29	-0.83	-1.24	-0.6	-1.28	0.79	0.15	0.35	0.9	1.14
1970	1.63	1.71	1.71	1.24	1.86	1.16	0.61	-1.3	-0.84	-1.26	-1.58	-1.93
1971	-2.36	-2.57	-3.02	-3.3	-3.87	-1.73	-1.8	3.58	5.75	7.22	6.64	6.08
1972	5.56	5.19	4.98	4.64	7.07	7.61	7.78	7.27	6.75	5.48	5.1	4.43
1973	4.36	5.21	4.57	4.1	3.01	5.37	5.85	5.53	5.36	5.28	4.41	3.59
1974	3.16	2.52	2.08	1.69	1.13	1.23	0.56	2.62	2.3	2.65	2.86	3.22
1975	2.75	2.22	1.77	1.36	1.35	1.34	1.71	1.38	1.56	1.78	1.08	0.62
1976	-0.85	-1.5	-1.74	-1.2	-0.99	-1.32	1.95	1.57	0.99	2.51	3.6	3.86
1977	3.76	3.4	3.2	3.82	5.19	4.87	3.91	3.63	2.23	1.78	1.08	0.78
1978	-1.82	-1.73	-2.13	-2.62	-2.89	-2.74	-3	-3.02	-1.71	-1.57	-1.76	-1.69
1979	-1.5	-1.35	-1.21	0.91	0.19	1.4	0.82	-0.98	-1.64	-2.33	-2.46	-2.17
1980	-2.28	-2.1	-2.46	-2.61	-2.53	-3.21	-3.59	-2.56	-2.65	-2.71	-1.57	-1.49
1981	-0.84	-0.77	1.62	3	4.19	5.07	6.76	6.97	5.84	6.07	5.17	4.33
1982	3.48	4.03	3.58	3.86	3.94	2.95	1.9	1.19	-2.41	-2.07	-1.81	-1.36
1983	-1.23	1.07	1.01	-0.38	-0.7	-1.08	-1.14	-1.43	-1.45	-1.46	-1.66	-1.68
1984	-1.14	-1.32	-1.83	-2.33	-1.87	-2.56	-2.72	-3.24	-3.13	-3.09	-3.03	-2.64
1985	-1.72	-1.56	-0.95	1.55	1.76	2.85	2.71	1.84	1.23	2.72	3.54	3.03
1986	2.91	2.66	2.25	2.2	1.99	2.1	1.18	-1.37	-2.11	-1.4	-1.23	1.21
1987	1.06	1.78	1.74	1.98	2.46	2.26	1.93	1.94	1.01	-1.24	-1.43	-1.61
1988	-1.57	-1.57	-1.85	-2.32	-2.89	-3.08	-2.69	-2.54	-2.28	-2.05	-2.41	-2.57
1989	-2.3	-2.33	-2.37	-1.99	-2.8	-2.66	-3.1	-2.52	-2.76	-3.06	-3.06	-2.26
1990	-1.88	-1.46	-0.83	1.44	0.6	-1.5	-1.14	-1.57	-0.68	-0.69	1.27	0.92
1991	0.86	0.63	-0.88	-1.27	-0.95	-0.84	-1.28	-1.69	-1.08	-1.77	-1.96	-1.07
1992	1.96	1.73	1.97	3.16	3.52	3.04	2.54	1.69	0.82	-1.88	-1.57	-1.3
1993	-1.28	-1.21	0.71	-0.2	-0.48	-0.75	-1.47	-2.09	-2.56	-2.38	-2.32	-2.47
1994	-2.39	-2.22	-1.59	-1.39	-1.49	-1.49	-1.22	-1.68	-1.43	-1.94	-2.37	-1.57

Table 5-4. City of Laredo Historical PHDI Values (1965 – 2023) (cont.)

Months of drought (PHDI <-1) indicated in red												
1995	-1.65	-1.69	-1.69	-2.17	-2.46	-1.75	-1.33	-0.74	1.14	0.78	1.33	1.09
1996	0.62	-0.95	-1.25	-1.36	-1.55	-2.03	1.61	2.34	2.08	1.49	1.22	0.78
1997	-0.96	-0.9	0.69	1.08	0.89	0.63	-0.64	-1.43	-2.02	-0.84	1.3	1.06
1998	-0.55	-0.63	-0.55	-1.05	-1.93	-2.68	-3.16	-3.38	-3.24	-2.86	-2.57	-2.69
1999	-2.96	-3.45	-2.9	-3.43	-3.18	-3.02	-3.05	-2.17	-2.65	-2.59	-2.86	-2.9
2000	-3.19	-3.04	-2.69	-2.69	-2.65	-3.1	-3.44	-3.68	-4.1	-3.38	-2.38	-2.12
2001	-1.76	-1.82	-1.35	-1.75	-2.36	-2.78	-2.91	-1.91	-1.85	-2.42	-1.56	-1.14
2002	-1.42	-1.66	-2.03	-2.57	-2.75	-2.89	-2.76	-3.01	-1.64	-1.09	-0.68	-0.75
2003	-0.64	1.18	1.11	0.72	-1.04	0.71	1.28	-0.65	0.21	1.24	1.05	0.56
2004	0.03	0.78	2.49	3	2.44	1.75	1.26	1.16	1.81	1.23	1.58	1.2
2005	1.12	1.08	0.96	-0.61	-1.2	-1.98	-1.44	-2.12	-2.85	-1.85	-2.05	-2.15
2006	-2.55	-2.76	-3.25	-3.75	-2.74	-3.08	-3.2	-3.7	-2.56	-2.74	-3.04	-1.34
2007	2.43	2.04	2.12	1.93	2.2	3.63	5.92	5.73	5.11	3.84	3.15	2.34
2008	1.94	1.01	-2.39	-2.68	-2.4	-3.01	-1.88	2.69	2.77	1.93	1.38	1.01
2009	-1.39	-1.75	-2.1	-2.44	-2.04	-2.65	-3.19	-3.37	-3.21	-3.28	-2.88	-1.98
2010	-1.32	-0.62	1.49	2.72	2.93	2.71	3.43	2.47	3.07	2.04	1.33	0.73
2011	0.98	0.57	-1.97	-2.69	-2.87	-3.32	-3.69	-4.13	-4.71	-4.9	-4.82	-3.11
2012	-3.1	-2.85	-2.45	-2.79	-2.87	-3.36	-3.33	-3.8	-3.15	-3.62	-3.67	-3.77
2013	-3.51	-3.7	-3.97	-3.59	-2.72	-2.5	-2.11	-2.31	-2.11	-1.57	-1.66	-1.33
2014	-1.44	-1.67	-1.44	-1.98	-1.55	-2.16	-2.27	-2.68	-1.75	-2.39	-1.78	-1.43
2015	-1.09	-1.05	1.34	2.81	4.91	4.86	4.05	2.81	1.83	1.8	1.53	0.9
2016	1.15	-1.51	1.1	1.21	0.91	0.59	-0.74	-0.5	-0.3	-1.15	-1.32	-0.71
2017	-1.06	-1.15	-1.05	-0.84	0.89	-0.84	-1.46	-1.92	1.57	0.85	-0.76	0.82
2018	-0.03	-0.35	-0.27	-0.55	-1.33	-2.04	-2.57	-3.15	3.32	2.77	2.56	2.62
2019	2.45	1.96	2.01	2.16	2.54	2.13	1.24	-1.58	-1.99	-2.01	-2	-2.11
2020	-2.32	-2.53	-2.96	-2.67	-1.4	-1.6	-1.8	-2.01	-1.53	-2.1	-2.52	-2.55
2021	-2.45	-2.5	-2.77	-2.94	-2.71	-2.99	-1.73	-1.64	-1.75	-2.23	-2.3	-2.88
2022	-2.83	-2.9	-3.13	-3.13	-2.39	-3.08	-3.58	-1.57	-1.78	-1.94	-1.45	-1.56
2023	-1.8	-2.22	-2.59	-1.43	-1	-1.63	-2.27	-1.67	-1.62	-1.41	-1.03	Missing code

Probability

Probability, or frequency of return, was calculated by dividing the number of months of drought in the recorded time period by the overall time period that the resource database has recorded. A drought may cover several parts of the city; however, a drought event is recorded for the entire city based on the levels of severity and the length in time of each occurrence. Table 5-5 provides a general overview of drought severity, probability, and return interval. Probability for future drought events are defined for the entire city in the following sections.

Table 5-5. City of Laredo Drought Probability

Drought Extent	Estimated Annual Probability	Estimated Return Interval
Incipient Drought	5.6%	1.50 years
Mild Drought	23.4%	0.36 years
Moderate Drought	19.3%	0.43 years
Severe Drought	8.5%	0.98 years
Extreme Drought	0.7%	11.98 years

Probabilities of future drought events are also subject to the effect of future conditions, such as climate change. The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. As long-term weather patterns and average temperatures change so too will the locations, frequencies, and range of anticipated intensities of droughts. In many parts of the United States and the world, climate change increases the odds of worsening drought. Regions such as the U.S. Southwest, where droughts are expected to get more frequent, intense, and longer lasting, are at particular risk. The impacts of drought will be increasingly severe as Laredo's population grows and climate change leads to longer, more frequent droughts. The Rio Grande, already under significant stress, is expected to see reduced flows due to changing precipitation patterns. This will strain water supply infrastructure, leading to shortages that affect residential, agricultural, and industrial users. Urban development will increase water demand, compounding the effects of drought on both public services and the economy. The need for enhanced water management systems, including improved infrastructure for water recycling and conservation, will grow as these pressures increase.

Impact

Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality. There is very low risk of loss of life or damage to structures associated with drought. Droughts may cause water shortages and require regulators to enact water rationing. The impacts of drought tend to be felt most by agriculture and related industries. Droughts can damage crops and pastoral lands and in severe cases, droughts may kill trees and cause loss of livestock. Dead vegetation from drought can serve as fuel for wildfires.

Crop insurance is purchased by agricultural producers such as farmers and ranchers to protect their investment in the event of natural disaster like drought, hail, or flood. The extent of crop loss due to drought occurrences is difficult to quantify because a drought during a growing season can impact the next two years of crop production. Documentation of agricultural losses due to drought is typically filed by the landowner directly with the policy holder and is not a matter of public record. For this reason, historical crop damages caused by drought is not quantified herein.

Economic impacts of droughts may be complex and far ranging. Water is required to produce many goods and services. If impacts are felt in basal levels of supply chains, there is potential for measurable downstream effects. The impacts of a drought may be felt by many interconnected industries and may reach well beyond the temporal or spatial extents of the drought.

An example of these economic impacts may be demonstrated by the 2011 Texas Drought, which had a total direct cost of agricultural loss estimated at $5.2 billion with an estimated $3.5 billion in indirect cost for a total of $8.7 billion in losses statewide. Some of this cost is associated to the decreased park attendance, demanding $4.6 million just to keep parks open to the public[2].

Vulnerability

Communities with a greater proportion of crop area may be more vulnerable to the economic impacts of drought. Cropland was calculated by using the 2021 USDA Crop Land and National Land Cover Dataset. This data is the most recent data of its type.

Droughts may potentiate the effects of other hazards. For example, droughts may remove water from vegetation, rendering areas more vulnerable to wildfires. Wildfire hazards are discussed elsewhere in this plan.

[2] Testimony at TWDB Work Session Meeting (October 21, 2014)

City of Laredo Drought Hazard

LOCATION
City Wide

OCCURRENCE	EXTENT				
Months of Drought (PHDI <-1) 1965-2023	Magnitude (PHDI Description)				
	Months of Incipient Drought	Months of Mild Drought	Months of Moderate Drought	Months of Severe Drought	Months of Extreme Drought
413	40	168	139	61	5

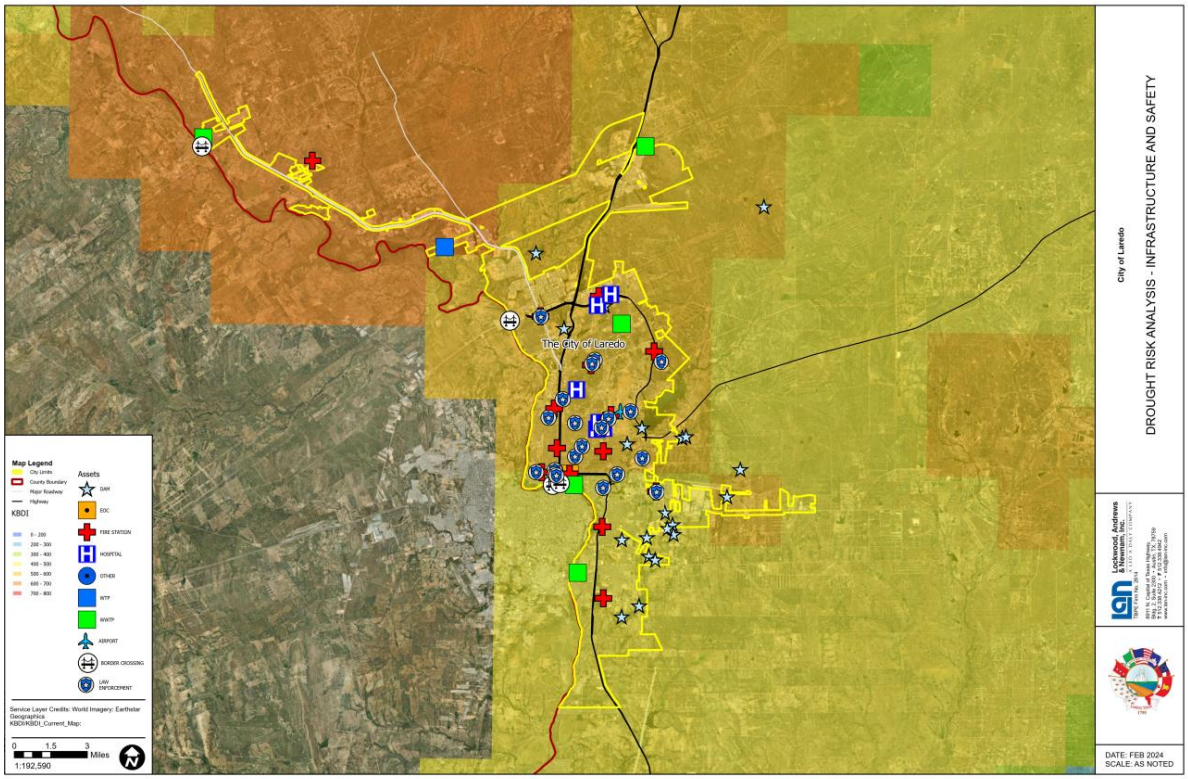
PROBABILITY					
Annual Chance of Drought (PHDI <-1)	Magnitude (PHDI Description)				
	Annual Chance of Incipient Drought	Annual Chance of Mild Drought	Annual Chance of Moderate Drought	Annual Chance of Severe Drought	Annual Chance of Extreme Drought
57.4%	5.6%	23.4%	19.3%	8.5%	0.7%

IMPACT
Crop and Pasture Damage
Values of historical crop and pasture damages caused by drought are not available in the public domain by jurisdiction as confirmed by AgriLife and USDA Webb County Farm Service Agency.

VULNERABILITY	
Crop and Pastureland	
Acres*	Percent of Total Jurisdictional Area
765	1.11%

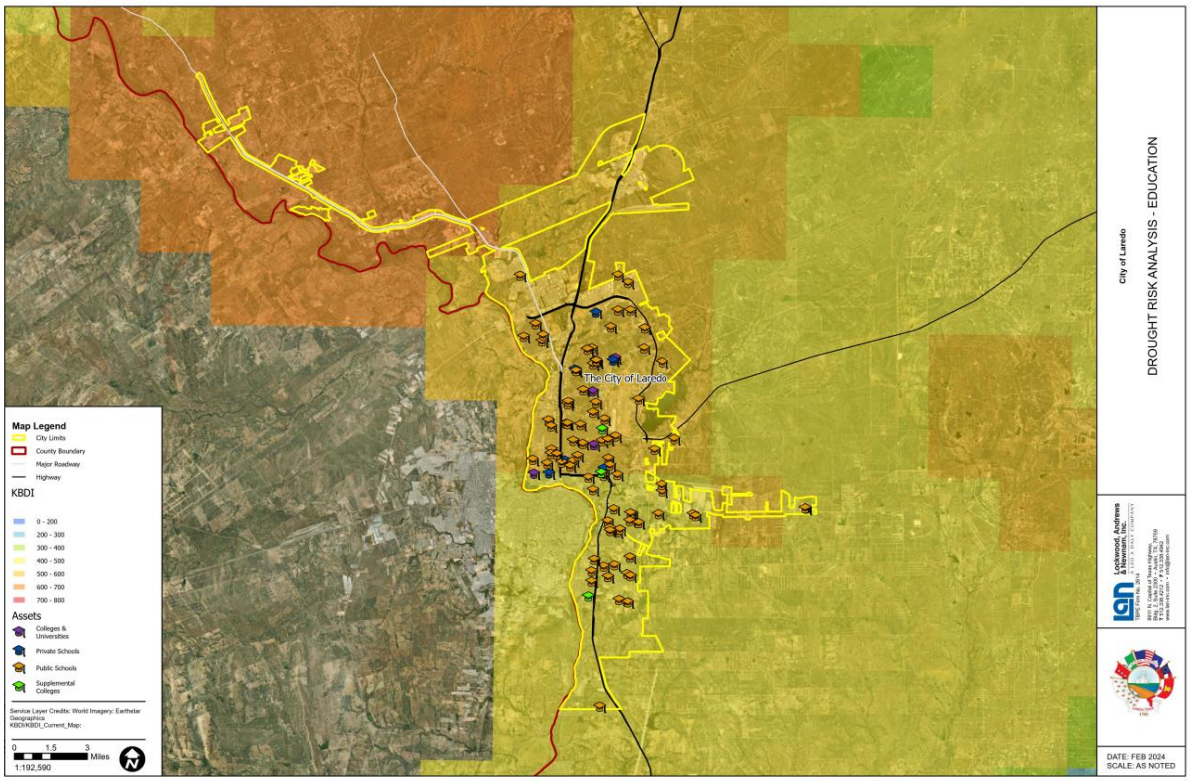
*USDA Crop Land and National Land Cover Dataset, 2021

Figure 5-1. City of Laredo Drought Hazard Map (Infrastructure and Safety) *



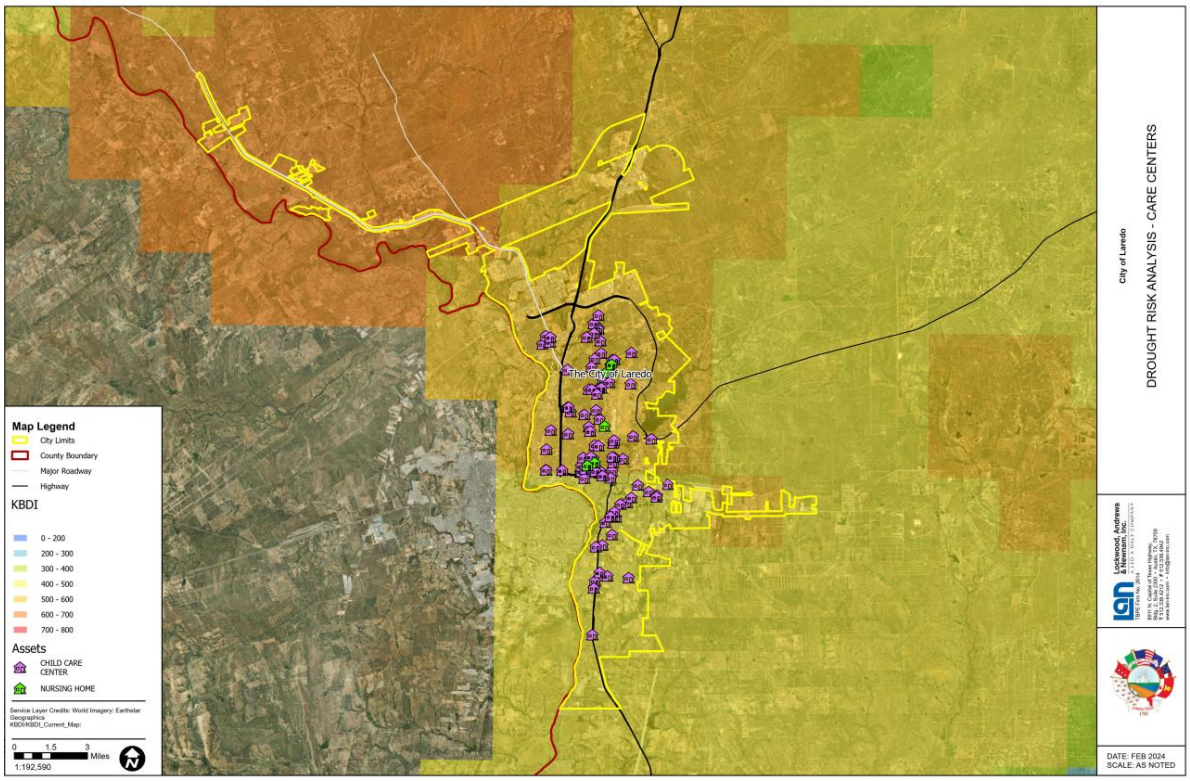
* Texas A&M Forest Service (TFS), estimated Jan. 30th, 2024

Figure 5-2. City of Laredo Drought Hazard Map (Education) *



* Texas A&M Forest Service (TFS), estimated Jan. 30th, 2024

Figure 5-3. City of Laredo Drought Hazard Map (Care Centers) *



* Texas A&M Forest Service (TFS), estimated Jan. 30th, 2024

Section 6: Hurricane and Tropical Storms

Hurricane and Tropical Storms Hazard Overview

Description

Hurricanes and tropical storms are intense tropical weather systems that produce damaging winds, generate storm surge, and heavy rainfall.

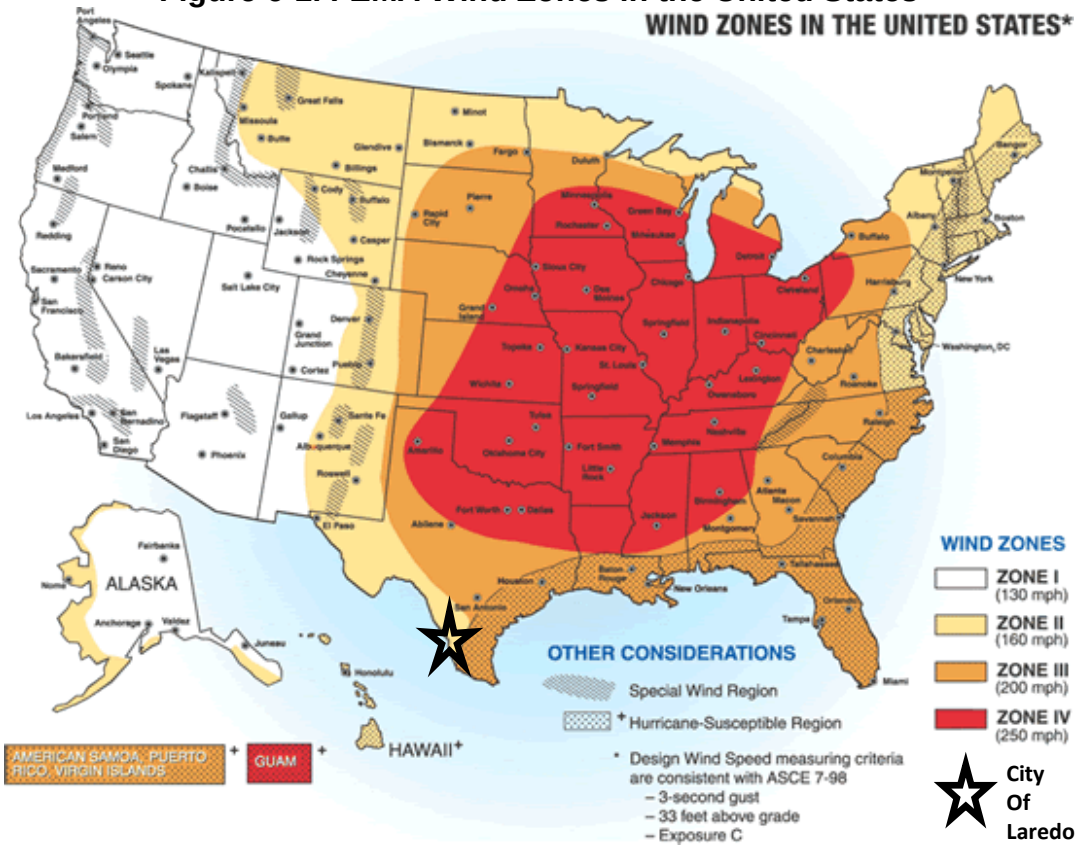
Location

Hurricanes and tropical storms do not have a specific geographic boundary and can occur throughout the planning area uniformly. According to FEMA Wind Zones in the United States as shown in Figure 6-1, the entirety of the City of Laredo is identified as a Hurricane-Susceptible Region and is in Wind Zone II, associated to winds as high as 160 mph.

The effects of a hurricane can be felt as far as 150 miles from the center of the storm. The most damaging effects of a storm, both in terms of wind damage and storm surge, are likely to be felt within the radius of maximum wind (RMW). The average RMW of Atlantic hurricanes has been observed to be about 30 miles[1]. A 30-mile buffer applied to the storms that have occurred in the planning area encompasses the entire planning area. Consequently, the entire planning area should be considered at risk of hurricane or tropical storm damage.

[1] Source: A Note on the Radius of Maximum Wind for Hurricanes, S.A. Hsu and Zhondge Yan, 1998

Figure 6-1. FEMA Wind Zones in the United States



Extent

Hurricane intensity is categorized by the Saffir-Simpson Scale, ranked 1 – 5, in order of lowest to highest wind speed. This scale, while it is based on a limited suite of characteristics of hurricane intensity, provides an informative framework with which hurricanes can be discussed. Category 3, 4, and 5 storms are considered to be the most dangerous hurricanes. There is a significant potential for property damage and loss of life associated with Category 3-5 storms. Only 20% of the total tropical hurricane landfalls are from Category 3-5 storms, yet Category 3-5 storms have caused 70% of the hurricane-related damage in the United States. Category 1 and 2 storms, while generally not as dangerous as Category 3-5 storms, still require consideration and preparation. For example, Hurricane Ike was a Category 2 storm, yet was the third most destructive hurricane to make landfall in the United States. Table 6-1 describes Saffir-Simpson Scale hurricane categories and associated storm surge estimates.

Historically, strong hurricanes and tropical storms have rarely occurred throughout the planning area as shown in Figure 6-3. Given the planning area's distance from the coast, it is not anticipated that a Category 5 Hurricane will impact the planning area.

Table 6-1. Saffir-Simpson Hurricane Wind Scale[2]

Category	Maximum Sustained Wind Speed (MPH)
1	74-95
2	96-110
3	111-129
4	130-156
5	157+

Occurrences

The typical Atlantic hurricane season runs from June to October. Majority of storms occur within this range. Between 1851 and 2023, a total of 77 unique storms crossed within 50 miles of the planning area. A detailed breakdown of storms by intensity is presented in Table 6-2. No hurricanes crossed within 50 miles of the planning area during this time, but it is important to note that tropical storms and depressions have reached the planning area and can also have devastating impacts.

Table 6-2. Historical Occurrences[3]

Hurricanes and Tropical Storms Within 50 Miles of Planning Area (1851 – 2021)						
Total Storms	Tropical Storms & Depressions	Category 1 Hurricanes	Category 2 Hurricanes	Category 3 Hurricanes	Category 4 Hurricanes	Category 5 Hurricanes
77	77	0	0	0	0	0

Probability

The annual probability and reoccurrence intervals of tropical storms and hurricanes is presented in Table 6-3. Probability and reoccurrence intervals are calculated by dividing the number of events by the observation period. It should be noted that these probabilities reflect the previous occurrence of the center of a storm tracking within 50 miles of the planning area. This is because the effects of a hurricane can be felt as far as 150 miles from the center of the storm. and the most damaging effects of a storm, in terms of wind damage, are likely to be felt within the radius of 30 miles. A 30-mile buffer applied to the storms that have occurred in the planning area encompasses the entire

[2] Landsea, C.W., Pielke, R.A. Jr., Mestas-Nunez, A.M., Knaff, J.A. (1999)
Atlantic Basin Hurricanes: Indices of Climatic Changes. *Climactic Change*, 42:89-129.
[3] NOAA

planning area. Consequently, the entire planning area should experience the same risk probability and recurrence intervals.

Table 6-3. Reoccurrence Probability

Annual Probability of Storms Within 50 Miles of Planning Area						
	Future Storms	Tropical Storms & Depressions	Category 1 Hurricanes	Category 2 Hurricanes	Category 3 Hurricanes	Category 4 Hurricanes
City of Laredo	45%	45%	0%	0%	0%	0%

Probabilities of future hurricane and tropical storm events are also subject to the effect of future conditions, such as climate change. The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. As long-term weather patterns, average temperatures, and sea levels change, so too will the locations, frequencies, and range of anticipated intensities of hurricanes and tropical storms. Climate change worsens hurricane impacts in the United States by increasing the intensity and decreasing the speed at which they travel. There is uncertainty as to whether there will be an effect on the number of hurricanes, but the intensity and severity of hurricanes will continue to increase as the climate changes. Although Laredo is located inland, hurricanes and tropical storms can still bring heavy rainfall and flooding. Climate change is projected to increase the intensity of these storms, resulting in heavier rainfall over shorter periods. This will overwhelm stormwater drainage systems and lead to more frequent flash flooding, particularly in low-lying and newly developed areas. As the city's population and urban footprint expand, more people and infrastructure will be exposed to flood risks, requiring improvements in flood management infrastructure, including levees, storm drains, and water retention systems.

Impact

The City of Laredo is 110 miles away from the Gulf of Mexico; the entire planning area will be vulnerable due to the proximity to impacts of wind brought on by hurricanes and tropical storms. Laredo is still at risk for hurricanes and tropical storms but not close enough to the coast to be susceptible to storm surge hazards.

Additionally, hurricanes and tropical storms produce large amounts of rain. This rain can overwhelm drainage systems. Even hurricanes or tropical storms that have weakened after making landfall can continue to drop significant quantities of water. This water can lead to flooding.

The impacts to communities from a category 5 storm could be near complete destruction of any and all assets. Houses and commercial property could be destroyed.

In addition to the destruction of property, populations can be displaced if their homes are destroyed. Power and other utilities can be interrupted, even by lower category storms. Crops can be severely damaged, resulting in economic impacts.

Vulnerability

The City of Laredo is located far enough from the Texas coast that risks to assets is relatively low but still possible. The Gulf Coast often generates powerful hurricanes and tropical storms, particularly category 4 and 5 storms. It is important to note all assets within the planning area are far enough from the coast that vulnerability to damage from hurricanes are low but tropical storms still pose a higher probable risk to the planning area's assets, these assets are listed in the summary table.

City of Laredo Hurricane and Tropical Storms Hazard

LOCATION
Area at Risk
City Wide

OCCURRENCE	EXTENT				
Total Storms	Tropical Storms & Depressions	Category 1 Hurricanes	Category 2 Hurricanes	Category 3 Hurricanes	Category 4 Hurricanes
77	77	0	0	0	0

PROBABILITY					
Future Storms	Tropical Storms & Depressions	Category 1 Hurricanes	Category 2 Hurricanes	Category 3 Hurricanes	Category 4 Hurricanes
45%	45%	0%	0%	0%	0%

IMPACT & VULNERABILITY	
Total Population*	**Land Area (Acres)**
256,187	144,264.18
Residential Parcels	**Residential Total Improvement Value****
61,808	$7,920,774,658
Commercial Parcels	**Commercial Total Improvement Value****
11,611	$6,211,372,448
Crop Area (Acres)***	**Crop Value******
765	$28,395,000
Major Roadway (Miles)	**Railroad (Miles)**
216.26	69.95

* Census Bureau Population Estimate 2022

**Webb County Appraisal District, 2022

***USDA Crop Land and National Land Cover Dataset, 2022

Figure 6-4. Map of Hurricane & Tropical Storms for The City of Laredo (1851 – 2021) - (Infrastructure and Safety)

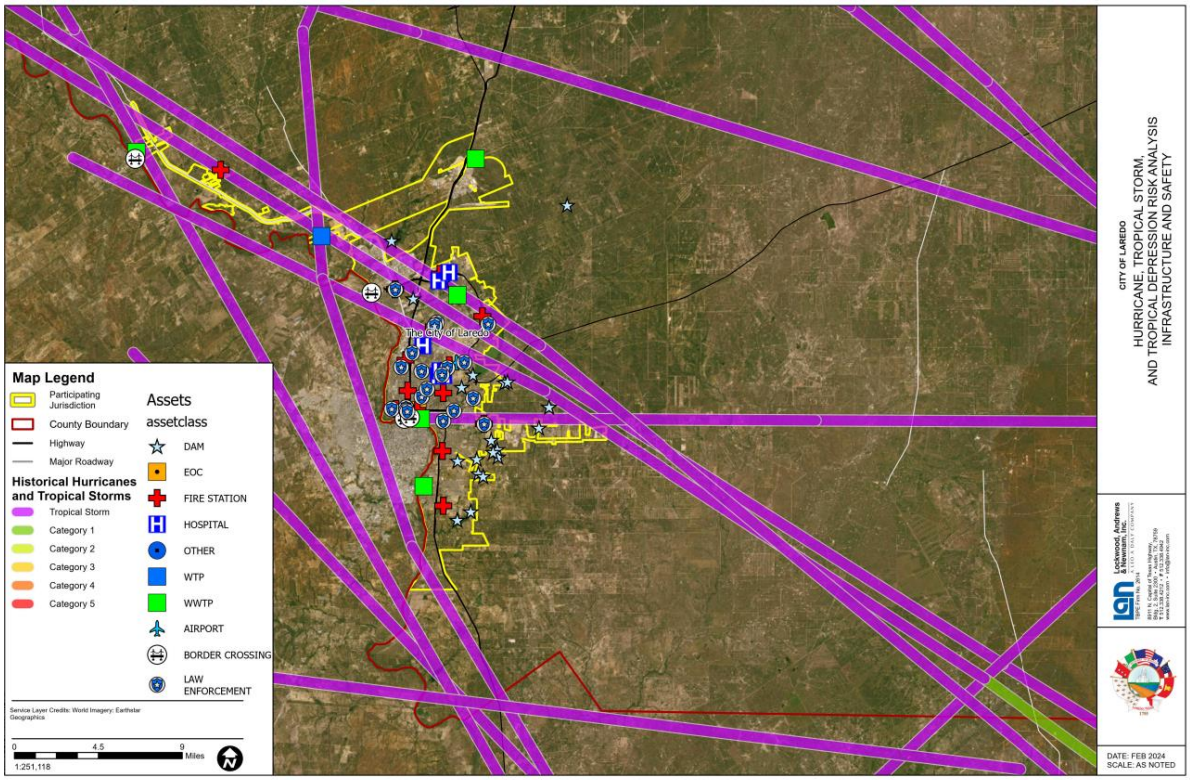


Figure 6-5. Map of Hurricane & Tropical Storms

for The City of Laredo (1851 - 2021) - (Education)

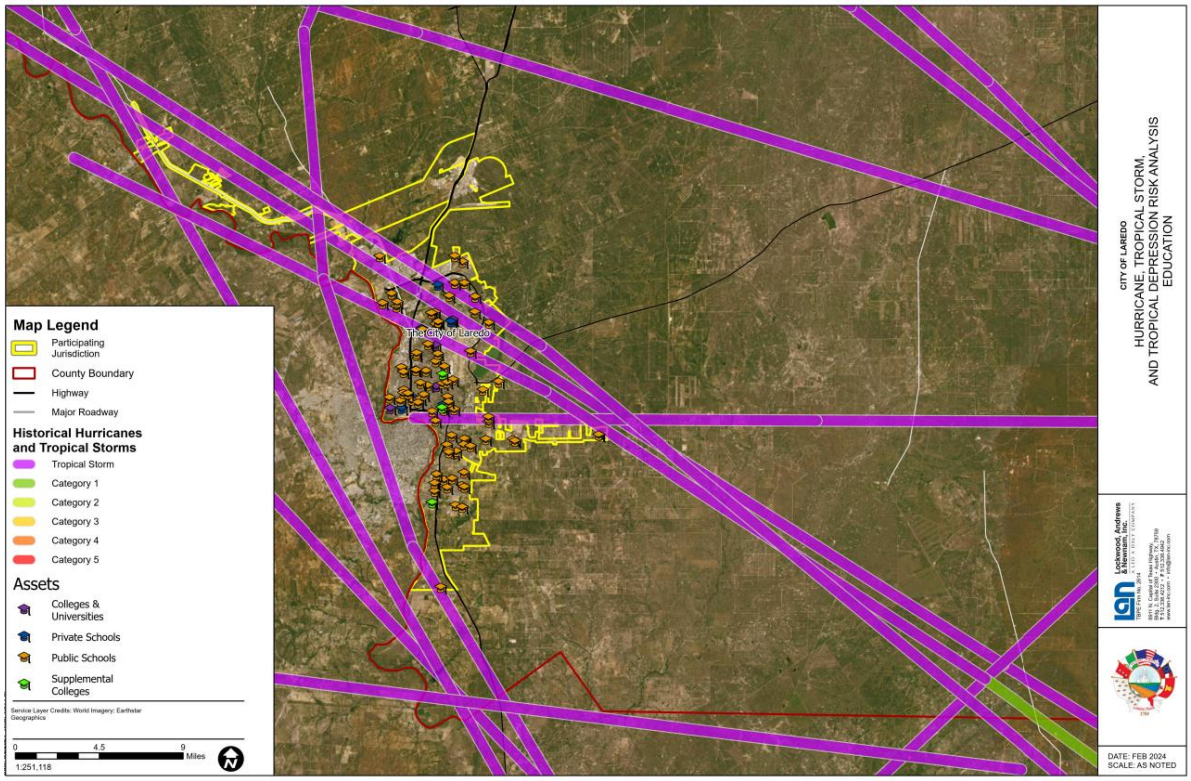
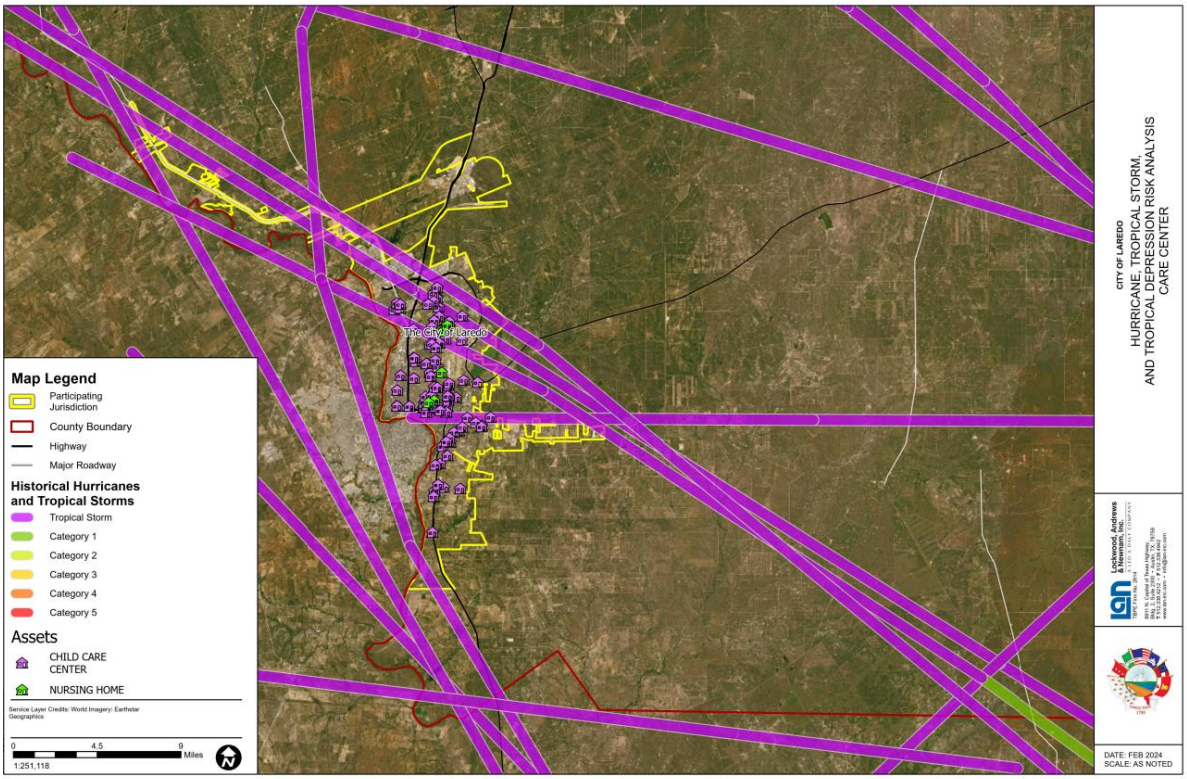


Figure 6-6. Map of Hurricane & Tropical Storms

for The City of Laredo (1851 - 2021) - (Care Centers)



Section 7: Flood

Flood Hazard Overview

Description

A flood is the overflow of excess water onto adjacent lands, usually floodplains. The floodplain is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse susceptible to flooding. Flooding is the partial or complete inundation of otherwise normally dry land. Types of flooding include riverine, coastal, and shallow flooding.

Location

Sources of flooding in the City of Laredo include riverine flooding, and flooding resulting from poor drainage, otherwise referred to as localized flooding. Federal Emergency Management Agency (FEMA) flood maps are the number one resource for defining location of flood hazard for a community. The current effective FEMA Flood Insurance Rate Maps (FIRMS) and Flood Insurance Study (FIS) for the City of Laredo are from 2008.

Adoption of flood maps in conjunction with development of a new city-wide Hazard Mitigation Plan provides the City of Laredo an opportunity to coordinate and implement these two planning mechanisms into land use policies, regulations, and ordinances, and to alter the built environment to build resiliency to natural hazards over time. Communities may also consider higher regulatory standards to be more aligned with the city's regulations, and to more effectively, and responsibly, manage the local National Flood Insurance Program (NFIP).

This report section includes floodplain maps with the proposed 2008 FEMA Flood Insurance Rate Maps (FIRMs) floodplain extents which incorporate the hydrologic and hydraulic analysis of the area. This floodplain map may be seen in Figure 7-1.

Extent

Magnitude of flood hazards is expressed in term of the 100-yr storm maximum flood depth experienced by the planning area. The flood depth was found by finding the greatest depth between the stream bed and the 1% annual chance flood line, also known as the 100-yr storm, along the Rio Grande in the FIS flood profiles. Generally, homes that are impacted by more than four feet of flood depth are considered by FEMA as a complete loss. Therefore, flood depth combined with number of homes impacted by floods is one measure of a community's vulnerability to flood damage. FEMA flood maps designate Special Flood Hazard Areas (SFHA) which indicate areas of the city that have a 1% annual chance of inundation. A 0.2% annual chance of inundation floodplain has also been designated by FEMA, further detailing the extent of flood hazards in The City of Laredo.

Occurrences

Flood occurrences in City of Laredo are documented in the National Climatic Data Center (NCDC) Storm Event Database. The NCDC data reports include event details such as property damage, crop damage, injury, and death. Dates of floods recorded by the NCDC from 1950 to 2023 may be viewed in Table 7-1.

Table 7-1. NCDC flood records 1950 - 2023

Date	Date (cont.)	Date (cont.)	Date (cont.)	Date (cont.)
7/10/1996	8/29/2004	7/8/2010	5/30/2015	5/18/2023
7/10/1996	7/27/2005	5/12/2011	10/9/2015	
8/25/1996	10/11/2005	7/27/2012	4/11/2017	
8/30/1996	5/14/2006	7/27/2012	5/21/2017	
8/30/1996	9/24/2006	9/28/2012	5/21/2017	
8/31/1996	9/24/2006	9/28/2012	9/26/2017	
6/6/1997	10/13/2006	9/29/2012	9/26/2017	
6/15/1997	5/7/2007	4/27/2013	9/27/2017	
6/15/1997	6/9/2007	5/10/2013	9/10/2018	
3/14/2000	6/17/2007	5/11/2013	5/21/2020	
7/30/2000	6/20/2007	6/14/2013	5/19/2021	
8/22/2000	7/2/2007	7/15/2013	8/15/2022	
9/9/2002	5/5/2008	7/15/2013	8/15/2022	
9/9/2002	7/24/2008	10/13/2013	8/15/2022	
9/15/2002	8/17/2008	10/14/2013	8/15/2022	
10/11/2003	8/22/2008	8/1/2014	8/15/2022	
10/12/2003	5/27/2009	4/11/2015	8/15/2022	
10/12/2003	9/29/2009	5/21/2015	8/15/2022	
4/4/2004	5/16/2010	5/23/2015	4/23/2023	
6/30/2004	6/2/2010	5/30/2015	4/23/2023	

Additionally, one non-hurricane, flood-related FEMA disaster declarations took place in the City of Laredo between 1950 and 2023. Disaster declarations are made at the county level without published detail of impacts to cities. Consequently, these disasters are not described within the tables. Disaster Declarations are shown in Table 7-2.

Table 7-2. City of Laredo Flood-Related Disaster Declarations[1]

Disaster Number	Declaration Date	Incident Begin Date	Incident End Date	Public Assistance Grants
333	05/20/1972	05/20/1972	05/20/1972	Information Not Provided

[1] https://www.fema.gov/data-visualization/disaster-declarations-states-and-counties

Probability

Probability and frequency of return were calculated by dividing the number of flood events in the recorded time period for flood hazards by the overall time period that the resource database has recorded events. Estimated probability of future flood events has been calculated for the planning area. The probabilities shown in the table are based on previous occurrences documented by the NCDC database.

Probabilities of future flood events are also subject to the effect of future conditions, such as climate change. The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. Climate change exacerbates several weather-related factors that contribute to floods, such as rainfall, snowmelt, sea levels, etc. As long-term weather patterns, average temperatures, and sea levels change, so too will the locations, frequencies, and range of anticipated intensities of floods. Flooding is expected to worsen with both climate change and urban development. As more impervious surfaces are created by roads, parking lots, and buildings, the capacity for natural drainage will decrease, increasing the likelihood of flash flooding during heavy rain events. Climate change is projected to bring more intense and unpredictable rainfall, further straining Laredo's drainage infrastructure. Population growth will place more people and public assets, such as schools, hospitals, and transportation systems, at risk, especially in flood-prone areas.

Impact

Impacts of flooding frequently include damage to people, property, buildings, and infrastructure. Flooding may cause bridge and road closures, service disruptions, and injuries and fatalities. Flood impacts are summarized in the planning area table.

Vulnerability

Asset vulnerability to flood can be found in the tables below. Major infrastructure is defined at critical utility lines (gas, water, etc.), highway, and rail access.

NFIP Participation

One of the most powerful tools businesses and homeowners have to protect themselves from flooding is flood insurance through the National Flood Insurance Program (NFIP). The City of Laredo participates in the NFIP.

The City of Laredo has a total of 19 repetitive loss properties, having received a total of $801,483.37 in flood insurance payments. Repetitive Loss properties are properties that have received two or more payments of $1,000 within a ten-year period. Of those 19 repetitive loss properties, 2 are severe repetitive loss properties. Severe repetitive loss properties are properties that have received four NFIP payments of over $5,000 each.

The City of Laredo have developed mitigation actions related to NFIP compliance and maintenance. These mitigation actions can be seen in Section 17. The City of Laredo identified flooding as a hazard of particular relevance. Consequently, numerous mitigation actions were developed that will help mitigate the impacts of floods. Many of these actions relate to continued compliance with the NFIP and public outreach projects that exceed the NFIP minimum standards. The City of Laredo recognizes the flood mitigation benefits of exceeding the NFIP minimum standards.

Table 7-3. City of Laredo Ordinance

LOCATION OF ORDINANCE LANGUAGE					
Community	**Adoption of NFIP criteria in local regulation**	**Adoption of the latest effective FIRM**	**Latest Effective FIRM Date**	**Implementation/ enforcement of local regulations to develop in SFHAs**	**Designee/ agency responsible of implementing requirements of the NFIP**
City of Laredo	Section 24.69.4-6.A	Section 24.69.3-5.B	4/2/2008	Section 24.69.3-5.C	Section 24.69.4-6.A

*Ordinance for the City of Laredo is in Appendix D

The implementation of post-event substantial improvement/substantial damage (SI/SD) review starts with an assessment of the damage, to determine the impact and magnitude of the damage/improvement from an event. That assessment may be performed by local, State or Federal personnel using FEMA's Preliminary Damage Assessment Guide. Based on the information collected, if a structure was damaged to an extent that triggers SI/SD, then when repaired, it will have to meet all current building codes and regulations (including current elevation requirements). The SI/SD determination is based on the value of the damaged structure and not land value, which is determined by examining the Webb County Appraisal District data. Upon request, a notice letter will be sent to property owners stating what the determination was. If the letter states there was SI/SD the property owner can appeal the decision, otherwise the owner can continue the permit application review process. From the permit review process, permits can begin being issued to the property owner and inspections can be performed.

The City of Laredo Flood Hazard

LOCATION		EXTENT
Flooding Types	Major Flooding Source	100-yr Storm Maximum Flood Depth (Feet)
Riverine Localized	Rio Grande River	57

OCCURRENCES	
Number of Floods (Range: 1950-2023)	Risk to Health and Safety (No. Incidences by Type)
81	1 death, 0 injuries

PROBABILITY	
Future Flood Events Likelihood	1 Flood X Years
111% annual chance	1 flood every 0.90 years

IMPACT			
Parcels in SFHA	Property Value in SFHA*	Roadway (Mile)	Railroad (Mile)
5,831	$3,467,911,712	88	16

VULNERABILITY			
Total Number of Closed Paid Losses**		Total Dollar Amount of Closed Paid Losses**	
146		$5,640,663.97	
Repetitive Loss Structures (No.)	Repetitive Loss Payments	Severe Repetitive Loss Structures (No.)	Severe Repetitive Loss Payments
19	$801,483.37	2	$192,537.31
Repetitive Loss Structure NFIP Occupancy Status		Number of Repetitive Loss Structures	
Single Family Residential		17	
Other Nonresidential		2	
ASSET CLASS	ASSETS IN SFHA		
Dam	Clark Lake Dam		
	Lago Del Valle Dam		
	Link Lake No 1 Dam		
	Link Lake No 2 Dam		

*Webb County Appraisal District, 2022

**FEMA, as of Aug. 14th, 2023

Figure 7-1. Map of FEMA Floodplains for the City of Laredo – (Infrastructure and Safety)

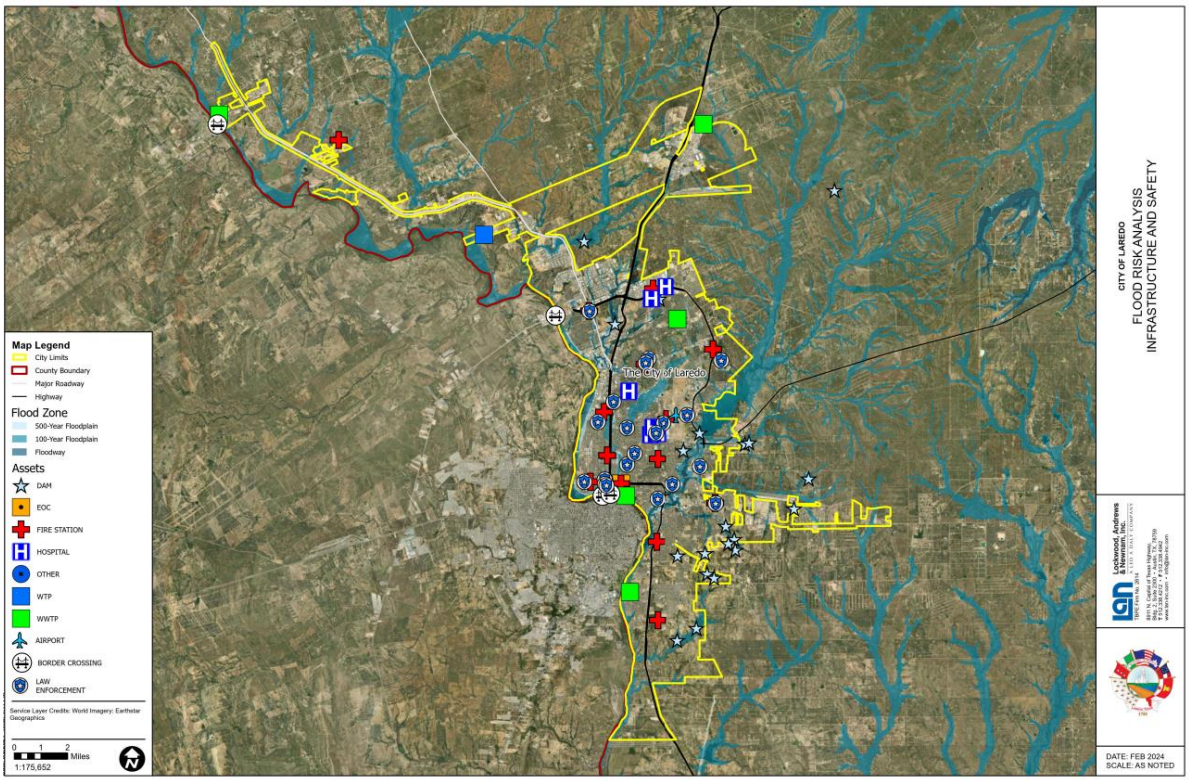


Figure 7-2. Map of FEMA Floodplains for the City of Laredo – (Education)

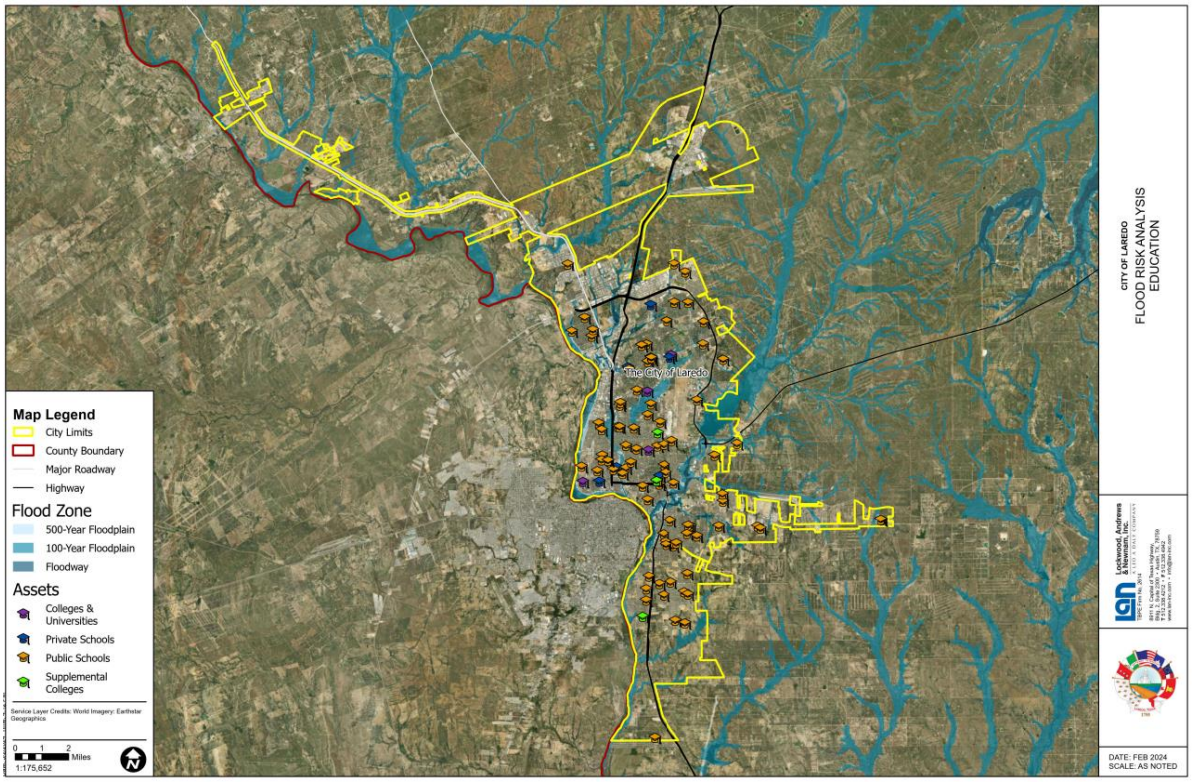
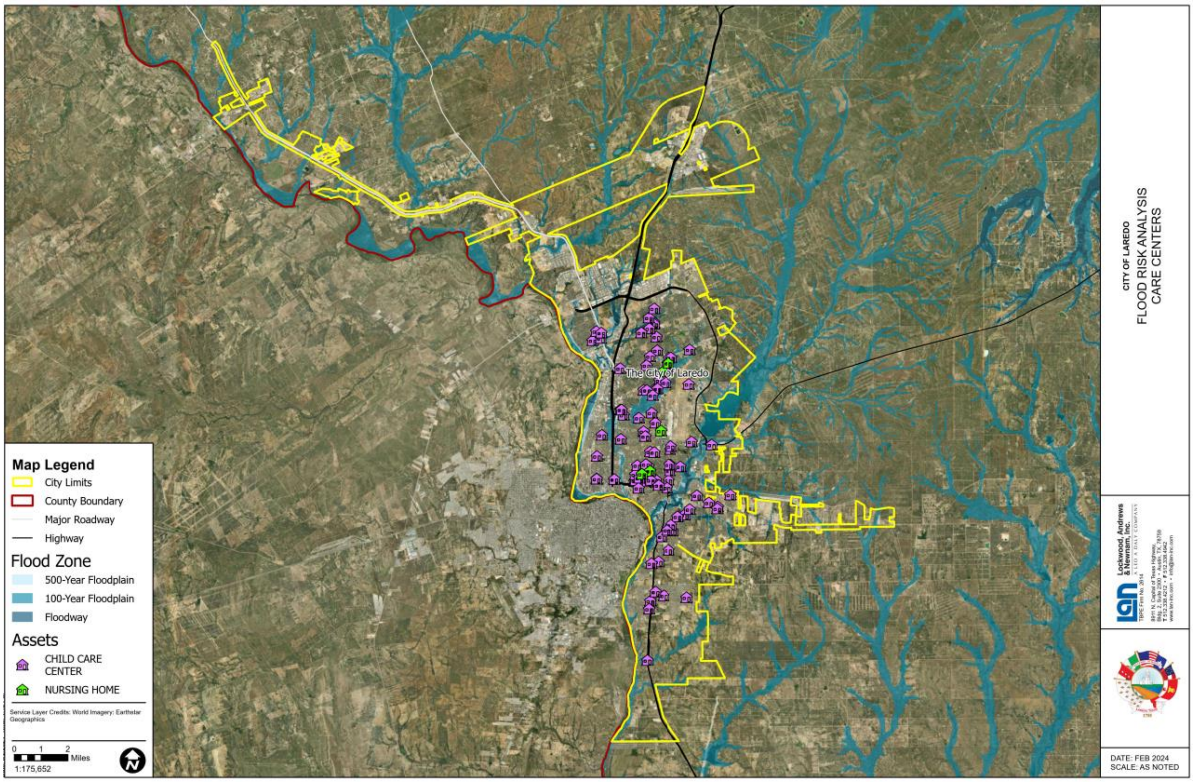


Figure 7-3. Map of FEMA Floodplains for the City of Laredo – (Care Centers)



Section 8: Windstorms

Windstorms Hazard Overview

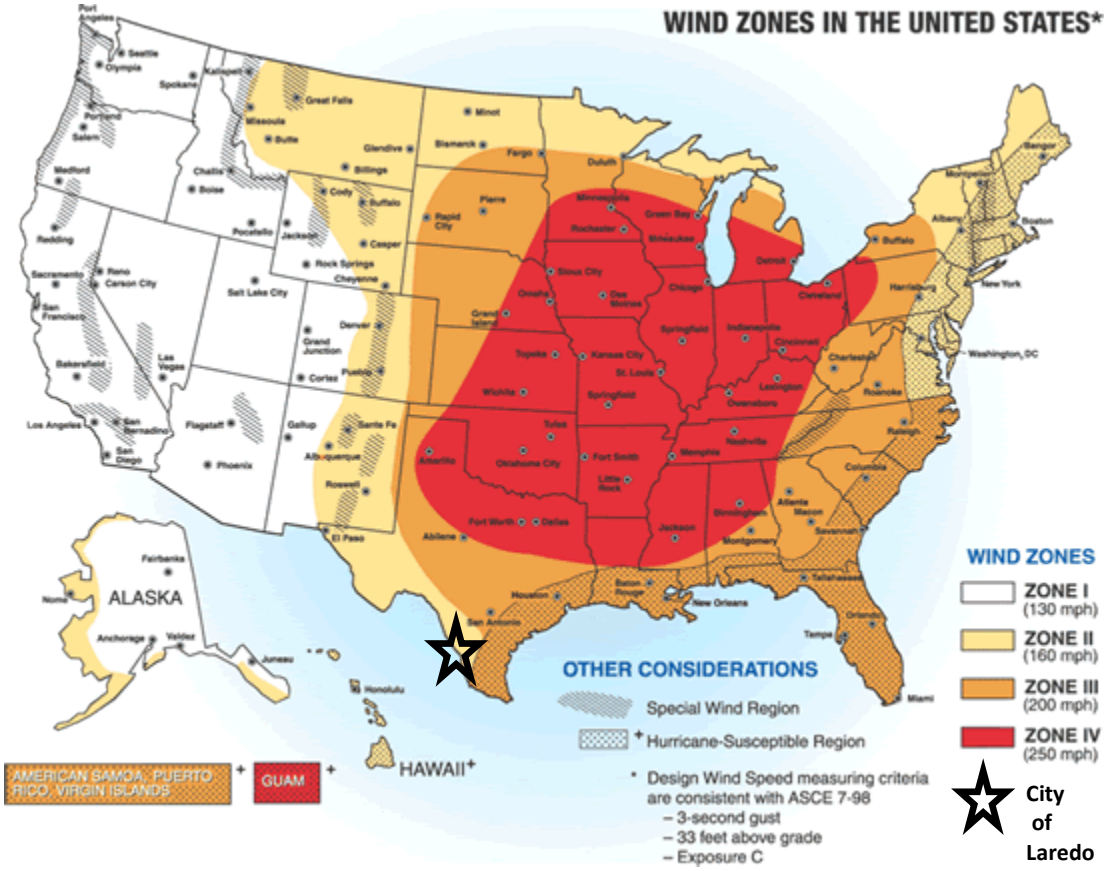
Description

A windstorm is a storm with high winds or violent gusts with little or no rain. The windstorm hazard excludes extreme wind events that occur with other wind-related natural hazards such as hurricanes, tropical storms, and tornados which are addressed elsewhere in this plan.

Location

Windstorms do not have any specific geographic boundary and can occur throughout the planning area uniformly. According to FEMA Wind Zones in the United States, the City of Laredo is in Wind Zone II and is subject to winds as high as 160 mph, as seen in Figure 8-1.

Figure 8-1. FEMA Wind Zones in the United States



The Texas Windstorm Insurance Association (TWIA) was established under the Texas Department of Insurance (TDI) by the Texas Legislature in 1971 following Hurricane Celia. TWIA provides windstorm and hail insurance along the Texas seacoast. Recommended design and inspection requirements for structures along the coast have been developed by TDI based on historical damages.

Extent

Windstorms extent is defined using the Beaufort Wind Scale. Table 8-1 summarizes the Beaufort Wind Scale.

Table 8-1. Beaufort Wind Scale[1]

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects	
			On the Water	On Land
0	Less than 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted; small tree branches move
5	17-21	Fresh Breeze	Moderate waves 4-8 ft. taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger waves 8-13 ft., whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Sea heaps up, waves 13-19 ft., white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Moderately high (18-25 ft.) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Twigs breaking off trees, generally impedes progress
9	41-47	Strong Gale	High waves (23-32 ft.), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Very high waves (29-41 ft.) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Exceptionally high (37-52 ft.) waves, foam patches cover sea, visibility more reduced	
12	64+	Hurricane	Air filled with foam, waves over 45 ft., sea completely white with driving spray, visibility greatly reduced	

[1] www.spc.noaa.gov/faq/tornado/beaufort.html

Occurrences

Windstorms can occur at any time of year, but they are typically more common during the spring and early summer. According to the National Oceanic and Atmospheric Administration (NOAA) Storm Events Database, the City of Laredo has experienced 103 (recorded) windstorm events from 9/26/1950 to 3/19/2022 (72 years). Table 8-2 includes a summary of windstorm events from 1950 to 2022, categorizing the events by wind speed. Table 8-3 includes a comprehensive list of all windstorm events on record that have affected the City of Laredo. Historical windstorm events are mapped for the City of Laredo, as seen in Figure 8-2.

No additional windstorm-related FEMA disaster declarations have affected the City of Laredo between 1970 and 2022.

Table 8-2. Historical Windstorm Occurrence Summary, 1950-2022

Number of Events	Extent (Wind Speed in Knots)						
	Unknown	50-54	55-59	60-64	65-69	70-74	75+
98	14	38	14	20	7	1	3

Table 8-3. Historical Windstorm Events, 1950-2022[2]

Date	Extent (Wind Speed in Knots)	Deaths	Injuries	Property Damage	Crop Damage
7/25/1956	65	0	0	$0.00	$0.00
8/6/1963	57	0	0	$0.00	$0.00
4/19/1965	0	0	0	$0.00	$0.00
10/29/1967	50	0	0	$0.00	$0.00
6/1/1968	70	0	0	$0.00	$0.00
6/3/1969	58	0	0	$0.00	$0.00
6/25/1969	0	0	0	$0.00	$0.00
10/27/1969	60	0	0	$0.00	$0.00
5/26/1970	0	0	0	$0.00	$0.00
5/10/1972	52	0	0	$0.00	$0.00
3/12/1974	0	0	0	$0.00	$0.00
3/14/1974	50	0	0	$0.00	$0.00
5/1/1975	0	0	0	$0.00	$0.00
5/22/1977	90	0	0	$0.00	$0.00
4/18/1979	50	0	0	$0.00	$0.00
4/21/1979	55	0	0	$0.00	$0.00
5/18/1980	0	0	0	$0.00	$0.00
8/10/1980	65	0	0	$0.00	$0.00
8/29/1980	50	0	0	$0.00	$0.00
6/6/1983	57	0	0	$0.00	$0.00
6/6/1983	58	0	0	$0.00	$0.00
5/19/1984	60	0	0	$0.00	$0.00
5/20/1984	61	0	0	$0.00	$0.00

[2] NOAA Storm Events Database, 2022

Table 8-3. Historical Windstorm Events, 1950-2022[3] (cont.)

Date	Extent (Wind Speed in Knots)	Deaths	Injuries	Property Damage	Crop Damage
7/24/1984	50	0	0	$0.00	$0.00
7/24/1984	60	0	0	$0.00	$0.00
7/24/1984	60	0	0	$0.00	$0.00
4/25/1985	0	0	0	$0.00	$0.00
4/25/1985	0	0	0	$0.00	$0.00
4/29/1986	0	0	0	$0.00	$0.00
4/28/1989	0	0	0	$0.00	$0.00
7/15/1991	0	0	0	$0.00	$0.00
4/17/1992	0	0	0	$0.00	$0.00
9/26/1993	8	0	0	$500,000.00	$0.00
3/9/1994	0	0	0	$5,000.00	$5,000.00
4/17/1995	68	0	0	$80,000.00	$0.00
6/11/1995	0	0	0	$20,000.00	$5,000.00
8/22/1995	52	0	0	$40,000.00	$0.00
5/28/1996	65	0	0	$0.00	$0.00
9/27/1996	55	0	0	$0.00	$0.00
4/4/1997	60	0	0	$0.00	$0.00
4/4/1997	60	0	0	$0.00	$0.00
5/9/1997	50	0	0	$0.00	$0.00
5/15/1997	50	0	0	$0.00	$0.00
7/14/1998	50	0	0	$0.00	$0.00
5/18/1999	50	0	0	$0.00	$0.00
5/18/1999	50	0	0	$0.00	$0.00
5/26/1999	50	0	0	$0.00	$0.00
3/9/2000	60	0	0	$0.00	$0.00

[3] NOAA Storm Events Database, 2022

Table 8-3. Historical Windstorm Events, 1950-2022[4] (cont.)

Date	Extent (Wind Speed in Knots)	Deaths	Injuries	Property Damage	Crop Damage
8/22/2000	55	0	0	$0.00	$0.00
11/5/2000	50	0	0	$0.00	$0.00
6/2/2003	60.87	0	0	$0.00	$0.00
6/2/2003	82.61	0	0	$33,000,000.00	$0.00
6/13/2003	52	0	0	$0.00	$0.00
7/21/2004	50	0	0	$3,000.00	$0.00
5/14/2006	53	0	0	$1,500,000.00	$0.00
5/7/2007	61	0	0	$100,000.00	$0.00
6/9/2007	55	0	0	$20,000.00	$0.00
6/17/2007	57	0	0	$0.00	$0.00
5/31/2009	60	0	0	$0.00	$0.00
6/2/2010	52	0	0	$5,000.00	$0.00
6/2/2010	50	0	0	$0.00	$0.00
3/28/2012	53	0	0	$0.00	$0.00
3/28/2012	51	0	0	$0.00	$0.00
5/10/2012	61	0	0	$5,000.00	$0.00
2/11/2013	52	0	0	$2,000.00	$0.00
2/11/2013	56	0	0	$15,000.00	$0.00
6/7/2013	50	0	0	$10,000.00	$0.00
5/9/2014	56	0	0	$5,000.00	$0.00
5/9/2014	57	0	0	$0.00	$0.00

[4] NOAA Storm Events Database, 2022

Table 8-3. Historical Windstorm Events, 1950-2022[5] (cont.)

Date	Extent (Wind Speed in Knots)	Deaths	Injuries	Property Damage	Crop Damage
5/9/2014	61	0	0	$10,000.00	$0.00
7/2/2014	61	0	0	$125,000.00	$0.00
7/25/2014	50	0	0	$0.00	$0.00
4/12/2015	52	0	0	$5,000.00	$0.00
5/29/2015	50	0	0	$25,000.00	$0.00
3/8/2016	52	0	0	$0.00	$0.00
2/19/2017	65	0	0	$75,000.00	$0.00
2/19/2017	66	0	0	$0.00	$0.00
2/19/2017	61	0	0	$25,000.00	$0.00
5/21/2017	61	0	0	$50,000.00	$0.00
5/21/2017	83	0	0	$20,000,000.00	$0.00
5/21/2017	61	0	0	$25,000.00	$0.00
5/21/2017	51	0	0	$0.00	$0.00
5/21/2017	50	0	0	$0.00	$0.00
5/21/2017	52	0	0	$0.00	$0.00
5/21/2017	61	0	0	$0.00	$0.00
5/21/2017	61	0	0	$0.00	$0.00
5/21/2020	65	0	0	$300,000.00	$0.00
5/21/2020	61	0	0	$200,000.00	$0.00
5/21/2020	52	0	0	$10,000.00	$0.00
5/17/2021	56	0	0	$250,000.00	$0.00
5/17/2021	56	0	0	$0.00	$0.00
5/24/2022	52	0	0	$25,000.00	$0.00

[5] NOAA Storm Events Database, 2022

Table 8-3. Historical Windstorm Events, 1956-2022[6] (cont.)

Date	Extent (Wind Speed in Knots)	Deaths	Injuries	Property Damage	Crop Damage
8/15/2022	52	0	0	$0.00	$0.00
4/23/2023	50	0	0	$10,000.00	$0.00
4/23/2023	50	0	0	$0.00	$0.00
4/23/2023	50	0	0	$5,000.00	$0.00
4/23/2023	50	0	0	$2,000.00	$0.00
6/3/2023	52	0	0	$10,000.00	$0.00

Probability

Probability, or frequency of return, was calculated by dividing the number of windstorm events in the recorded time period by the overall time period that the resource database has recorded events. Note, historical events are documented as a function of the path of the storm.

Probabilities of future windstorm events are also subject to the effect of future conditions, such as climate change. The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. As long-term weather patterns and average temperatures change so too will the locations, frequencies, and range of anticipated intensities of windstorms. Windstorms are expected to be amplified by climate change, population growth, and development. High winds can damage public infrastructure, such as roads, utility lines, and public buildings, resulting in widespread service interruptions and expensive repairs. As the city's infrastructure network expands with urban development, more assets will be vulnerable to wind damage, necessitating stronger building codes and better planning to protect public assets and reduce long-term costs.

Impact

Windstorm impacts are documented by the number of deaths, injuries, property damage, and crop damage. Table 8-4 provides a summary of impacts for the City of Laredo.

Table 8-4. Historical Windstorm Impacts Summary, 1956-2022

Number of Events	Deaths	Injuries	Property Damage	Crop Damage

[6] NOAA Storm Events Database, 2023

98	0	0	$56,462,000	$10,000

In addition to the direct, historical impacts in Table 8-4, vulnerable assets and potential maximum impacts are listed in the summary table. Windstorms can cause indirect impacts by damaging power lines and other above-ground utilities. Crop losses and population displacement from housing damage could cause additional economic losses.

Vulnerability

All existing and future buildings, facilities, and populations in and around the City of Laredo are exposed to windstorm hazard and are at potential risk of impact. The damage caused by a windstorm is typically a result of high wind velocity and wind-blown debris. Vulnerability of humans and property is difficult to evaluate given that windstorms form at different strengths and in random locations. Property damage is typically most significant for structures of light construction. Three types of structures are more likely to suffer damage: manufactured homes, homes on crawlspaces (more susceptible to lift), and buildings with large spans, such as shopping malls, gymnasiums, and factories.

City of Laredo Windstorms Hazard

LOCATION	
Area at Risk	**FEMA Windzone**
City Wide	Zone II

Number of Events	Extent (Wind Speed in Knots)						
	Unknown	50-54	55-59	60-64	65-69	70-74	75+
103	14	42	14	20	7	1	3

IMPACT*				
Number of Events	**Deaths**	**Injuries**	**Property Damage**	**Crop Damage**
103	0	0	$56,528,000	$10,000

*NOAA Storm Events Database

PROBABILITY		
Number of Events	**Time Period Years**	**Probability**
98	72	136%

VULNERABILITY			
Total Population	**Property Value****		**Crop Land Total*****
	Commercial	**Residential**	**Acres**
256,187	$6,211,372,448	$7,920,774,658	765

* Census Bureau Population Estimate 2022

**Webb County Appraisal District, 2022

***USDA Crop Land and National Land Cover Dataset, 2021

Figure 8-2. Map of the City of Laredo Windstorm Events – (Infrastructure and Safety)

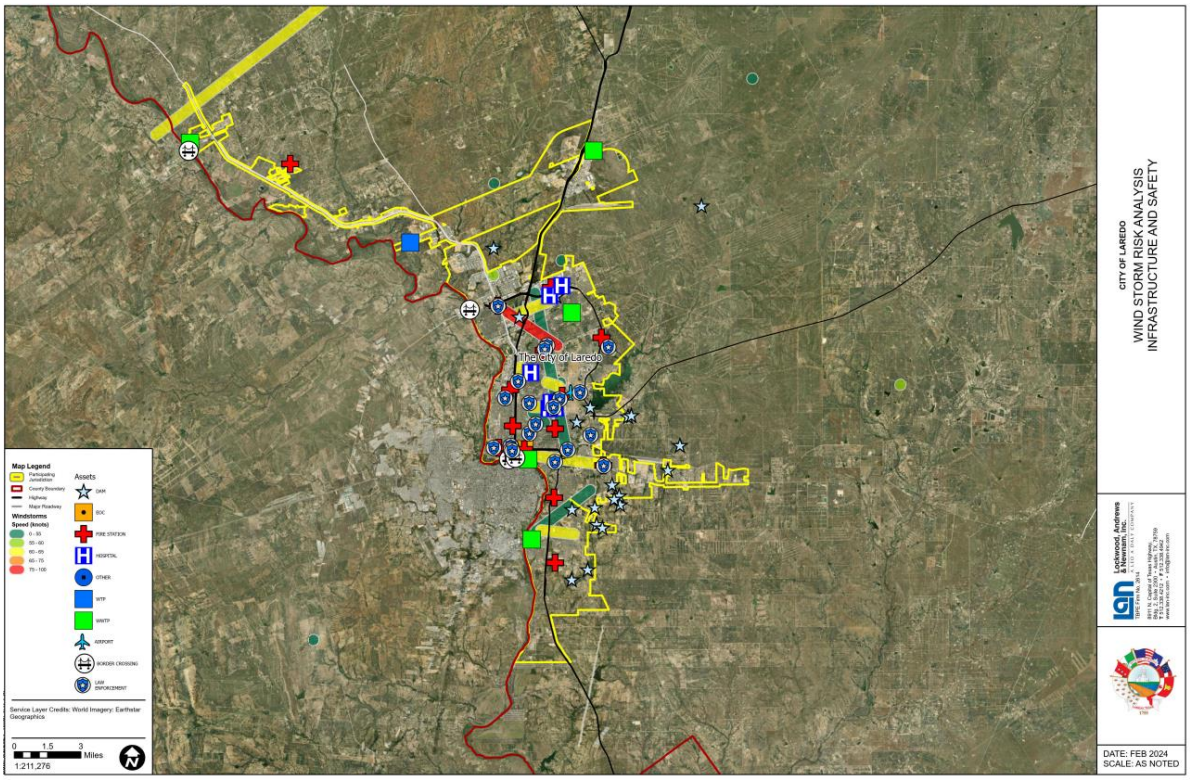


Figure 8-3. Map of the City of Laredo Windstorm Events – (Education)

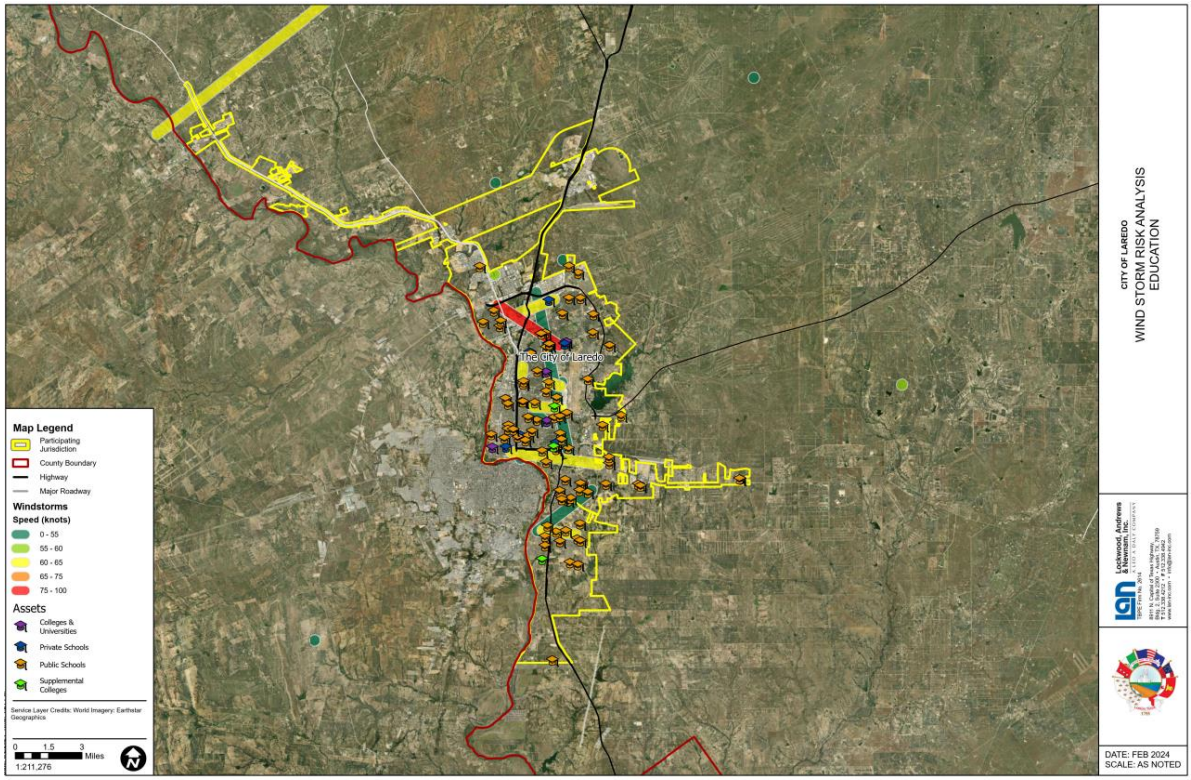
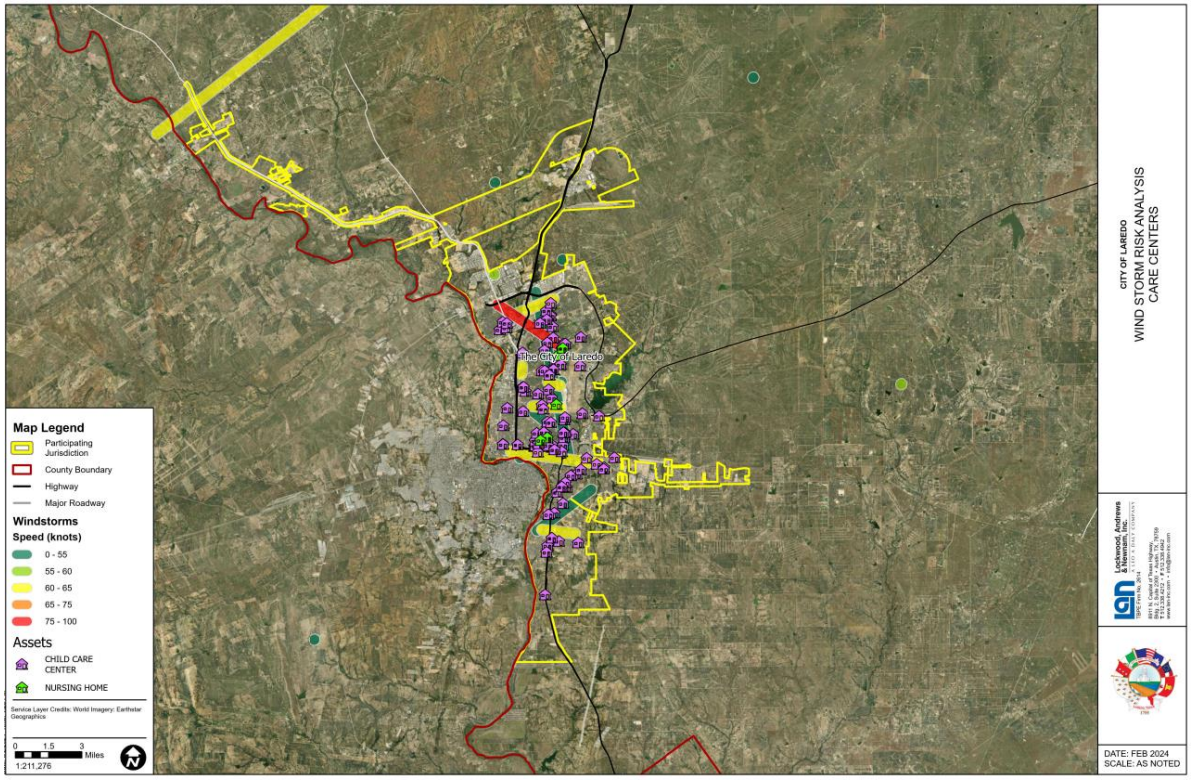


Figure 8-4. Map of the City of Laredo Windstorm Events – (Care Centers)



Section 9: Extreme Heat

Extreme Heat Hazard Overview

Description

Extreme heat is the condition whereby temperatures hover ten degrees or more above the average high temperature in a region for an extended period. If extreme heat conditions persist, it may be considered a heat wave.

Location

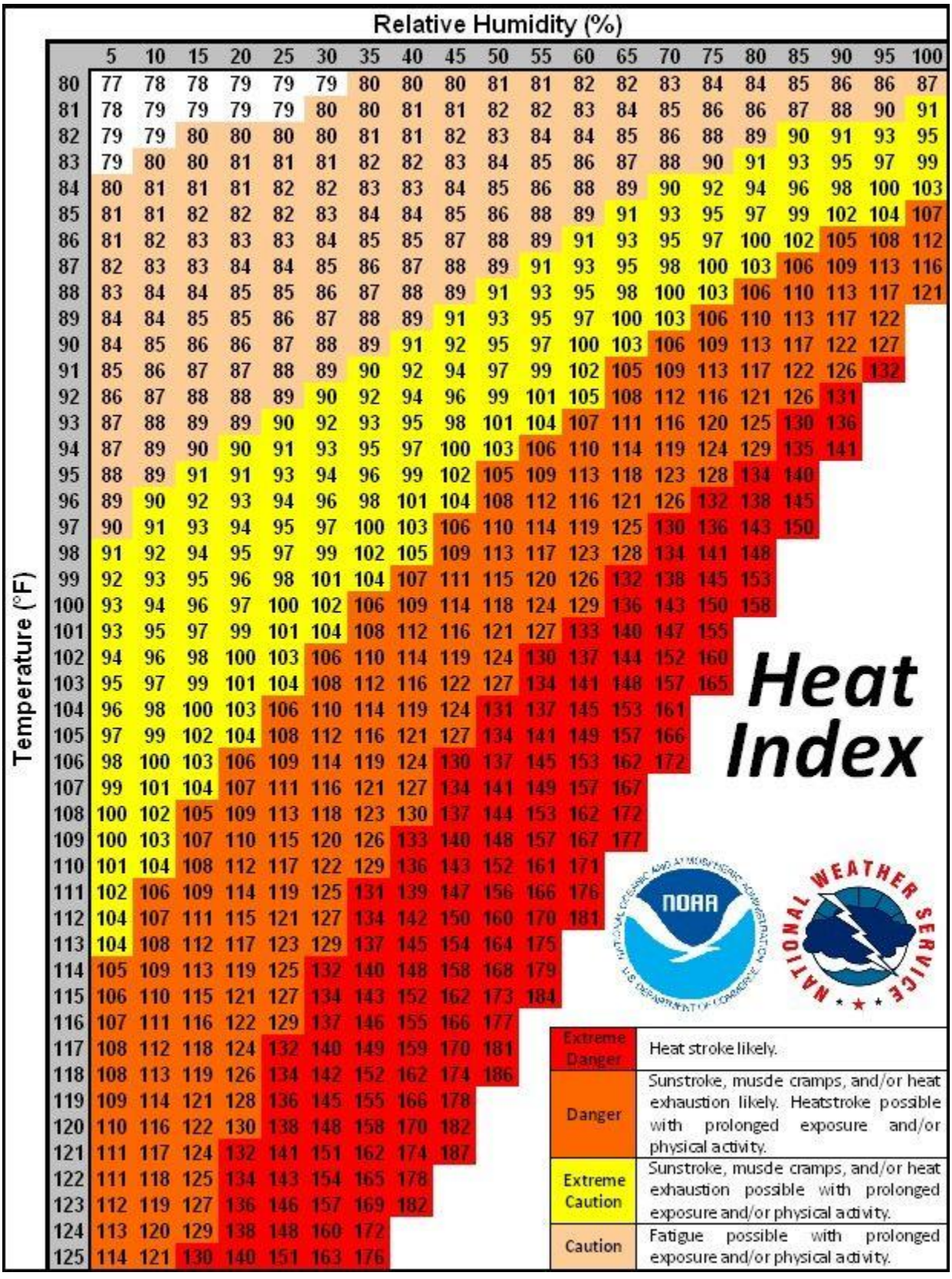
Climate and weather are major drivers of extreme heat. The spatial and temporal ranges at which these forces operate are relatively large scale, putting the entire planning area in risk.

A phenomenon known as heat islanding may mean that urban areas are at slightly higher risk than nearby rural areas. Man-made surfaces such as concrete and asphalt absorb thermal energy from the sun during the day. During nighttime, this thermal energy is released. This cyclical process ensures that ambient temperature remains high through the city. The heat islanding effect may cause temperatures to be up to 10 degrees higher in urban areas than in surrounding rural areas.

Extent

Extreme heat is most dangerous in the summer months. Extreme heat is not just a factor of temperature; humidity plays a role as well. An extreme heat event may occur with air temperature as low as 80°F if the relative humidity is over 40%. An 80°F temperature seems low, particularly for Texas in the summer, so people may not be aware of the risk to extreme heat and therefore may not adequately prepared for the effects of extreme heat. Citizens of the planning area, particularly populations vulnerable to extreme heat, should avoid prolonged heat exposure.

Table 9-1. NOAA's National Weather Service Heat Index, Temperature (F°)



Temperature (°F)	Relative Humidity (%)																			
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
80	77	78	78	79	79	79	80	80	80	81	81	82	82	83	84	84	85	86	86	87
81	78	79	79	79	79	80	80	81	81	82	82	83	84	85	86	86	87	88	90	91
82	79	79	80	80	80	80	81	81	82	83	84	84	85	86	88	89	90	91	93	95
83	79	80	80	81	81	81	82	82	83	84	85	86	87	88	90	91	93	95	97	99
84	80	81	81	81	82	82	83	83	84	85	86	88	89	90	92	94	96	98	100	103
85	81	81	82	82	82	83	84	84	85	86	88	89	91	93	95	97	99	102	104	107
86	81	82	83	83	83	84	85	85	87	88	89	91	93	95	97	100	102	105	108	112
87	82	83	83	84	84	85	86	87	88	89	91	93	95	98	100	103	106	109	113	116
88	83	84	84	85	85	86	87	88	89	91	93	95	98	100	103	106	110	113	117	121
89	84	84	85	85	86	87	88	89	91	93	95	97	100	103	106	110	113	117	122	
90	84	85	86	86	87	88	89	91	92	95	97	100	103	106	109	113	117	122	127	
91	85	86	87	87	88	89	90	92	94	97	99	102	105	109	113	117	122	126	132	
92	86	87	88	88	89	90	92	94	96	99	101	105	108	112	116	121	126	131		
93	87	88	89	89	90	92	93	95	98	101	104	107	111	116	120	125	130	136		
94	87	89	90	90	91	93	95	97	100	103	106	110	114	119	124	129	135	141		
95	88	89	91	91	93	94	96	99	102	105	109	113	118	123	128	134	140			
96	89	90	92	93	94	96	98	101	104	108	112	116	121	126	132	138	145			
97	90	91	93	94	95	97	100	103	106	110	114	119	125	130	136	143	150			
98	91	92	94	95	97	99	102	105	109	113	117	123	128	134	141	148				
99	92	93	95	96	98	101	104	107	111	115	120	126	132	138	145	153				
100	93	94	96	97	100	102	106	109	114	118	124	129	136	143	150	158				
101	93	95	97	99	101	104	108	112	116	121	127	133	140	147	155					
102	94	96	98	100	103	106	110	114	119	124	130	137	144	152	160					
103	95	97	99	101	104	108	112	116	122	127	134	141	148	157	165					
104	96	98	100	103	106	110	114	119	124	131	137	145	153	161						
105	97	99	102	104	108	112	116	121	127	134	141	149	157	166						
106	98	100	103	106	109	114	119	124	130	137	145	153	162	172						
107	99	101	104	107	111	116	121	127	134	141	149	157	167							
108	100	102	105	109	113	118	123	130	137	144	153	162	172							
109	100	103	107	110	115	120	126	133	140	148	157	167	177							
110	101	104	108	112	117	122	129	136	143	152	161	171								
111	102	106	109	114	119	125	131	139	147	156	166	176								
112	104	107	111	115	121	127	134	142	150	160	170	181								
113	104	108	112	117	123	129	137	145	154	164	175									
114	105	109	113	119	125	132	140	148	158	168	179									
115	106	110	115	121	127	134	143	152	162	173	184									
116	107	111	116	122	129	137	146	155	166	177										
117	108	112	118	124	132	140	149	159	170	181										
118	108	113	119	126	134	142	152	162	174	186										
119	109	114	121	128	136	145	155	166	178											
120	110	116	122	130	138	148	158	170	182											
121	111	117	124	132	141	151	162	174	187											
122	111	118	125	134	143	154	165	178												
123	112	119	127	136	146	157	169	182												
124	113	120	129	138	148	160	172													
125	114	121	130	140	151	163	176													

Extreme Danger	Heat stroke likely.
Danger	Sunstroke, musde cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity.
Extreme Caution	Sunstroke, musde cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	Fatigue possible with prolonged exposure and/or physical activity.

As shown in Table 9-1, The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service Heat Index shows how humidity and temperature interact to endanger people who are engaged in strenuous activity or are exposed to the environment without any protection. It should be noted that these risks exist even if the area is not currently experiencing conditions that qualify as an extreme heat event. The normal high temperatures may be enough to endanger human health.

The NOAA recorded the maximum temperature in the City of Laredo as 115°F, which occurred on June 19, 2023. At a relative humidity of 15%, the temperature corresponds to a heat index exceeding 115°F. Prolonged exposure to, or strenuous activity in, these conditions is extremely dangerous. These conditions are the worst that may be expected in the foreseeable future.

Occurrences

Extreme heat events typically occur in summer months during periods of high heat and high humidity. According to the National Climatic Data Center (NCDC)[1], eight extreme heat events took place in City of Laredo from 1950 to 2023, as shown in Table 9-3. All events are recorded at the county level, though comments may reflect noteworthy events at the municipal level.

Table 9-3. Previous Recorded Occurrences of Extreme Heat

Date	Comments
6/21/2021	Excessive heat occurred over southern portions of the Coastal Bend and Brush Country during the afternoon of the 21st. Heat index values ranged from 115 to 120 degrees across this area.
6/13/2023	An upper-level ridge formed over northern Mexico into south Texas by June 9th. The upper-level ridge built over south Texas for the next week. Above normal temperatures and high humidity provided dangerous heat conditions across south Texas from the 9th to 14th. Record heat led to excessive heat conditions for the inland Coastal Bend and western Brush Country by the 13th. Afternoon heat index values ranged from 115 to 117 degrees.
6/16/2023	An upper-level ridge continued to build over south Texas from the 15th to the 19th. Above normal humidity and hot temperatures provided excessive heat conditions across the coastal plains to the Brush Country starting on the 15th. Maximum heat index values reached 125 degrees in Kingsville and 120 in Corpus Christi on the 15th, and 129 degrees in Kingsville and 125 degrees in Corpus Christi on the 17th. Record high temperatures occurred across parts of south Texas during the period with Laredo reaching their record high of 115 degrees on the 19th. Cotulla reached 116 degrees on the 19th. The excessive heat from this period led to heat related illnesses and deaths across south Texas. By the end of the month, there were 10 fatalities in Laredo and 2 in Beeville.
6/18/2023	An upper-level ridge continued to build over south Texas from the 15th to the 19th. Above normal humidity and hot temperatures provided excessive heat conditions across the coastal plains to the Brush Country starting on the 15th. Maximum heat index values reached 125 degrees in Kingsville and 120 in Corpus Christi on the 15th, and 129 degrees in Kingsville and 125 degrees in Corpus Christi on the 17th. Record high temperatures occurred across parts of south Texas during the period with Laredo reaching their record high of 115 degrees on the 19th. Cotulla reached 116 degrees on the 19th. The excessive heat from this period led to heat related illnesses and deaths across south Texas. By the end of the month, there were 10 fatalities in Laredo and 2 in Beeville.

[1]NCDC Storm Events Database, https://www.ncdc.noaa.gov/stormevents/

Table 9-3. Previous Recorded Occurrences of Extreme Heat Continued

Date	Comments
6/19/2023	An upper-level ridge continued to build over south Texas from the 15th to the 19th. Above normal humidity and hot temperatures provided excessive heat conditions across the coastal plains to the Brush Country starting on the 15th. Maximum heat index values reached 125 degrees in Kingsville and 120 in Corpus Christi on the 15th, and 129 degrees in Kingsville and 125 degrees in Corpus Christi on the 17th. Record high temperatures occurred across parts of south Texas during the period with Laredo reaching their record high of 115 degrees on the 19th. Cotulla reached 116 degrees on the 19th. The excessive heat from this period led to heat related illnesses and deaths across south Texas. By the end of the month, there were 10 fatalities in Laredo and 2 in Beeville.
6/22/2023	Record high temperatures and above normal humidity continued into the latter part of the month of June. Afternoon heat index values were around 120 degrees at Kingsville and Corpus Christi from the 20th to the 23rd, with highest value of 127 at Kingsville on the 20th. Cotulla had a high temperature of 116 on the 21st.
7/11/2023	The upper-level ridge over northern Mexico moved back into the south Texas region by the 8th. The ridge built over the region through the middle part of the month. With high humidity, the heat index values became dangerously high again. Heat index values ranged from 110 to 115 degrees on the 8th and 9th and rose to excessive values of 115 to 120 for the 11th and 12th over the Coastal Bend. Dangerous heat index values occurred over the Brush Country also.
7/12/2023	The upper-level ridge over northern Mexico moved back into the south Texas region by the 8th. The ridge built over the region through the middle part of the month. With high humidity, the heat index values became dangerously high again. Heat index values ranged from 110 to 115 degrees on the 8th and 9th and rose to excessive values of 115 to 120 for the 11th and 12th over the Coastal Bend. Dangerous heat index values occurred over the Brush Country also.

The state of Texas is generally very hot in the summer. From 1999 – 2021, 261 heat-related deaths were reported by the NCDC in the state of Texas. Remarkably, forty-seven of the heat-related deaths occurred during the evacuation of Hurricane Rita.

Probability

The eight historical heat events reported by NCDC from 1950 to 2023 suggest that the planning area can expect a 11% annual occurrence of extreme heat events. The expected reoccurrence interval of extreme heat events is about 9.1 years. Extreme heat events are expected to take place in summer months based on previous occurrences, which were reported in the months of June and July.

Probabilities of future extreme heat events are also subject to the effect of future conditions, such as climate change. The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. As long-term weather patterns and average temperatures change, so too will the locations,

frequencies, and range of anticipated intensities of extreme heat events. Over the past decade, daily record high temperatures have occurred twice as often as record lows across the continental United States. Heat waves are becoming more common. Extreme heat is projected to become a more frequent and intense hazard due to climate change, with serious implications for public infrastructure and health. As temperatures rise, roads, bridges, and utility systems will face accelerated deterioration, increasing the need for repairs and maintenance. Higher temperatures will also strain the energy grid as demand for cooling increases, potentially leading to power outages. The city's growing population will exacerbate these impacts, with vulnerable populations, including the elderly and low-income residents, facing increased health risks. Development trends that contribute to the urban heat island effect will make extreme heat even more damaging, necessitating strategies like increasing green spaces and improving energy efficiency in public buildings. Heat waves are more dangerous when combined with high humidity. The combination of temperature and humidity is measured by the heat index. The annual number of days with a heat index above 100ºF is currently projected to double, and days with a heat index above 105ºF is projected to triple, nationwide.

Impact

The risks associated with extreme heat tend to most greatly impact humans. Buildings are not likely to be damaged by extreme heat. The populations most at risk are children, the elderly, those in poor health, and those who spend large portions of their time outside. According to the latest compiled study on heat related deaths by the Centers for Disease Control and Prevention (CDC)[2], from 2004 - 2018, the most recent years for which a report of this nature has been compiled, extreme heat exposure led to 10,527 deaths in the United States. The victims of extreme heat tended to be male (70%) and over the age of 65 (38%). The overwhelming majority of deaths (90%) occurred in the summer months of May to September.

Extreme heat can impact agricultural industries in the form of crop or livestock losses. Extreme heat may cause economic impacts related to damage crops and grazing lands caused by reduced productivity of workers.

Vulnerability

Males and those over the age of 65 tend to be the populations most vulnerable to extreme heat hazards. Demographic information regarding these populations is shown below in the planning area table. Agricultural assets are also vulnerable to extreme heat. Livestock and crops can be damaged or killed by extreme heat. Information regarding the vulnerability of agricultural assets for Webb County is also shown in the summary table.

[2]CDC Heat-Related Deaths, https://www.cdc.gov/mmwr/volumes/69/wr/mm6924a1.htm

City of Laredo Extreme Heat Hazard

LOCATION	EXTENT FOR MITIGATION (Next Five Years, based on historical data)
City Wide	Up to 115°, Up to 115° Heat Index

OCCURRENCES	PROBABILITY	
Number of Events (1950-2023)	Annual Probability	Return Interval
8	11%	One extreme heat event every 9.1 years

VULNERABILITY		
Total Population*	Male Population*	Total Population Over 65*
256,187	126,813	24,594

IMPACT		
Agricultural Area (Acres)**	Agricultural Area (Percentage of Planning Area)	Agricultural Value***
765	1.11%	$28,395,000

* Census Bureau Population Estimate 2022

** USDA Crop Land and National Land Cover Dataset, 2021

***USDA Webb County Census of Agriculture, 2017

Section 10: Lightning

Lightning Hazard Overview

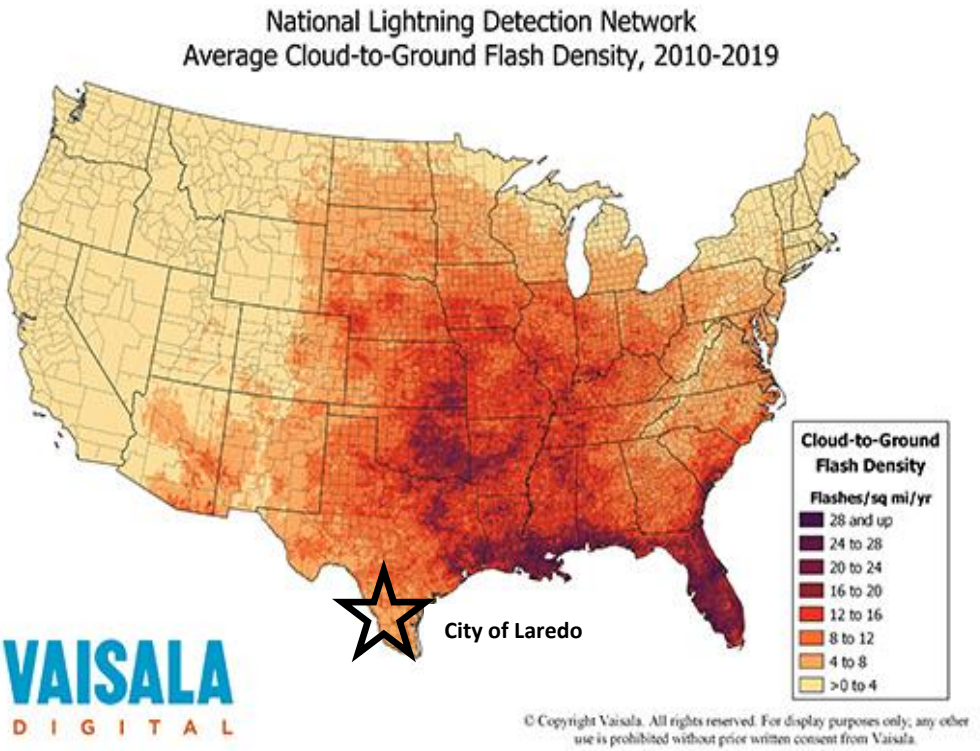
Description

Lightning is a sudden electrostatic discharge during an electrical storm between electrically charged regions of a cloud, between that cloud and another cloud, or between a cloud and the ground.

Location

Worldwide, there is predictable spatial variation in the frequency of lightning strikes. This spatial variation is shown nationally in Figure 10-1. However, when examining lightning activity at smaller scales, such as the county or community level, the distribution of lightning events is evenly distributed. Lightning does not have any specific geographic boundary and can occur throughout the county uniformly. It is assumed that the planning area is uniformly exposed to lightning activity.

Figure 10-1.National Average Cloud-to-Ground Flash Density (2010-2019)



Extent

Lightning extents can be described in terms of the frequency of lightning strikes within a time frame. Lightning Activity Levels (LAL) is one of the metrics used to describe lightning extent. Table 10-1 describes the storm activity and strikes-per-minute associated with the six different Lightning Activity Levels.

Table 10-1. Lightning Activity Levels (LAL)

LAL Value	Cloud and Storm Description[1]	Strikes per 15 min
1	No thunderstorms	
2	Cumulus clouds are common but only a few reach the towering cumulus stage. A single thunderstorm must be confirmed in the observation area. The clouds produce mainly virga, but light train will occasionally reach the ground. Lightning is very infrequent.	1-8
3	Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two to three must occur within the observation are. Light to moderate rain will reach the ground, and lightning is infrequent.	9-15
4	Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered and more than three must occur within the observation area. Moderate rain is common and lightning is frequent.	16-25
5	Towering cumulus and thunderstorms are numerous. They cover more than three-tenths and occasionally obscure the sky. Rain is moderate to heavy and lightning is frequent and intense.	>25
6	Similar to LAL 3 except thunderstorms are dry.	

The entire planning area is vulnerable to all levels of lightning activity levels including all 6 levels of activity. The worst lightning extent to the planning area can expect to experience is LAL5, but LAL5 is the least likely to occur with LAL1 & 2 being the most common.

Occurrence

NCDC records ranging from 1950 – 2023 show zero records of lightning strikes within the planning area.

Lightning occurrences are discussed in greater detail in the planning area table.

Probability

The probability of a lightning strike is calculated by dividing the number of events by the number of years for which records exist.

Probabilities of future lightning events may also be subject to the effect of future conditions, such as climate change. The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. As long-term weather patterns and average temperatures change, the locations and frequencies of lightning strikes may also change. The impacts of lightning on Laredo's public infrastructure will grow as development expands. Climate change could lead to shifts in

[1] From http://www.prh.noaa.gov/hnl/pages/LAL.php

weather patterns that increase the frequency of lightning events. Lightning strikes can damage power grids, communication systems, and public buildings, leading to service disruptions and costly repairs. As Laredo's infrastructure footprint grows, more assets—such as utility lines, transformers, and public buildings—will be exposed to lightning risks. The growing population will also increase the number of people potentially affected by outages or infrastructure damage caused by lightning strikes.

Impact

Each individual lightning strike has a very small spatial extent. Only the facilities hit by lightning are expected to be damaged. Facility shutdowns are expected to be less than 24 hours. Deaths are possible, but rare. In 21 years of records from the National Climatic Data Center (NCDC), no lightning death was recorded. No injuries due to lightning were reported.

The downstream impacts of a lightning strike have the potential to be damaging. Lightning strikes have the potential to spark wildfires, cause explosions or fires if they hit combustible materials, or damage power infrastructure. Lightning impacts are provided for the planning area as a function of the potential future losses including commercial property value and agricultural value. Commercial property value for Laredo was compiled from the Webb County Appraisal District. Agricultural value is a function of the total agricultural land shown in the 2021 USDA Crop Land and National Land Cover Database divided by the total agricultural land for the city and multiplied by the total market value of agricultural products sold for Webb County from the 2017 Agricultural Census, the most recent data available.

Vulnerability

The vulnerabilities to lightning come in the form of assets that may be damaged by a strike or in the form of agricultural land that would be vulnerable to lightning-started wildfires. Communities with higher concentrations of commercial buildings may be more vulnerable to lightning strikes. Commercial buildings are often taller than residential buildings, particularly single-family residential buildings, and may be at greater risk of lightning strikes.

City of Laredo Lightning Hazard

NCDC Record
No lightning hazard events reported in Webb County

OCCURRENCES*		
Number of Events (Range: 2000-2021)	Risk to Health and Safety (No. Incidences by Type)	Property Damage
0	0 deaths, 0 injuries	0

PROBABILITY	
Future Lightning Event Likelihood	1 Lightning Event X Years
1%	1 lightning event every 100 years

IMPACT	
Commercial Property Value**	Agricultural Value****
$6,211,372,448	$28,395,000

VULNERABILITY		
Commercial Parcels (No.)	Agricultural Area (Acres)***	Agricultural (Percent area of Planning Area)
11,611	765	1.11%

*NCDC Records, No reported deaths, or injuries
**Web County Appraisal District, 2022
***USDA Crop Land and National Land Cover Dataset, 2021
****USDA Webb County Census of Agriculture, 2017

Section 11: Tornado

Tornado Hazard Overview

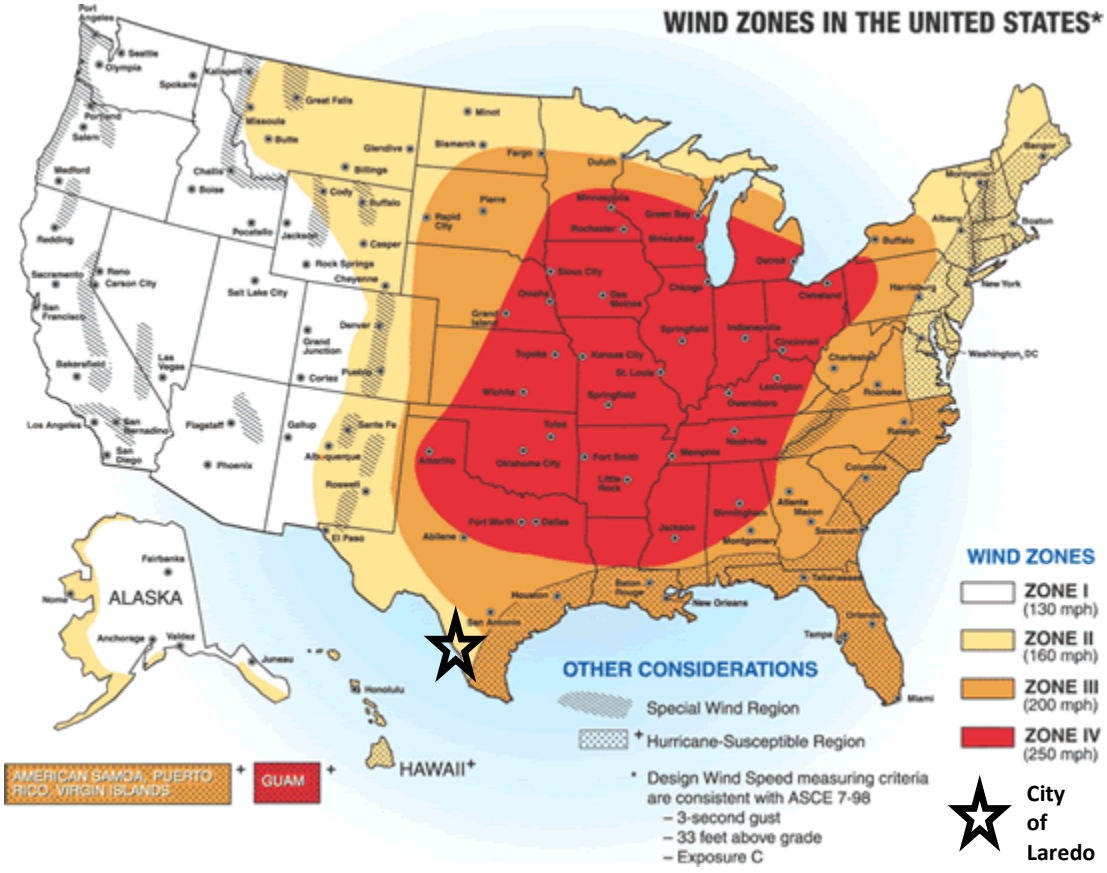
Description

A tornado is a violently rotating column of air extending between, and in contact with, a cloud and the surface of the earth. Tornadoes can have wind speeds of 250 miles per hour or more. Damage paths can be in excess of one mile wide and 50 miles long.

Location

Tornadoes do not have any specific geographic boundary and can occur throughout the county uniformly. It is assumed that the county planning area is uniformly exposed to tornado activity. According to FEMA Wind Zones in the United States, as shown in Figure 11-1, the City of Laredo is in Wind Zone II, associated with winds as high as 160 mph.

Figure 11-1. FEMA Wind Zones in the United States



Extent

Tornado damage is currently defined using the Enhanced Fujita Scale which took effect on February 1st, 2007; the preceding scale was called the Fujita Tornado Damage Scale. The Enhanced Fujita Scale is summarized in Table 11-1. The Enhanced Fujita Scale has 28 Damage Indicators (DI), or types of structures and vegetation, each with a varying number of Degrees of Damage (DoD). Damage Indicators are summarized in Table 11-2. Each Damage Indicator has a unique Degree of Damage Scale. For example, Small Barns and Farm Outbuildings (SBO) Degree of Damage Scale is provided as Table 11-3. For unique Degree of Damage Scales for the remaining Damage Indicators refer to National Oceanic and Atmospheric Administration (NOAA) website[1].

Based upon the planning area's location in Wind Zone II, which can see winds up to 160 miles per hour, the most powerful tornado the planning area can expect to experience is an EF3.

[1] http://www.spc.noaa.gov/faq/tornado/ef-scale.html

Table 11-1. Enhanced Fujita Scale[2]

Scale	Wind Speed (mph)	Relative Frequency	Potential Damage	Example of Damage
EF0	65 - 85	56.88%	**Minor or no damage.** Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.	
EF1	86 - 110	31.07%	**Moderate damage.** Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.	
EF2	111 - 135	8.80%	**Considerable damage.** Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.	
EF3	136 - 165	2.51%	**Severe damage.** Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.	
EF4	166 - 200	0.66%	**Extreme damage.** Well-constructed and whole frame houses completely leveled; cars and other large objects thrown up to 300 feet and small missiles generated.	
EF5	> 200	0.08%	**Total destruction of buildings.** Strong-framed, well-built houses leveled off foundations are swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations; some cars, trucks and train cars can be thrown approximately 1 mile.	

[2] NOAA

Table 11-2. Damage Indicators

Number	Damage Indicator (Abbreviation)	Degrees of Damage (DoD)
1	Small barns, farm outbuildings (SBO)	8
2	One- or two-family residences (FR12)	10
3	Single-wide mobile home (MHSW)	9
4	Double-wide mobile home (MHDW)	12
5	Apt, condo, townhouse (3 stories or less)	6
6	Motel (M)	10
7	Masonry apt. or motel (MAM)	7
8	Small retail bldg. (fast food) (SRB)	8
9	Small professional (doctor office, branch bank) (SPB)	9
10	Strip mall (SM)	9
11	Large shopping mall (LSM)	9
12	Large, isolated ("big box") retail bldg. (LIRB)	7
13	Automobile showroom (ASR)	8
14	Automotive service building (ASB)	8
15	School - 1-story elementary (interior or exterior halls) (ES)	10
16	School - jr. or sr. high school (JHSH)	11
17	Low-rise (1-4 story) bldg. (LRB)	7
18	Mid-rise (5-20 story) bldg. (MRB)	10
19	High-rise (over 20 stories) (HRB)	10
20	Institutional bldg. (hospital, govt., or university) (IB)	11
21	Metal building system (MBS)	8
22	Service station canopy (SSC)	6
23	Warehouse (tilt-up walls or heavy timber) (WHB)	7
24	Transmission line tower (TLT)	6
25	Free-standing tower (FST)	3
26	Free standing pole (light, flag, luminary) (FSP)	3
27	Tree – hardwood (TH)	5
28	Tree – softwood (TS)	5

Table 11-3. Small Barns and Farm Outbuildings (SBO)

Degrees of Damage (DoD)	Damage Description	Expected Wind Speed (mph)	Lower Bound Wind Speed (mph)	Upper Bound Wind Speed (mph)
1	Threshold of visible damage	62	53	78
2	Loss of wood or metal roof panels	74	61	91
3	Collapse of doors	83	68	102
4	Major loss of roof panels	90	78	110
5	Uplift or collapse of roof structures	93	77	114
6	Collapse of walls	97	81	119
7	Overturning or sliding of entire structure	99	83	118
8	Total destruction of building	112	94	131

Occurrences

Tornado producing storms can occur at any time of year and at any time of day, but they are typically more common in the spring months during the late afternoon and evening hours. A smaller high frequency period can emerge in the fall during the brief transition between the warm and cold seasons. According to the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information Storm Event Database, the City of Laredo has experienced 1 (recorded) tornado events over the course of the record period from 11/1/1950 to 11/30/2023 (73 years). Table 11-4 includes a summary of tornado events from 1950 to 2023 using the Fujita Scale and Table 11-5 summarizes tornado events from 1950 to 2023 using the latest magnitude scale the Enhanced Fujita Scale. Table 11-6 includes a comprehensive list of all tornadoes on record affecting the planning area. Historical tornado events are mapped for the city in the following sections, as seen in Figures 11-2.

Table 11-4. Historical Tornado Occurrence Summary, 1950-2023

Number of Events	Magnitude (Fujita Scale)						
	N/A	F0	F1	F2	F3	F4	F5
1	0	0	1	0	0	0	0

Table 11-5. Historical Tornado Occurrence Summary, 1950-2023

Number of Events	Magnitude (Enhanced Fujita Scale)						
	N/A	EF0	EF1	EF2	EF3	EF4	EF5
1	0	0	1	0	0	0	0

Table 11-6. Historical Tornado Events, 1950-2023[3]

Date	Time	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
05/22/1977	17:30	F1	0	0	$25,000	0

Probability

Probability, or frequency of return, was calculated by dividing the number of tornado events in the recorded time period by the overall time period that the resource database has recorded events for the planning area. Note, historical events are documented as a function of the origin of the touchdown location. A tornado may travel over several miles into the planning area; however, the tornado event is solely recorded for the area of the tornado origin. Table 11-7 provides a general overview of tornado severity, probability, impacts, and defining characteristics. Probability for future tornado events is defined for the planning area within the section.

Probabilities of future tornado events are also subject to the effect of future conditions, such as climate change. The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. As long-term weather patterns and average temperatures change so too may the locations, frequencies, and range of anticipated intensities of tornado events. Climate change could lead to shifts in storm patterns that increase tornado risk. Population growth and urban expansion will raise the stakes by increasing the number of public assets, homes, and critical infrastructure in tornado-prone areas. Public buildings, such as schools and hospitals, could be severely damaged by tornadoes, leading to service disruptions. New development must incorporate stronger building standards to mitigate tornado damage and protect public safety, especially as more people move into areas vulnerable to severe wind events.

[3] NCDC Storm Events Database, https://www.ncdc.noaa.gov/stormevents/

Table 11-7. Tornado Severity Defined

WEAK	STRONG	VIOLENT
• 69% of all tornadoes • Less than 5% of tornado deaths • Lifetime 1-10+ minutes • Winds less than 110 mph	• 29% of all tornadoes • Nearly 30% of all tornado deaths • May last 20 minutes or longer • Winds 110 – 205 mph	• 2% of all tornadoes • 70% of all tornado deaths • Lifetime can exceed one hour • Winds greater than 205 mph

Impact

Tornado impacts are documented by the number of deaths, injuries, property damage, and crop damage. Table 11-8 provides a summary of impacts for City of Laredo as a whole. Impacts to the city is documented in the following sections.

Tornadoes, depending upon extent, can destroy anything they come into contact with. Due to the unpredictable locations of tornado touchdowns, it is difficult to identify assets or populations within the planning area that are particularly vulnerable to tornadoes. Due to those two facts, all assets, property, and populations within the planning area are considered vulnerable to tornadoes. Properties within the planning area may experience power outages or other utility failures even if they're not destroyed during a tornado event. Homes destroyed by tornadoes will lead to displaced populations. Crops and commercial property destroyed in tornado events will have negative economic impacts.

Table 11-8. Historical Tornado Impacts Summary, 1950-2023[4]

Number of Events	Deaths	Injuries	Property Damage	Crop Damage
1	0	0	$25,000	$0

Vulnerability

Tornadoes typically travel miles once formed: therefore, all existing and future buildings, facilities, and populations in and around the City of Laredo are at potential risk of impact. The damage caused by a tornado is typically a result of high wind velocity, wind-blown debris, lightning, and large hail. Vulnerability of humans and property is difficult to evaluate given that tornadoes form at different strengths and in random locations. Property damage is typically most significant for structures of light construction. Three types of structures are more likely to suffer damage: manufactured homes, homes on

[4] NCDC Storm Events Database, https://www.ncdc.noaa.gov/stormevents/

crawlspaces (more susceptible to lift), and buildings with large spans, such as shopping malls, gymnasiums, and factories.

City of Laredo Tornado Hazard

LOCATION
City Wide

OCCURRENCE	EXTENT						
Number of Events 1950-2023*	Magnitude (Fujita Scale)						
	N/A	F0	F1	F2	F3	F4	F5
1	0	0	1	0	0	0	0
Number of Events 2007-2021*	Magnitude (Enhanced Fujita Scale)						
	N/A	EF0	EF1	EF2	EF3	EF4	EF5
1	0	0	1	0	0	0	0

* Fujita Scale replaced with Enhanced Fujita Scale in 2007

PROBABILITY			
Number of Events	Record Time Period	Time Period Years	Probability
1	11/1/1950 to 11/30/2023	73	1 tornado touchdown estimated every 73 years

IMPACT			
Number of Events	Deaths	Injuries	Property Damage
1	0	0	$25,000

VULNERABILITY				
Total Population*	Property Value**		Crop Land	
	Commercial	Residential	Acres***	Value****
256,187	$6,211,372,448	$7,920,774,658	765	$28,395,000

* Census Bureau Population Estimate 2021

**Webb County Appraisal District, 2022

***USDA Crop Land and National Land Cover Dataset, 2021

****USDA Webb County Census of Agriculture, 2017

Figure 11-2. City of Laredo Tornado Hazard Map (1950 – 2023) – (Infrastructure and Safety)

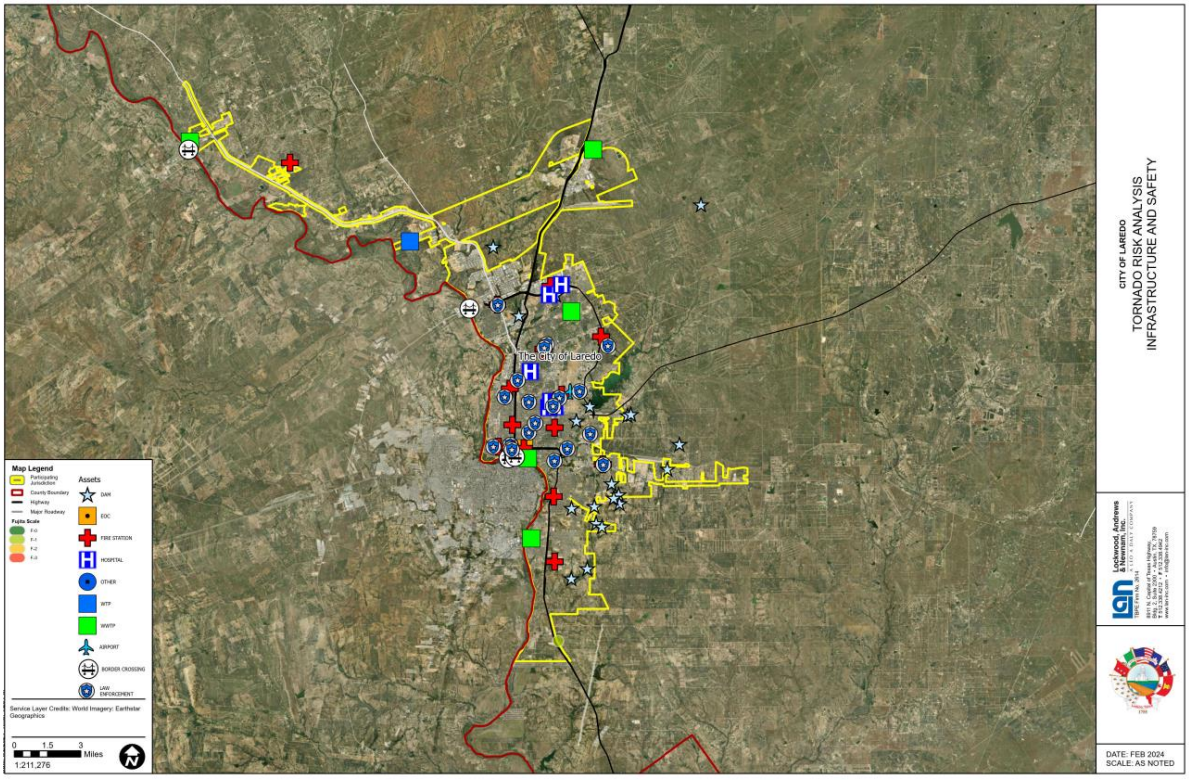


Figure 11-3. City of Laredo Tornado Hazard Map (1950 – 2023) – (Education)

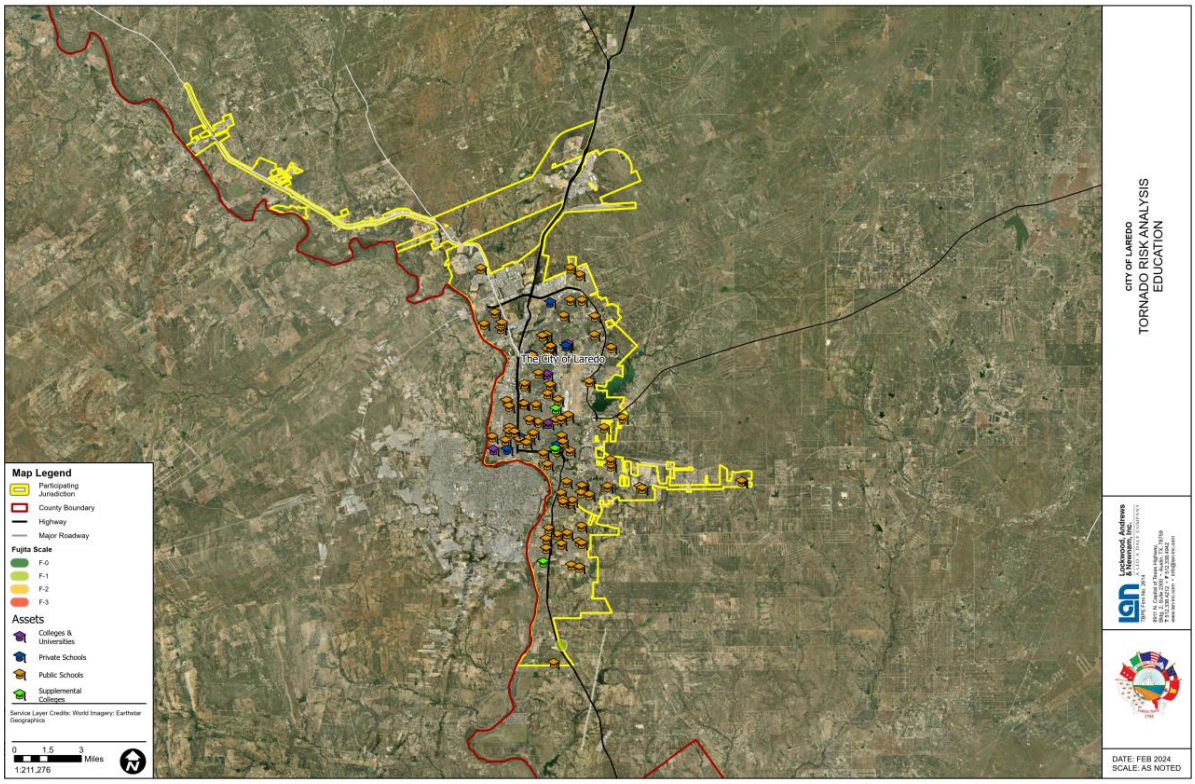
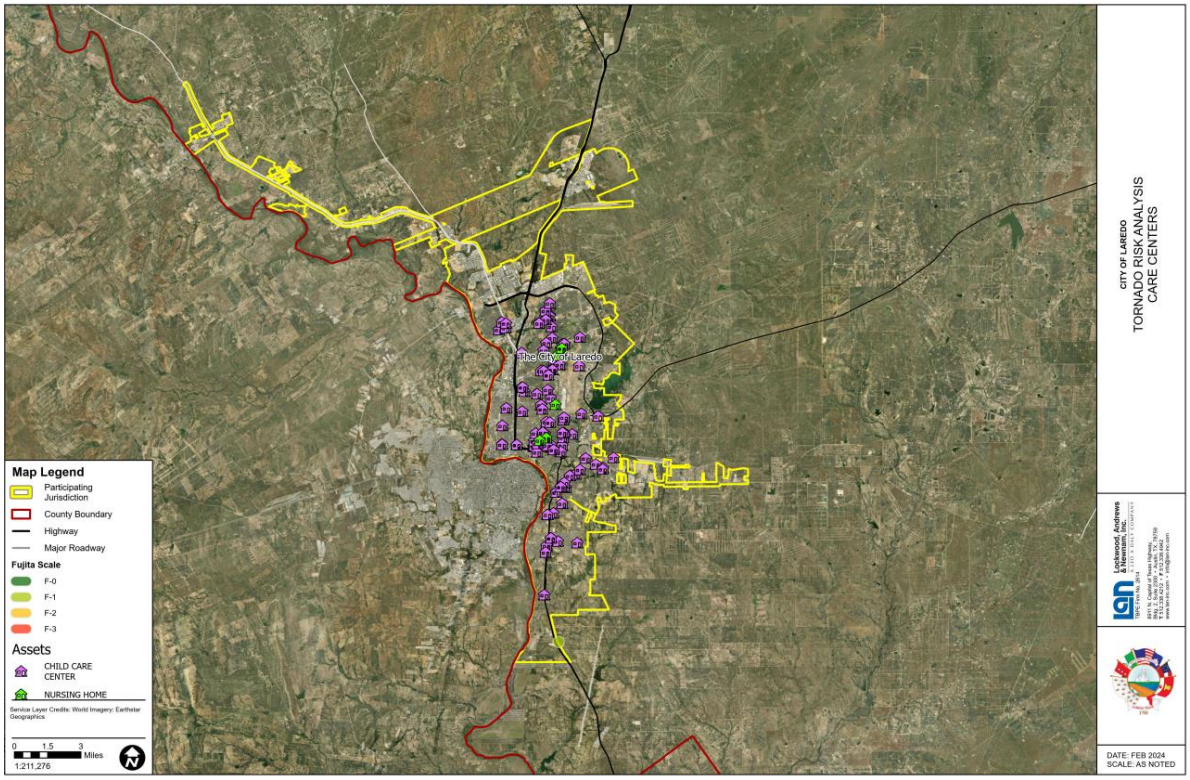


Figure 11-4. City of Laredo Tornado Hazard Map (1950 – 2023) – (Care Centers)



Section 12: Hailstorm

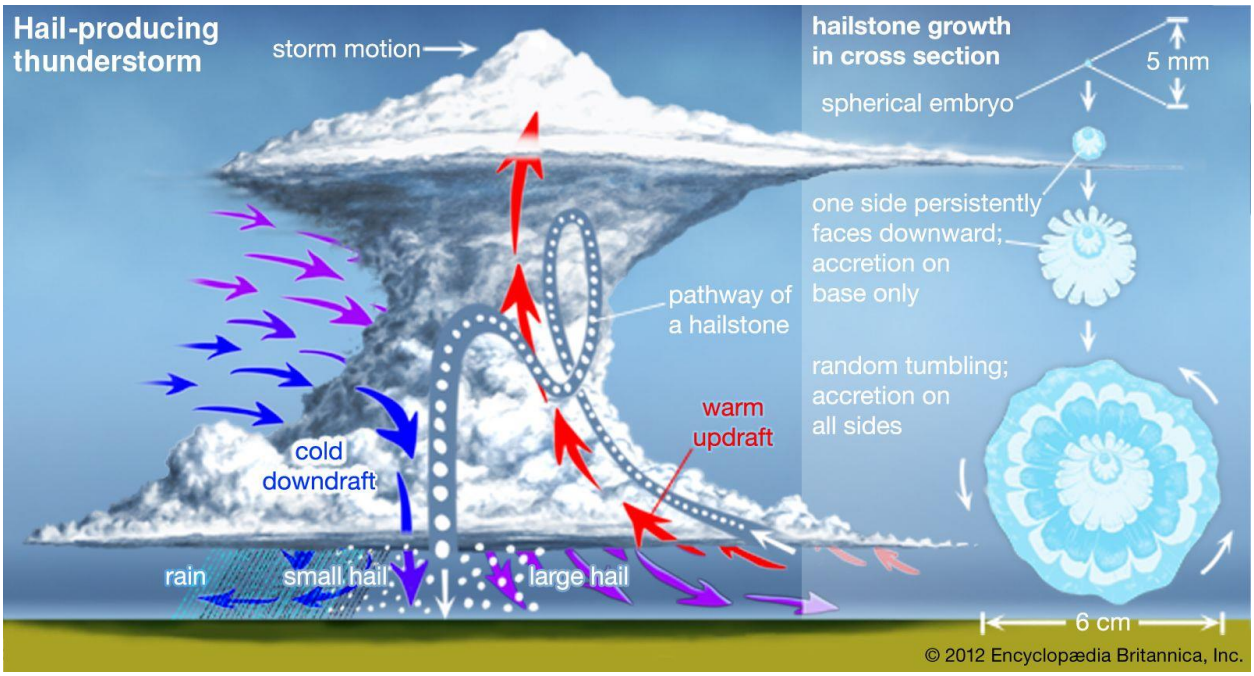
Hailstorm Hazard Overview

Description

Hail is a form of precipitation that occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice. Nearly all severe thunderstorms produce hail aloft, though it may melt before reaching the ground. Multi-cell thunderstorms produce many hailstones, but not usually large hailstones. In the life cycle of the multi-cell thunderstorm, the mature stage is relatively short so there is not much time for growth of the hailstone. Supercell thunderstorms have sustained updrafts that support large hail formation by repeatedly lifting the hailstones into the very cold air at the top of the thunderstorm cloud. In general hail 2 inches (5 cm), a little larger than golf ball, or larger in diameter is associated with supercells. Non-supercell storms are capable of producing golf ball size hail. In all cases, the hail falls when the thunderstorm's updraft can no longer support the weight of the ice. The stronger the updraft the larger the hailstone can grow[1]. This process of hail development within a thunderstorm is depicted in Figure 12-1.

[1] NOAA

Figure 12-1: Hail Development within a Thunderstorm[2]



Location

Hailstorms do not have any specific geographic boundaries and can occur throughout the planning area uniformly. It is assumed that the entire planning area is uniformly exposed to damage from hailstorms.

[2] Britannica, https://www.britannica.com/science/thunderstorm/Supercell-storms

Extent

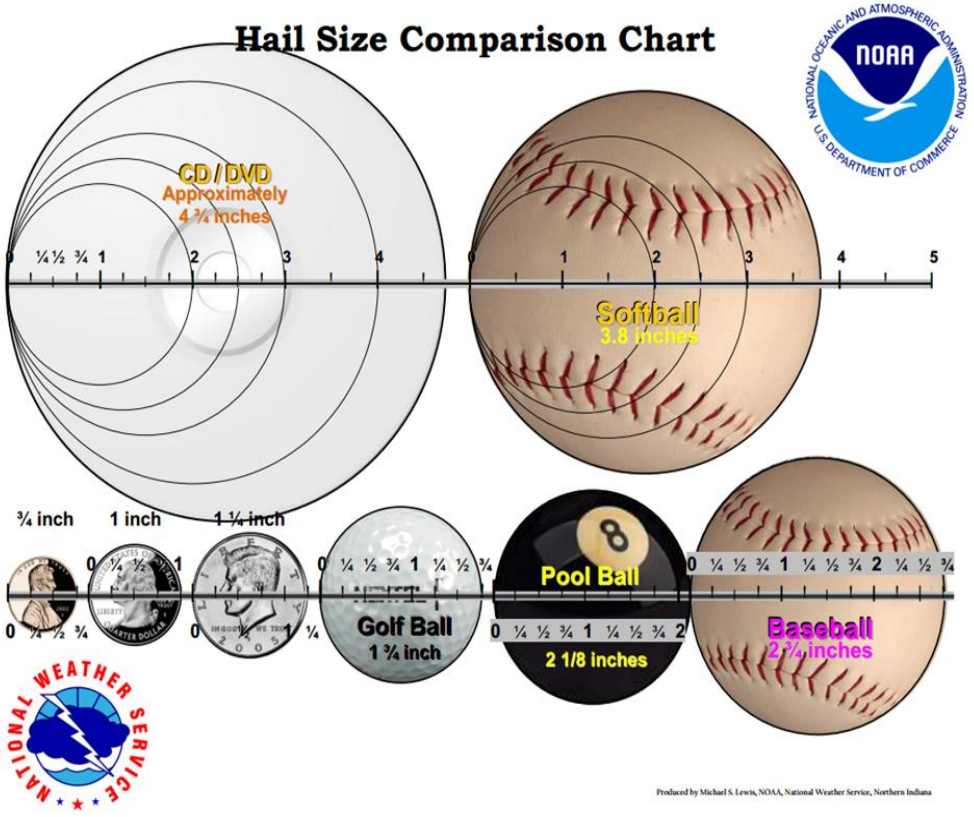
Much of the damage inflicted by hail is to crops. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are the other assets commonly damaged by hail.

Hail has been known to cause injury to humans, and occasionally has been fatal. There has been one recorded fatality in the region.

Hail size is estimated by comparing it to a known object, as shown in Figure 12-2. Most hailstorms are made up of a mix of sizes, and only the very largest hail stones pose serious risk to people caught in the open. Hail of quarter size and larger is considered severe. The potential damage caused by different hail sizes is show in Table 12-1.

Historically, hailstones almost three inches in diameter have fallen in the planning area. For future planning purposes, the City of Laredo can expect hailstones up to three inches in diameter. The extent of hailstorms is uniform across the region.

Figure 12-2: Hail Size Comparison Chart[3]



[3] NOAA

Table 12-1. Estimating Hail Size[4]

Size	Relative Frequency	Potential Damage	Example of Damage
Pea	¼" Diameter	**Virtually no damage.** Slight Damage to plants.	
Marble	½" Diameter	**Virtually no structural damage.** Some damage to plants.	
Quarter	1" Diameter	**Some severe damage.** Dents to vehicles. Extensive damage to crops, plants, minor bodily damage.	
Ping Pong Ball	11/2" Diameter	**Severe damage.** Paint damaged on cars; shingle roof damage; limbs broken; extensive damage to crops. Extensive bodily injury.	
Golf Ball	13/4"	**Severe damage.** Damage to windows, metal roofs pitted, aircraft pitted, trees damaged, total crop damage.	
Tennis Ball	21/2"	**Extreme Damage** Damage to roof tiles, Significant structural damage to buildings, risk of serious bodily injury.	
Baseball	3"	**Extreme Damage** Cars and airplanes severely damaged, damage to forests, humans, and animals seriously in danger.	
Softball	41/2"	**Total Destruction** Buildings destroyed, fatalities in humans and animals; cars and airplanes destroyed, forest severely damaged.	

[4] NOAA

Occurrences

Hail producing storms can occur at any time of year and at any time of day, but they are typically more common in the spring and summer months during the late afternoon and evening hours. A smaller, high frequency period can emerge in the fall during the brief transition between the warm and cold seasons. According to the NOAA National Weather Service Storm Prediction Center, the City of Laredo has experienced 81 (recorded) hailstorm events, within a half mile of the city limits, over the course of the record period from 1960 to 2022 (62 years). Table 12-2 includes a summary of hailstorm events from 1960 to 2022 and Table 12-3 includes a comprehensive list of all hailstorms on NOAA National Weather Service Storm Prediction Center database within a half mile of the City of Laredo. Spatial data for hailstorm occurrences was retrieved from the NOAA's National Weather Service Storm Prediction Center[5], and may be viewed for the planning area in Figure 12-3.

Table 12-2. Historical Hailstorm Occurrence Summary, 1960-2022

Number of Events	Magnitude (Size of Hail)									
	¾"	⅞"	1"	1 ¼"	1 ½"	1 ¾"	2"	2 ¼"	2 ½"	2 ¾"
81	9	5	25	6	5	24	1	1	4	1

Table 12-3. Historical Hailstorm Events, 1960-2022[6]

Date	Time	Magnitude (Size of Hail)	Injuries	Fatalities	Prop Damage	Crop Damage
5/17/1960	21:30	1.5	0	0	0	0
4/12/1969	2:33	1.75	0	0	0	0
4/12/1969	2:47	2.5	0	0	0	0
4/9/1969	19:00	1.75	0	0	0	0
5/8/1969	18:52	1.5	0	0	0	0
5/26/1970	22:20	2.5	0	0	0	0
2/25/1971	20:30	1.75	0	0	0	0
5/10/1972	10:00	1	0	0	0	0
5/10/1972	10:15	1.75	0	0	0	0
6/9/1974	21:10	1.75	0	0	0	0
5/1/1975	20:15	2	0	0	0	0
5/17/1985	20:15	1.75	0	0	0	0
5/17/1985	20:30	1.75	0	0	0	0
5/17/1986	15:39	1	0	0	0	0

[5] https://www.spc.noaa.gov/gis/svrgis/
[6] NCDC Storm Events Database, https://www.ncdc.noaa.gov/stormevents/

Table 12-3. Historical Hailstorm Events, 1960-2022 (cont.)

Date	Time	Magnitude (Size of Hail)	Injuries	Fatalities	Prop Damage	Crop Damage
5/20/1990	17:45	1.25	0	0	0	0
5/3/1991	16:12	1	0	0	0	0
3/29/1992	2:40	1.75	0	0	0	0
3/29/1992	3:00	1	0	0	0	0
5/26/1992	3:37	1.75	0	0	0	0
3/9/1994	9:25	1.75	0	0	$500	0
4/6/1994	1:38	1.75	0	0	$500,000	0
4/28/1996	20:00	1	0	0	0	0
5/28/1996	23:15	0.88	0	0	0	0
4/4/1997	21:10	1.75	0	0	0	0
4/1/2000	20:00	1.25	0	0	0	0
4/1/2000	20:35	2.5	0	0	$100,000	0
6/14/2001	17:55	1	0	0	0	0
6/14/2001	18:00	0.75	0	0	0	0
4/20/2003	10:15	1	0	0	0	0
6/2/2003	20:32	1.75	0	0	0	0
2/24/2004	1:15	1.75	0	0	0	0
7/22/2004	16:40	0.75	0	0	0	0
4/24/2005	21:45	1	0	0	0	0
4/25/2006	17:25	1	0	0	0	0
5/14/2006	18:55	2.75	0	0	$100,000	0
5/4/2006	18:10	1.75	0	0	0	0
3/26/2007	14:40	0.75	0	0	0	0
3/26/2007	14:51	0.88	0	0	0	0
4/30/2007	19:55	0.88	0	0	0	0
4/17/2009	21:42	1.75	0	0	0	0
5/25/2009	20:15	0.88	0	0	0	0
5/25/2009	20:45	0.75	0	0	0	0
5/25/2009	20:50	1.75	0	0	0	0
5/25/2009	21:07	0.75	0	0	0	0
5/16/2010	19:00	0.88	0	0	0	0
6/2/2010	19:30	0.75	0	0	0	0
5/12/2011	11:30	0.75	0	0	0	0
3/29/2012	20:17	1	0	0	$10,000	0

Table 12-3. Historical Hailstorm Events, 1960-2022 (cont.)

Date	Time	Magnitude (Size of Hail)	Injuries	Fatalities	Prop Damage	Crop Damage
3/29/2012	20:23	1	0	0	$10,000	0
3/29/2012	20:30	1.25	0	0	$25,000	0
3/29/2012	20:40	1	0	0	$10,000	0
3/30/2012	18:40	2.25	0	0	$100,000	0
3/30/2012	18:45	1.75	0	0	$10,000	0
3/30/2012	18:56	1.75	0	0	$20,000	0
5/10/2012	4:20	0.75	0	0	0	0
5/10/2012	23:05	0.75	0	0	0	0
5/10/2013	22:17	1.75	0	0	$25,000	0
6/7/2013	13:50	1	0	0	$5,000	0
6/7/2013	13:55	1.25	0	0	$20,000	0
5/9/2014	16:45	1.75	0	0	$100,000	0
5/9/2014	16:46	1	0	0	$10,000	0
3/18/2016	19:05	1.75	0	0	$100,000	0
3/18/2016	19:10	1	0	0	0	0
3/18/2016	19:15	1	0	0	0	0
3/18/2016	19:20	1	0	0	$50,000	0
4/17/2016	21:00	1.5	0	0	$25,000	0
4/17/2016	21:25	1.25	0	0	$20,000	0
4/17/2016	21:52	1	0	0	$10,000	0
5/21/2017	15:44	1.5	0	0	$25,000	0
5/21/2017	15:44	1.75	0	0	$25,000	0
5/21/2017	15:48	1.5	0	0	$25,000	0
5/21/2017	15:55	2.5	0	0	$100,000	0
5/21/2017	16:04	1	0	0	0	0
3/27/2018	21:25	1.75	0	0	$20,000	0
3/27/2018	21:28	1	0	0	0	0
3/21/2022	20:45	1	0	0	0	0
3/21/2022	21:30	1	0	0	0	0
5/24/2022	21:01	1	0	0	0	0
5/24/2022	21:15	1	0	0	0	0
5/24/2022	21:20	1.25	0	0	0	0
5/24/2022	21:25	1	0	0	0	0

Probability

Probability, or frequency of return, was calculated by dividing the number of hailstorm events in the recorded time period by the overall time period that the resource database has recorded. A hailstorm may travel over large distances; however, the hailstorm event is solely recorded for the hailstorm origin. Table 12-4 provides a general overview of hailstorm severity, probability, impacts, and defining characteristics. Probability for future hailstorm events is defined for the city and its respective county in the following sections based on NCDC Storm Events Database records.

Probabilities of future hailstorm events are also subject to the effect of future conditions, such as climate change. The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. As long-term weather patterns and average temperatures change so too may the locations, frequencies, and range of anticipated intensities of hailstorm events. The risk of hailstorms damaging public infrastructure will grow as climate change intensifies storm activity and development expands. Hail can cause significant damage to roofs, vehicles, and outdoor public spaces, leading to costly repairs for public buildings and infrastructure like roads and bridges. As Laredo's population grows and development spreads, more public assets will be exposed to hail risks, increasing the financial burden on the city to maintain and repair infrastructure. The need for resilient building materials and improved stormwater management systems will grow to mitigate hail damage.

Table 12-4. Hailstorm Severity Defined

Minor Damage	Severe Damage	Extreme Damage
• 36% of all hailstorms. • $0 to Less than $100 in damage. • No bodily injuries if exposed to the hail.	• 45% of all hailstorms • $500 to $50,000 in damages. • Minor bodily injuries if exposed to the hail.	• 17% of all hailstorms • $100,000 to $5,000,000 in damages. • Fatalities possible if exposed to hail.

Impact

Hailstorm impacts are documented by the number of deaths, injuries, property damage, and crop damage. Table 12-5 provides a summary of impacts for the City of Laredo as a whole. Impacts to the city is documented in the following sections.

Table 12-5. Historical Hailstorm Impacts Summary, 1960-2022[7]

Number of Events	Deaths	Injuries	Property Damage	Crop Damage
81	0	0	$1,445,500	$0

Vulnerability

All existing and future buildings, facilities, and populations in and around the City of Laredo are at potential risk of impact. The damage caused by hail is dependent upon the size of the "hail stones" and result in damage to vehicles, buildings, roofs, plants, trees, and especially crops. Vulnerability of humans and property is difficult to evaluate given that hailstorms form at different strengths and in random locations. Property damage is typically most significant for vehicles and structures of light construction. Two types of structures are more likely to suffer damage: manufactured homes and recreational vehicles. Agricultural crops are especially vulnerable to 1" or greater size hail and can lead to total crop failure. Vulnerability is defined for the city and its respective county in the following sections.

[7] NCDC Storm Events Database, https://www.ncdc.noaa.gov/stormevents/

City of Laredo Hailstorm Hazard

LOCATION
City Wide

OCCURRENCE*	EXTENT*									
Number of Events 1960-2022	Magnitude (Size of Hail)									
	¾“	⅞”	1”	1 ¼”	1 ½”	1 ¾”	2”	2 ¼”	2 ½”	2 ¾”
81	9	5	25	6	5	24	1	1	4	1

PROBABILITY*			
Number of Events	Record Time Period	Time Period Years	Probability
81	1960 to 2022	62	1 hailstorm estimated every 0.8 years

IMPACT*				
Number of Events	Deaths	Injuries	Property Damage	Crop Damage
81	0	0	$1,445,500	$0

VULNERABILITY				
Population**	Property Value***		Crop Land	
	Non-Residential	Residential	Acres****	Value*****
256,187	$10,081,575,278	$11,644,252,428	765	$28,395,000

*NCDC Storm Events Database, 2023

**Census Bureau Population Estimate 2022

***Webb County Appraisal District, 2022

****USDA Crop Land and National Land Cover Dataset, 2021

*****USDA Web County Census of Agriculture, 2017

Figure 12-3. City of Laredo Hailstorm Hazard Map (1955 – 2021) – (Infrastructure and Safety)

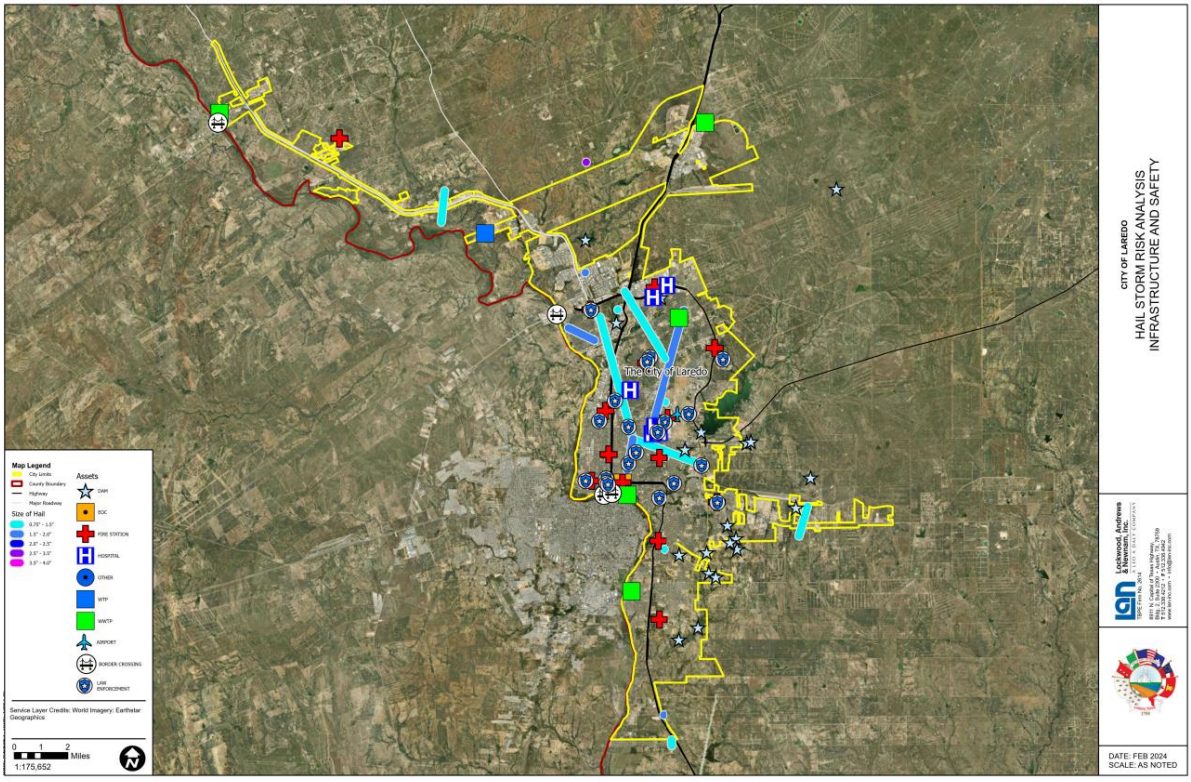


Figure 12-4. City of Laredo Hailstorm Hazard Map (1955 – 2021) – (Education)

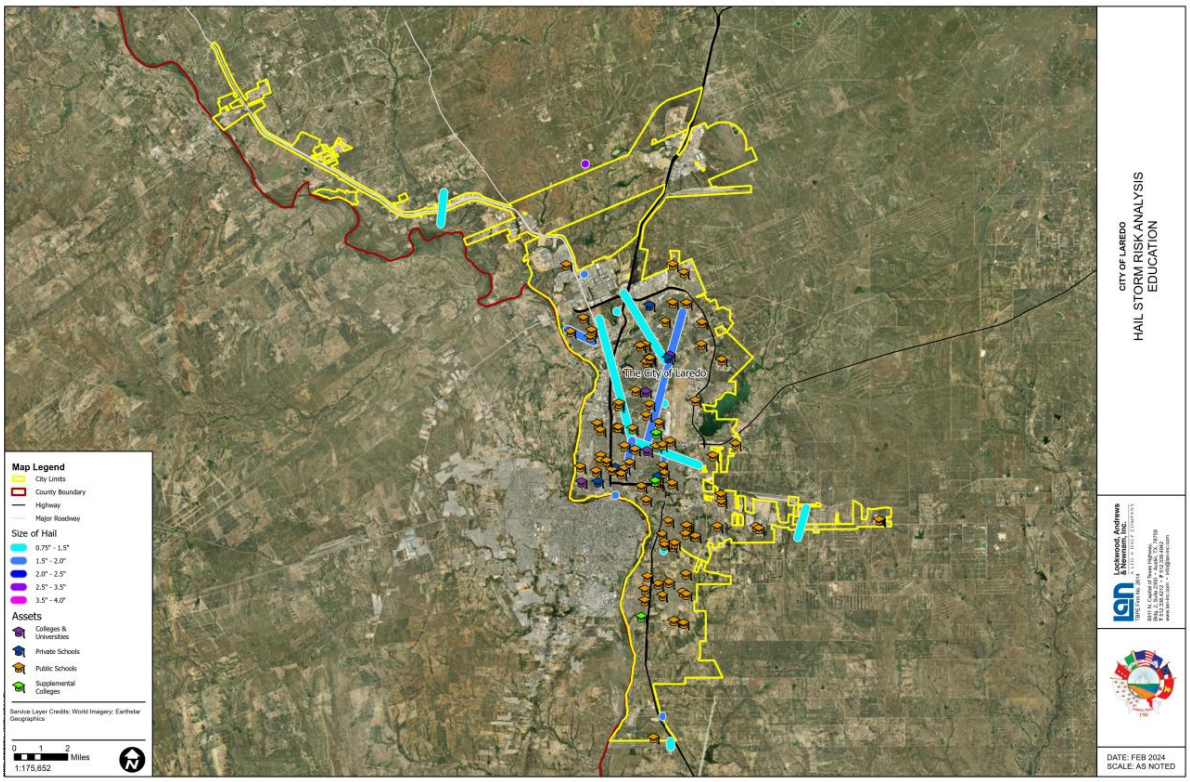
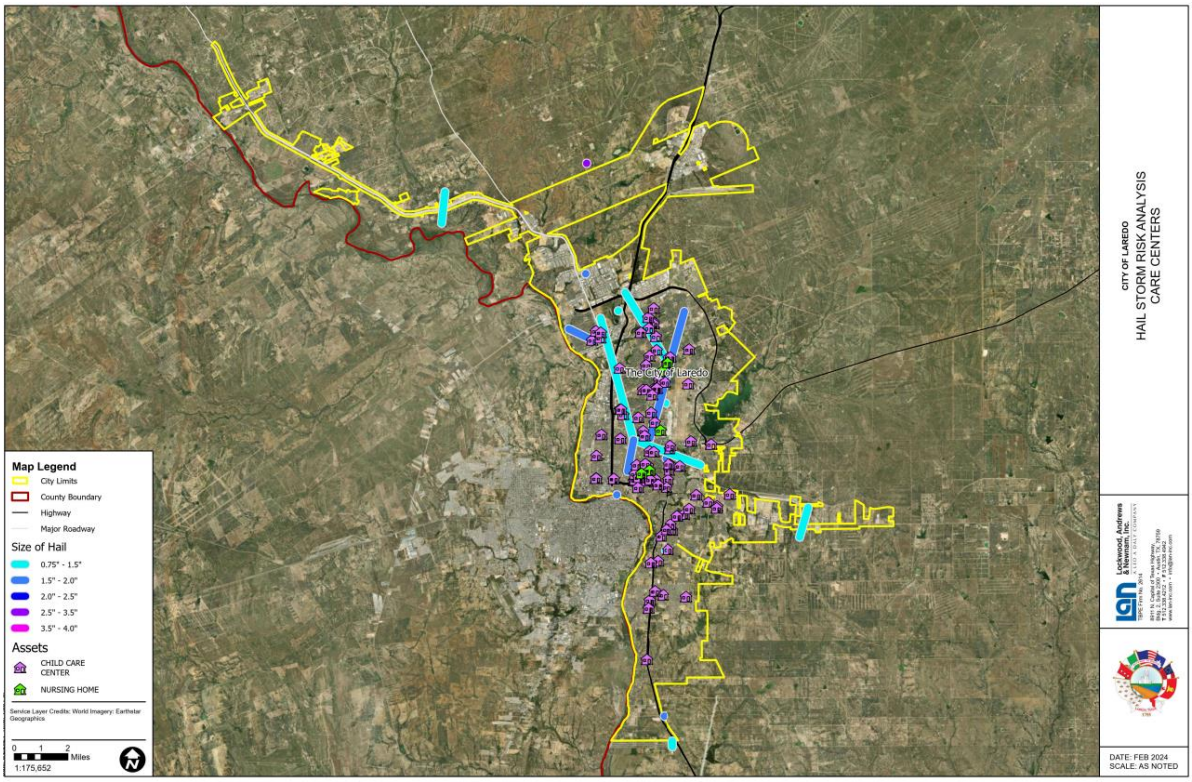


Figure 12-5. City of Laredo Hailstorm Hazard Map (1955 – 2021) – (Care Centers)



Section 13: Expansive Soils

Expansive Soils Hazard Overview

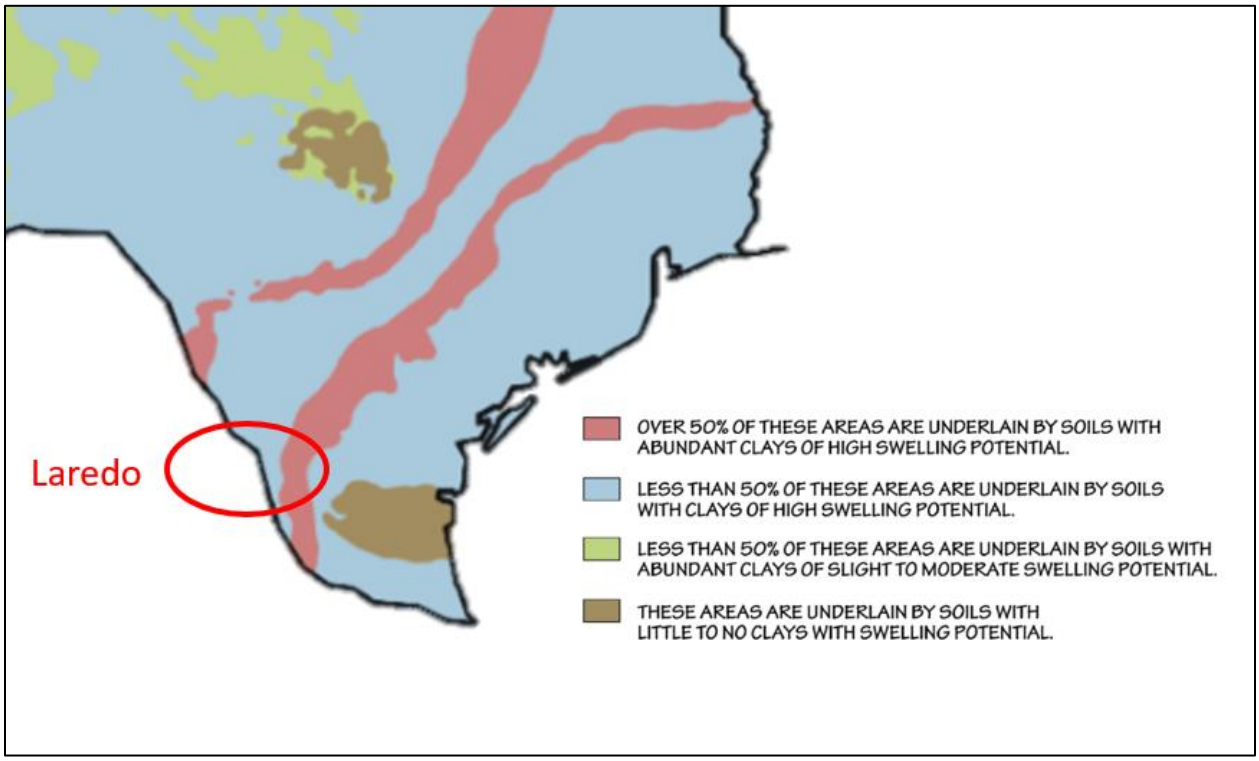
Description

Expansive soils contain minerals such as clay that are prone to large volume changes (swelling and shrinking). Soils with a high content of expansive minerals can shrink in drier seasons forming deep cracks. This shrinkage can remove support from buildings or other structures and result in damaging subsidence.

Location

Expansive soils with high clay content can expand to as much as 15 times its original volume. The majority of the soils in the City of Laredo, the planning area, have low swelling potential. Swelling potential in South Texas and along the Gulf Coast is illustrated in Figure 13-1.

Figure 13-1. South Texas and the Gulf Coast Swelling-Clay Map[1]



A USDA soil survey for Webb County indicates that approximately 9.77% of the City of Laredo's land surface consists of clay soils as indicated in Table 13-1.

Table 13-1. City of Laredo Clay Soil Survey[2]

City of Laredo - Percentage of Clay Soils				
Symbol	**Soil Name**	**Acres**	**%**	
Te	Tela Sandy Clay Loam	2,578.59	3.79%	**Percentage Excluding Water Surface**
CaB	Catarina Clay	2,045.55	3.01%	
PaB	Palafox Clay Loam	957.22	1.41%	
LrA	Laredo Silty Clay Loam	544.73	0.8%	
MgC	Mogolia Clay Loam	389.86	0.57%	
VrB	Viboras Clay	72.89	0.11%	
LrA	Laredo Silty Clay Loam	57.12	0.08%	
Land Surface	**Total Clay Soils**	6,645.96	9.77%	**9.89%**
	Other Soils	61,328.38	89.21%	**90.11%**
	Total Land Surface	**67,974.34**		
	Water Surface	771.54	1.12%	
	Total City of Laredo		**100%**	

Extent

Section 618.41 of the National Soil Survey Handbook (NSSH), by the USDA's Natural Resources Conservation Service, indicates expansive soils can be measured as a percent of the volume change of an oven-dried soil sample when it changes from moist to dry conditions. This percentage is called the Linear Extensibility Percent (LEP). The LEP is calculated as indicated in Figure 13-2.

[2] USDA Web Soil Survey

Figure 13-2. Linear Extensibility Percent (LEP) Formula[3]

$$COLE = \frac{\text{(moist length) - (dry length)}}{\text{dry length}}$$

COLE = Coefficient Of Linear Extensibility

LEP = COLE x 100

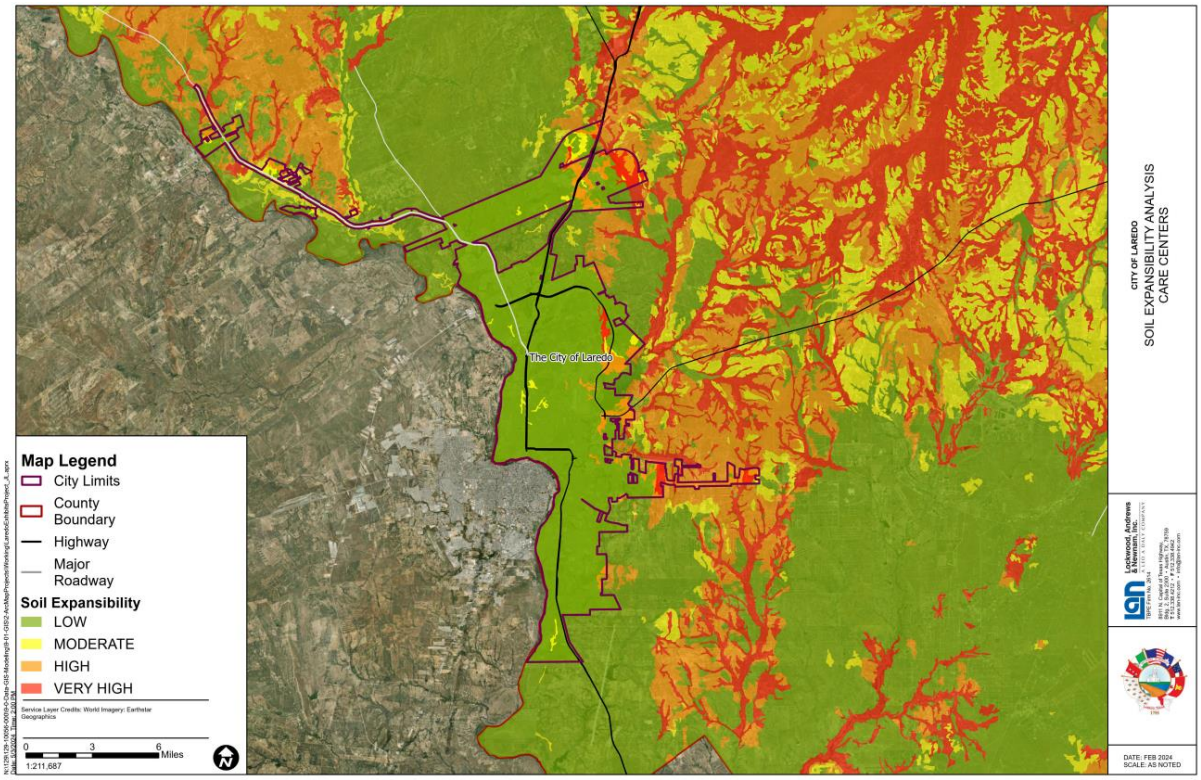
The higher the LEP percentage the greater the amount the soil will shrink and swell. LEP can be expressed in four Shrink-Swell classifications from Low to Very High as indicated in Table 13-2. The shrinking and swelling of soils with Moderate to Very High LEP can damage buildings, roads, buried infrastructure such as pipelines, and other structures. High to Very High LEP soils can even damage plant roots. Figure 13-3 graphically illustrates the distribution of soils for the City of Laredo and surrounding areas by LEP Shrink-Swell classifications. The soil distributions for the planning area may be viewed in Figure 13-4.

Table 13-2. Shrink-Swell Classifications[4]

Shrink-Swell Class	Linear Extensibility Percent (LEP)
Low	< 3.0%
Moderate	3.0% - 5.9%
High	6.0% - 8.9%
Very High	≥ 9.0%

[3] USDA Web Soil Survey
[4] USDA Web Soil Survey

Figure 13-3. City of Laredo Soil Distribution by LEP Shrink-Swell Classification



Occurrences

Expansive soils are a condition that is native to the soil characteristics for specific geographic locations and "cannot be documented as a time-specific event, except when it leads to structural and infrastructure damage."[5]

Damage due to expansive soils started to increase significantly in the 1960s when construction materials and foundations for residential homes started changing from pier and beam foundations with flexible sidings like wood, to rigid monolithic concrete slab-on-grade foundations with brick and other masonry sidings. The rigid foundations with rigid sidings are less forgiving and are readily damaged by the differential swelling and shrinking cycles of expansive soils.

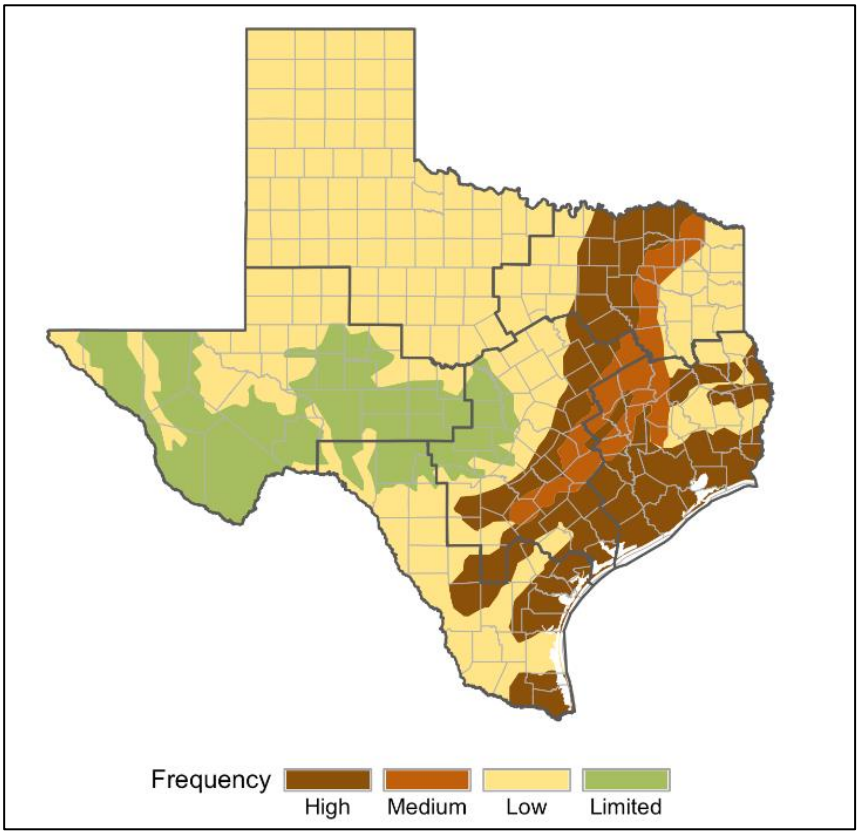
Probability

While damage due to expansive soils hazard is present in the City of Laredo, it is not well documented. Private claims documenting damages exclusively caused by expansive soils are typically not made available in the public domain. Figure 13-4 shows expansive soil locations and frequencies within Texas. This map shows Laredo in a designated low

[5] State of Texas Mitigation Plan, 2023

area of expansive soil frequency, but in close proximity to a designated high frequency area where other hazards, like drought, can exacerbate the possibility of expansive soil damages. The forecasted claim drought percentages are from 1950 to 2023, drought drive the expansibility and shrinkage of soils in the planning area.

Figure 13-4. Location and Frequency of Expansive Soils in Texas



*State of Texas Hazard Mitigation Action Plan, 2023

Probabilities of future expansive soil events are also subject to the effect of future conditions, such as climate change.

Future expansive soil hazard probability is also evaluated by utilizing drought and rainfall data which affect soil's expansive and shrinking properties. Shrinking, swelling, and cracking of soil under structures can result in foundational and structural issues that can result in major structural damage and pose a hazard to residents. Table 13-4 shows the annual chance of droughts by severity which can stimulate the hazard expansive soils pose.

Table 13-3. Drought Annual Probability by Severity

Annual Chance of Drought (PHDI <-1)	Magnitude (PHDI Description)				
	Annual Chance of Incipient Drought	Annual Chance of Mild Drought	Annual Chance of Moderate Drought	Annual Chance of Severe Drought	Annual Chance of Extreme Drought
57.4%	5.6%	23.4%	19.3%	8.5%	0.7%

In addition, rainfall data shows that Laredo receives minimal rainfall which can further accelerate shrinking-swelling of expansive soils. Laredo, on average, sees 20.15 inches of rain. Laredo's annual rainfall amount is in the bottom 11% of cities in Texas, further escalating the impact of droughts throughout the planning area. Additionally, Laredo has an 11% annual chance for an extreme heat event.

The severity of both, lack of rainfall in Laredo combined with commonly occurring droughts combine to create a high likelihood of expansive soils hazards affecting structures within the planning area.

Impact

Swelling and shrinkage typically varies depending on the amounts of moisture content and clay content. Uneven shrink/swell cycles are what causes damage to building foundations, walls, roadway pavement, sidewalks, underground piping, and other structures. Lightweight types of foundations like concrete pavement for roads and concrete slab on grade foundations are particularly susceptible to damage from the shrink/swell cycle. Cracked foundations, floors, and basement walls are typical types of damage done by swelling soils.

Private claims documenting exclusively expansive soil damage are not well documented in the public domain. The hazard of expansive soils should not severely impact the City of Laredo residents.

The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. As long-term weather patterns and average temperatures change, so too may frequencies and range of anticipated intensities of expansive soil swelling and shrinkage events. Expansive soils pose a significant risk to public infrastructure, particularly roads, bridges, and building foundations. Climate change is expected to exacerbate soil movement due to more variable rainfall patterns, leading to increased damage to infrastructure. As Laredo's population grows and development continues, more buildings and public facilities will be constructed on soil

types prone to expansion. This will increase the costs of infrastructure maintenance and repair, especially in areas with heavy development. Incorporating soil stabilization techniques and better land-use planning will be critical in addressing these risks.

Impact can be measured in terms of property damage when such data is made available.

Vulnerability

Expansive soils primarily represent a threat to buildings and subterranean infrastructure. Crops and people are not typically directly threatened by expansive soils. Vulnerabilities to expansive soils are determined by examining what critical assets and properties are in different areas of soil expansibility. Assets in areas of vulnerability, moderate to very high expansive soil areas, are shown in Figure 13-3 & 13-5.

City of Laredo Expansive Soils Hazard

LOCATION
City Wide

OCCURRENCES	PROBABILITY
Ongoing	Ongoing and increasing (see Table 13-3)

IMPACT & VULNERABILITY					
VULNERABLE NON-CRITICAL FACILITIES: PROPERTY					
Property Class	SHRINK-SWELL RISK CLASS	VALUE		ACRES	
		AMOUNT*	%	AMOUNT	%
Residential	LOW	$7,378,720,021	93.16%	10,203	93.58%
	MODERATE	$89,321,452	1.13%	156	1.43%
	HIGH	$313,776,230	3.96%	342	3.14%
	VERY HIGH	$138,956,955	1.75%	202	1.85%
Commercial	LOW	$6,168,734,391	84.88%	53,253	39.98%
	MODERATE	$257,834,424	3.55%	13,036	9.79%
	HIGH	$633,561,881	8.72%	28,292	21.24%
	VERY HIGH	$207,144,125	2.85%	38,600	28.98%
TOTAL		**$15,188,049,479**		**144,084**	

*Webb County Appraisal District, 2022

VULNERABILITY (CONT.)	
VULNERABLE CRITICAL FACILITIES	
SHRINK-SWELL RISK CLASSIFICATION	ASSET COUNT IN SHRINK-SWELL RISK AREA
LOW	118
MODERATE	3
HIGH	3
VERY HIGH	5

Figure 13-5. City of Laredo Soil Expansibility Hazard Map – (Infrastructure and Safety)

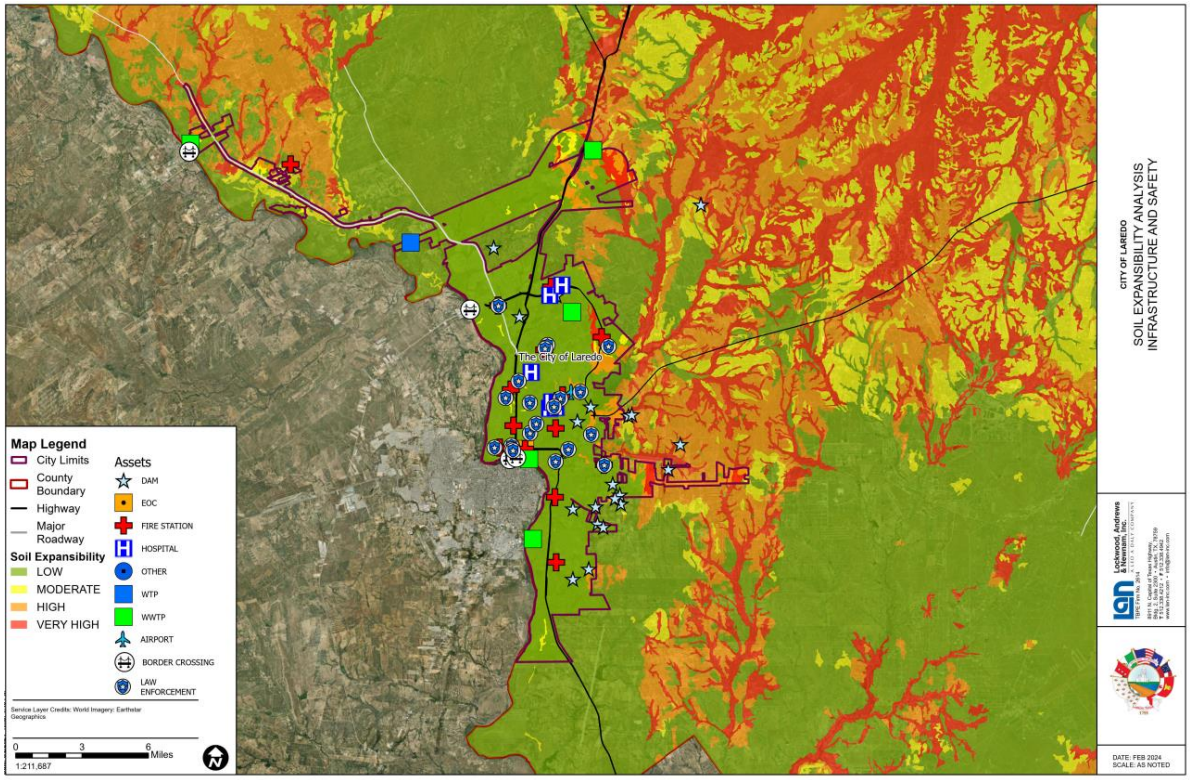


Figure 13-6. City of Laredo Soil Expansibility Hazard Map – (Education)

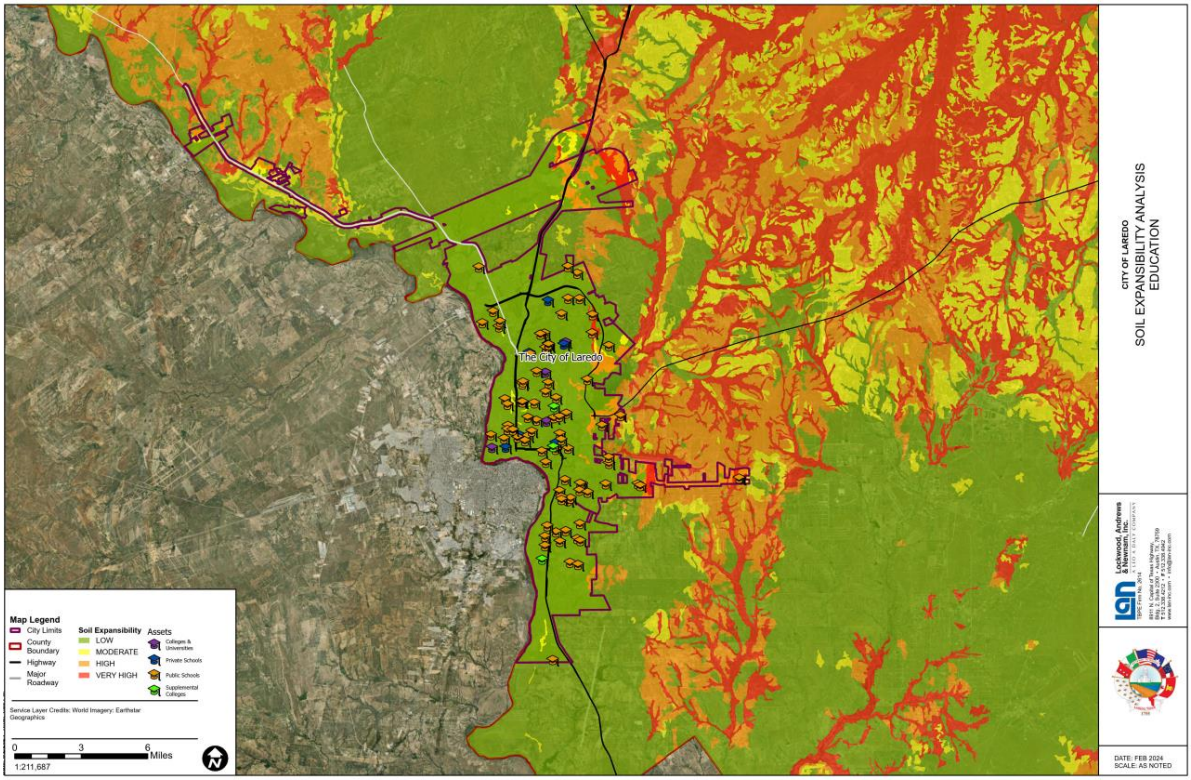
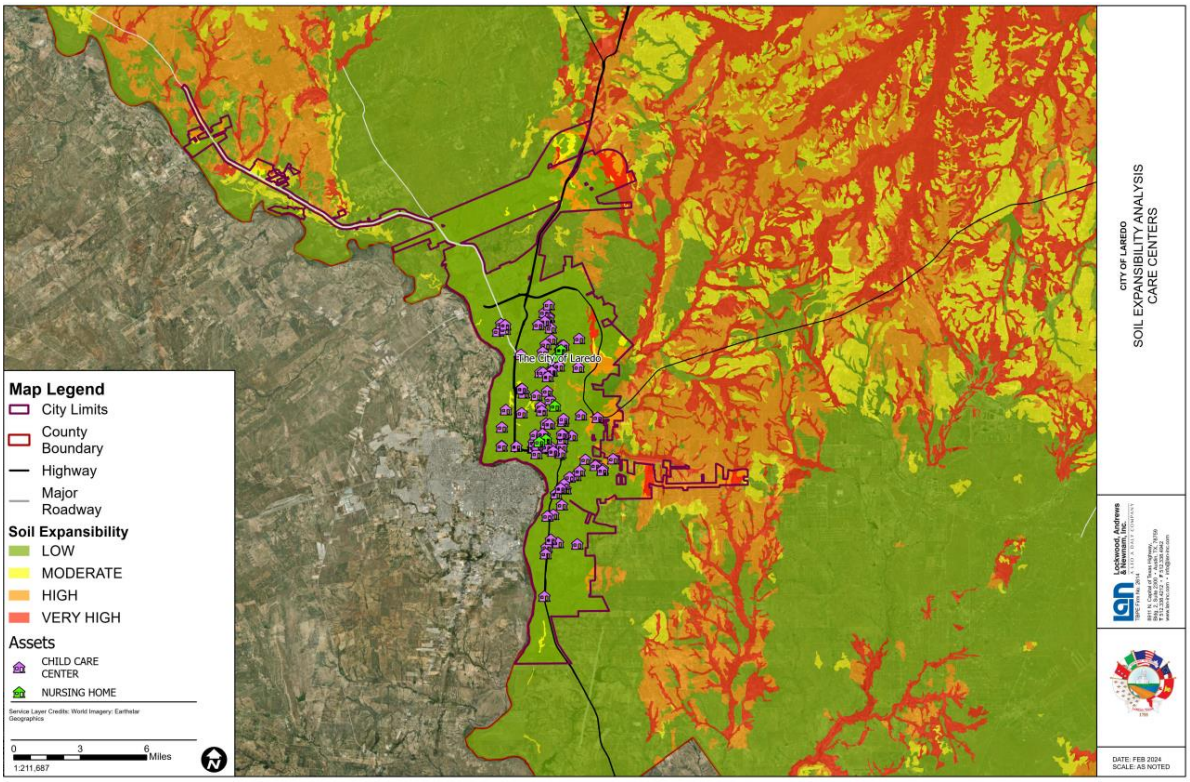


Figure 13-7. City of Laredo Soil Expansibility Hazard Map – (Care Centers)



Section 14: Dam and Levee Failure

Dam and Levee Failure Hazard Overview

Description

A dam is a barrier that is constructed to hold back water. A dam failure is a systematic failure of a dam structure resulting in the uncontrolled release of water, often resulting in floods that could exceed the 100-year flood plain boundaries.[1] A levee is an embankment built to prevent overflow from a body of water. A levee failure is when a levee embankment fails, or is intentionally breached, causing the previously contained water to flood the land behind the levee.

Location

Dams

There are 13 dams located in the City of Laredo as indicated in Table 14-1, Table 14-2 and Figure 14-1 show the dams located in and around the City of Laredo. Locations impacted by dam failure are the areas downstream from the dams. These areas can expect a degree of inundation from flood waters, depending upon the severity of the dam failure. It is also possible that some areas upstream will be impacted by receding water levels, though these impacts are not likely to be damaging. Opportunities for recreation, irrigation, and industrial use may be reduced if reservoir water levels fall beneath their normal levels.

There is a general data deficiency for these small dams. Dam-specific inundation maps do not exist for these dams. This data deficiency includes extent. Without inundation maps, extent cannot be measured. Actions to correct these data deficiencies are proposed in Section 17.

[1] The State of Texas Mitigation Plan, Updated 2023

Table 14-1. Dams Located in the City of Laredo

Dam Name			
1	Clark Lake Dam	8	Minnie Martin Lake Dam
2	Farias Farm Lake Dam	9	Paul Young Ranch Lake Dam
3	Lago Del Valle Dam	10	San Isidro Detention Pond No 3 Dam
4	Lake Casa Blanca Dam	11	Wright Dam No 1
5	Link Lake No 1 Dam	12	Wright Dam No 2
6	Link Lake No 2 Dam	13	Wright Dam No 4
7	Lomas Del Sur Detention Pond Dam		

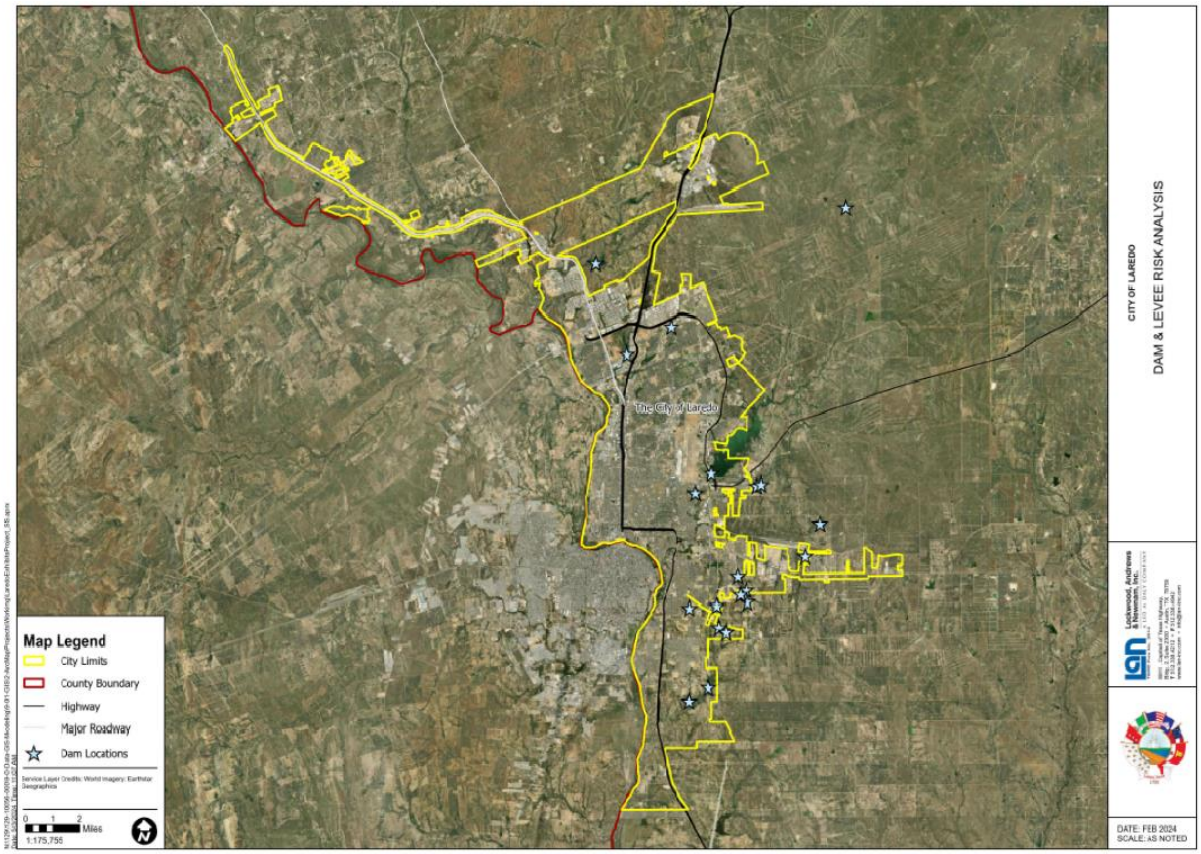
Table 14-2. Dams Located in and Around the City of Laredo[2]

Dam	Primary Purpose	Owner	Drainage Area (sq miles)	Extent	Location		Storage (acre-feet)	
					Latitude	Longitude	Max.	Normal
Clark Lake Dam	Fire Protection, Stock, Or Small Fish Pond	EG RANCH LTD	2.1	High	27.476456	-99.426299	396	63
Farias Farm Lake Dam	Irrigation	BARBARA FASKEN	5.4	High	27.5931	-99.500712	1,104	600
Lago Del Valle Dam	Flood Risk Reduction	DNL INVESTMENTS LTD	3	High	27.483559	-99.431568	168	88
Lake Casa Blanca Dam	Irrigation	WEBB COUNTY	117.6	High	27.53413	-99.447969	65,000	17,480
Link Lake No 1 Dam	Fire Protection, Stock, Or Small Fish Pond	ELIZABETH LINK MINNE	0	Low	27.427836	-99.448973	817	260
Link Lake No 2 Dam	Recreation	GEORGE LINK	0	Low	27.421173	-99.460635	927	284
Lomas Del Sur Detention Pond Dam	Flood Risk Reduction	ALS LAREDO HOLDINGS LLC	0.65	High	27.467238	-99.46083	97	0
Minnie Martin Lake Dam	*	MINNIE MARTIN	0	Low	27.493333	-99.39	105	14
Paul Young Ranch Lake Dam	Fire Protection, Stock, Or Small Fish Pond	PAUL YOUNG	0.53	High	27.524497	-99.457771	90	39
San Isidro Detention Pond No 3 Dam	Flood Risk Reduction	CITY OF LAREDO;SAN ISIDRO MANAGEMENT LC	1.7	High	27.6069	-99.4736	150	0
Wright Dam No 1	Water Supply	DR LA WRIGHT ET AL	0	Low	27.455315	-99.438428	360	150
Wright Dam No 2	*	HACHAR	0.14	High	27.468626	-99.444105	33	24
Wright Dam No 4	Water Supply	DR LA WRIGHT ET AL	0	Low	27.457531	-99.442669	147	27
Rafael B Garcia Dam	Fire Protection, Stock, Or Small Fish Pond	ANGELO FERRAZZANO	0.4	High	27.470603	-99.425638	83	34
Middle Pasture Lake Dam	Water Supply	KILLAM AND HURD LTD	41	Low	27.638053	-99.519967	1,570	848
Killam No1 82 Pond Dam	*	RATCLIFFE KILLAM	0	Low	27.666667	-99.366666	180	120
Leo Flores Lake Dam No 2	Fire Protection, Stock, Or Small Fish Pond	LEO FLORES ET AL	0	Low	27.528332	-99.420227	84	53
Wright Dam No 5	Fire Protection, Stock, Or Small Fish Pond	ELAINE CALK	0.2	Low	27.47416	-99.429881	90	15
Leo Flores Lake Dam	Fire Protection, Stock, Or Small Fish Pond	LEO FLORES ET AL	0	Low	27.529078	-99.417723	474	95
Killam Lake No 2 Dam	*	RATCLIFF KILLAM	0	Low	27.509674	-99.381265	192	67
Amistad Dam	Flood Risk Reduction	International Boundary and Water Commission;Mexico Comision Internacional de Limites y Aguas	123,134	High	29.449825	-101.05703	5,128,000	3,384,000

*No data in the Army Corps of Engineer National Inventory of Dams (NID)

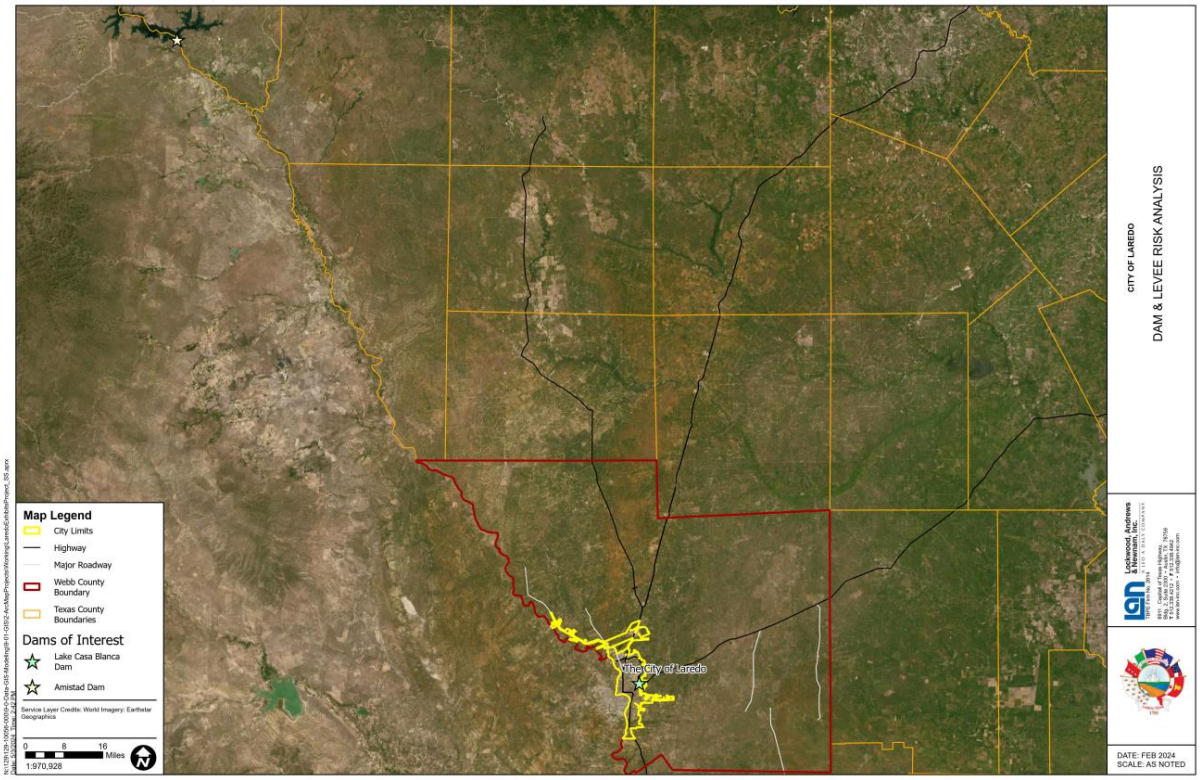
[2] Texas Commission on Environmental Quality and National Inventory of Dams from The United States Army Corps of Engineers

Figure 14-1: Map of Dams Located within and in proximity to the City of Laredo[3]



[3] Texas Commission on Environmental Quality and National Inventory of Dams from The United States Army Corps of Engineers

Figure 14-1: Map of Amistad and Casa Blanca Dams



Levees

Texas does not maintain a database of levees. The US Army Corps of Engineers does maintain a national levee database, but it is not an inclusive list. A search of the national database identifies zero levees within Webb County.

Extent

The Federal Guidelines for Dam Safety (FEMA publication No. 333, dated April 2004) provides guidelines for determining the potential hazard classification for dams with "*the understanding that the failure of any dam or water-retaining structure, no matter how small, could represent a danger to the downstream life and property.*" The guideline establishes three classification levels of Low, Significant and High as indicated in Table 14-3.

Table 14-3: Dam Hazard Classifications

Hazard Classification	Loss of Life	Economic, Environmental, Lifeline Losses
Low	None Expected	Low and generally limited to owner
Significant	Possible, but not expected	Yes
High	Probable. One or more expected	Yes (but not necessary for this classification)

The Texas Emergency Action Planning website indicates that in 2005, the Texas Attorney General ruled that dam hazard classifications are exempt from disclosure under the state's Public Information Act due to Homeland Security concerns.

Dam failures can occur as a collapse or breach of the structure. Dam failures my result from one or more of the following conditions:

- Long periods of rainfall and flooding.
- Insufficient spillway capacity, resulting in embankment overtopping.
- Internal erosion caused by leaking or piping.
- Cathodic corrosion of concrete reinforcement.
- Maintenance problems, including failures in debris removal, repairs, or gate and valve maintenance.
- Poor design or construction.
- Dam failure upstream inundating the downstream dam.
- Erosion caused by wind-driven waves.
- Intentional sabotage.
- Land subsidence.
- Earthquakes.

A levee is a manmade embankment or structure built along a river, sea, or other body of water to protect the adjacent land from flooding. A levee failure is the systematic failure of the levee structure or levee system resulting in the uncontrolled release of water. The more common causes of levee failure include:

- Overtopping.
- Erosion.
- Structural Instability.
- Piping/under seepage.
- Settlement.[4]

FEMA requires that levees be certified to meet federal design, construction, maintenance, and operation standards to adequately reduce the risk of flooding from a major flood.

The State of Texas Hazard Mitigation Plan indicates that the "extent or magnitude of a dam failure event is described in terms of the classification of damages that could result from a dam's failure." The State plan also indicates that "specific dam names and additional identifying information are not included in this document as hazard classifications are considered confidential per Texas Government Code §418.181 and the Texas Attorney General."

Occurrences of:

Dam Failures

No previous occurrences of dam failure for dams affecting City of Laredo are known.

Levee Failures

Based on the US Army Corps of Engineers National Levee Database, there are no levees in Webb County.

Probability of:

Dam Failures

There is no history of failures for any of the dams that can affect the City of Laredo. It is assumed that a dam failure affecting the City of Laredo is unlikely within the next 10 years.

Levee Failures

There is no probability of a levee failure since there are no levees in Webb County.

Probabilities of future dam and levee failure events are also subject to the effect of future conditions, such as climate change. The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. As long-term

[4] Congressional Briefing, FEMA, July 2013

weather patterns and average temperatures change, so too will the locations, frequencies, and range of anticipated intensities of weather-related factors that contribute to dam and levee failure events, such as hurricanes, tropical storms, extreme rainfall events, sea levels, etc.

Impact of:

As climate change intensifies rainfall events and the population continues to grow in flood-prone areas, the risk of dam and levee failures becomes more critical. These structures protect large portions of the city from flooding, and their failure could result in catastrophic damage to homes, public buildings, and critical infrastructure. The growing population in Laredo will lead to increased development in areas protected by these structures, amplifying the potential for economic and human loss in the event of a failure. Investment in the maintenance and upgrade of dams and levees will be essential to prevent such disasters as climate impacts intensify.

Dam Failures

Dams provide benefits in the form of water for recreation, irrigation, human consumption (after treatment), industrial use, flood control, and hydroelectric power. Most dams contain relatively small volumes of water and do not pose a severe threat to downstream communities; however, a failure of a large dam could be catastrophic.

The 21 dams of interest, located in and around the City of Laredo, have a hazard classification defined by the Army Corps of Engineers which is defined in Table 14-3. 11 of the dams have been classified as “Low” risk and the remaining 10 are considered “High” risk dams, as shown in Table 14-2.

All the dams are relatively small except for Amistad Dam and Lake Casa Blanca Dam which have a max storage of 5,128,000 acre-feet and 65,000 acre-feet, respectively. The eleven “Low” hazard dams are in rural or semi-rural areas of the City of Laredo, with little to no residential or commercial development downstream of the dams so no loss of life is expected. Impacts would be limited to the dam itself and minimal damage to crops and the environment. The ten “High” hazard dams are in or near urban areas that can be damaged in the event of a dam failure. The two largest dams, Amistad and Lake Casa Blanca, are of most concern because of their size and “High” hazard classification, but the lack of dam failure inundation maps makes it hard to quantify the possible damage. It can be assumed that the failure of these large dams can result in extensive damage to the dam, residential/agricultural areas, displace vulnerable populations, and result in the loss of life downstream of the dams. These assumptions are made based on the shear size of the dams. Locations of dams in the planning area may be viewed in Figure 14-1.

Based on this data and hazard classifications the impact of a dam failure in the City of Laredo is assumed to be high, based on the presence of two large capacity “High” hazard dams and that almost half of the dams are considered “High” hazard.

If the City of Laredo “Low” hazard dams were to fail, impacts are expected to be restricted to surrounding riparian corridors, agricultural areas, and to the dams themselves. If the “High” hazard and higher capacity dams fail they might cause power outages, destroy large areas of cropland, damage residential property, and displace vulnerable populations.

Levee Failures

Levee failures have no impact since there are zero levees in the planning area.

Vulnerability

Vulnerability to dam failure has been examined by looking at the length of highway and railroad infrastructure downstream from the dams. There is a general data deficiency for these dams as dam-specific inundation maps do not exist for these dams. Consequently, it is difficult to develop a detailed vulnerability profile. Actions to correct these data deficiencies are proposed in Section 17.

City of Laredo Dam and Levee Failure Hazard

Location	Extent
See Figure 14-1	See Table 14-2

Occurrences	Probability
No historical dam failures No levees present	Dam Failure: 1% chance in next 10 years

Impact	Vulnerability
Dam failure – Low Hazard Dams: damage to dam and agricultural areas. High Hazard & Large Capacity Dams: damage to dam, residential/agricultural areas, displace vulnerable populations, etc. **Levee failure** – no levees present	23 miles of railroad downstream of dams 76 miles of major roadway downstream of dams

Despite the efforts of the planning team, inundation maps for the dams of the City of Laredo were not available. The eleven “Low” hazard dams are in relatively remote areas of the city. Failure of these dams is not expected to endanger critical facilities. Expected damages are restricted to nearby riparian corridors, agricultural areas, and the dams themselves. The ten “High” hazard dams are in densely populated areas where a failure can cause damage to the dams themselves, residential/commercial/agricultural property, cause vulnerable populations to be displaced, destroy city infrastructure, and cause loss of life.

Section 15: Wildfire

Wildfire Hazard Overview

Description

A wildfire is an uncontrolled fire almost exclusively fueled by natural vegetative fuels. Fuel may come in the form of grass, brush, or trees. Wildfire risk increases with high concentrations of connected fuels. Meteorological conditions such as high temperatures, low humidity, droughts, and high wind can also increase wildfire risk. Humans are the most common source of initial ignition in wildfires. Sparks from agricultural, industrial, or automobile activity may start a wildfire.

Location

Wildfires are most common in areas where wildland and urban areas abut, known as the Wildland Urban Interface (WUI). The areas in the City of Laredo that feature WUI are the most vulnerable to wildfire. The urban centers of communities lack the concentrations of fuels required to feed wildfires. The rural areas of the planning area lack the degree of human activity that is associated with ignition. Areas where human activity takes place and where fuel concentrations and connectivity are sufficient to fuel wildfire are the areas where wildfires are most likely.

Extent

Risk to wildfire can be measured by using the Keetch-Byram Drought Index (KBDI). KBDI relates weather conditions and expected, potential fire behavior as shown in Table 15-1. KBDI is based upon daily water balance, precipitation, and soil moisture. KBDI ranges from 0 to 800. A KBDI score of 0 indicates no water depletion, while a score of 800 represents extremely dry conditions.

Table 15-1. KBDI scores correspond to potential fire behavior as follows.

KBDI Value Range	Qualitative Drought Extent
0 - 200	Soil moisture and large class fuel moistures are high and do not contribute much to fire intensity. Typical of early spring following winter precipitation.
200 – 400	Fuels are beginning to dry and contribute to wildfire intensity. Heavier fuels will still not readily ignite and burn. This is often seen in late spring or early summer.
400 – 600	Lower litter and duff layers contribute to fire intensity and will burn actively. Wildfire intensity begins to increase significantly. Larger fuels could burn or smolder for several days. This is often seen in late summer and early fall.
600 – 800	Often associated with more severe drought with increased wildfire occurrence. Intense, deep-burning fires with extreme intensities can be expected. Live fuels can also be expected to burn actively at these levels

Webb County has an average KBDI[1] of 311, minimum of 112, and maximum of 518. On average Webb County has a moderate level of risk. Because KBDI indicates current conditions, care should be taken to ensure that KBDI is examined to determine risk. Droughts or extreme weather conditions may drive KBDI up or down in a short time.

Historically, the largest fire in the planning area (excluding controlled, fuel-management burns), based on TAMFS, was about 20 acres. In the future, the worst that is expected to occur in the City of Laredo is a fire size of 20 acres.

Extent may also be examined in terms of fire intensity. Table 15-2 provides the Texas A&M Forest Service Fire Intensity Rating. For future planning purposes, the City of Laredo can expect to experience a fire of Moderate to Low intensity on the Texas A&M Forest Service Fire Intensity rating. The Wildfire Risk associated with the City of Laredo may be viewed in Figure 15-1.

[1] Texas Weather Connection, https://twc.tamu.edu/kbdi

Table 15-2 – Texas A&M Forest Service Fire Intensity Rating

Texas A&M Forest Service Fire Intensity Ratings	
Intensity Rating	**Description**
Very Low	Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and nonspecialized equipment.
Low	Small flames, usually less than two feet long; small amount of very short-range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.
Moderate	Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.
High	Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property
Very High	Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

Occurrences

Records from the Texas A&M Forest Service (TAMFS) indicate that from November 2010 to July 2018, the range of dates for which spatial wildfire data is provided, Webb County experienced a total of 32 wildfires. 23 of these wildfires were less than or equal to 1 acre, 7 wildfires were greater than one but less than or equal to 5 acres, and 2 wildfires were greater than 5 but less than or equal to 20 acres resulting in a total burned area of 69.72 acres. TAMFS records indicate that debris burning is the most commonly known cause of fires in Webb County, causing 12 fires. Equipment use is next most common causes of fires in Webb County, causing 7 fires in the eight-year period. 22% of these wildfires have “Unknown” or “Miscellaneous” sources of ignition. Records of occurrence are provided in the summary table, and a partial list is provided in Table 15-3, using TAMFS data. These record locations may be viewed in Figures 15-1. No damages were reported.

Due to the wide-ranging variability in wildfire data, the Webb County data provided by the Texas A&M Forest Service is used to calculate the City of Laredo hazard probability. This dataset is the most detailed available, and therefore most suited for analysis.

Table 15-3 Historical Wildfire Occurrences[2]

Start Date	Acres Burned	Cause	Sub-Cause/Narrative
11/23/2010	2.50	Debris Burning	Construction debris (boards, panels, cardboard, etc.)
4/4/2011	15.00	Children	Playing with matches
5/14/2011	3.00	Children	Playing with matches
9/27/2011	1.00	Equipment Use	Vehicles (catalytic converters, faulty mufflers, dragging metal)
8/3/2012	1.00	Miscellaneous	Fireworks
5/21/2013	0.20	Debris Burning	Brush pile burning
6/29/2013	20.00	Equipment Use	Farm equipment (hay balers, tractors, etc.)
8/7/2013	0.20	Debris Burning	Prescribed burning (forest brush control/hazard reduction, grassland brush control)
4/26/2014	1.00	Miscellaneous	Other
8/17/2015	2.00	Miscellaneous	Other
2/16/2016	1.00	Smoking	Origin traceable to smoking
12/8/2016	1.00	Equipment Use	Oil field equipment (pump jacks, faulty electric lines, etc.)
1/2/2017	1.00	Equipment Use	Vehicles (catalytic converters, faulty mufflers, dragging metal)
1/20/2017	0.01	Equipment Use	Vehicles (catalytic converters, faulty mufflers, dragging metal)
1/22/2017	1.00	Power Lines	NULL
1/22/2017	1.00	Railroads	Origin traceable to trains
1/24/2017	1.00	Equipment Use	Vehicles (catalytic converters, faulty mufflers, dragging metal)
1/26/2017	0.10	Debris Burning	Brush pile burning
1/28/2017	1.00	Debris Burning	Brush pile burning
1/31/2017	1.00	Miscellaneous	Other
3/2/2017	5.00	Debris Burning	Pasture and field burning (including grass, crop residues)

[2] Texas A&M Forest Service, 2023

Table 15-3 Historical Wildfire Occurrences[2]

Start Date	Acres Burned	Cause	Sub-Cause/Narrative
4/14/2017	1.40	Debris Burning	Brush pile burning
5/6/2017	3.00	Debris Burning	Brush pile burning
5/9/2017	1.00	Debris Burning	Subdivision development, clearing
5/31/2017	0.10	Debris Burning	Brush pile burning
6/30/2017	0.10	Equipment Use	Vehicles (catalytic converters, faulty mufflers, dragging metal)
7/4/2017	0.01	Debris Burning	Construction debris (boards, panels, cardboard, etc.)
7/19/2017	0.10	Debris Burning	Brush pile burning
2/21/2018	2.00	Incendiary	Spite
5/22/2018	1.00	Unknown	Cause and Origin Not Identified
7/3/2018	1.00	Unknown	Cause and Origin Not Identified
7/13/2018	1.00	Unknown	Cause and Origin Not Identified

Probability

Hazard probability or reoccurrence intervals are calculated based upon the number of historical events during the period of examination. For example, if four wildfires were to have taken place during a 50-year reporting period, the reoccurrence interval would be about 12.5 years, or an 8% annual chance of wildfire. Probabilities are shown below in the summary table.

Probabilities of future wildfire events are also subject to the effect of future conditions, such as climate change. The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. As long-term weather patterns and average temperatures change so too will the frequencies and range of anticipated intensities of wildfires. While the majority of wildfires in Webb County are manmade, the conditions brought by climate change may lead to larger, more intense, and harder to control wildfires. Climate change is expected to increase the frequency and intensity of wildfires in Texas, and Laredo will not be immune. Drier conditions and higher temperatures will raise the risk of wildfires, particularly on the outskirts of the city where development is expanding into more fire-prone areas. Public infrastructure, including roads, power lines, and water systems, could be damaged or disrupted by wildfires, affecting access to critical services. As Laredo's population grows, more people will live in areas vulnerable to wildfire, increasing the potential for loss of life and property. Fire-resistant infrastructure and effective land management practices will be crucial to reducing these risks.

Impact

The impact of wildfire is described in terms of property exposure. Data from the Texas A&M Forest Service are examined to determine residential and commercial property exposure to high wildfire risk areas. The Texas A&M Forest Service data are described in greater detail in the Vulnerability section.

Vulnerability

Vulnerability and impact to wildfire is discussed in terms of asset exposure from “low” to “very high” wildfire threat. The wildfire threat data comes from the Texas A&M Forest Service and is a unitless index ranging from 1 to 7. The TAMFS assigns the qualitative descriptions of Low (1 & 2), Moderate (3 & 4), High (5 & 6), and Very High (7).

27 of the assets described in Section 4 are in high wildfire threat areas. Of the 27 assets there are 1 WWTP, 1 WTP, 18 schools, and 7 dams.

It should be noted that the wildfire threat index is a model. Wildfires have taken place outside of areas of high risk. Conversely, there are areas of high risk that have never experienced a wildfire. When interpreting wildfire risk exposure as described by the

wildfire threat model, it is important to realize that no model will ever completely capture the variability of the real world.

Pastoral and crop lands have the potential to be impacted by wildfire. Crops and pastures can become fuel for wildfires. Wildfires that do not pose a direct threat to human lives or safety can still be damaging due to their impacts on economies dependent upon crop or livestock production. The 2021 National Land Cover Database (NLCD) dataset was used to calculate pasture and crop area in the City of Laredo.

City of Laredo Wildfire Hazard

LOCATION
City Wide

EXTENT*,**		
Sources of Ignition	**Total Burned Acreage**	**Maximum Single Fire Acreage**
Debris Burning Equipment Use Incendiary Miscellaneous Power Lines Smoking Unknown Children Railroads	69.72	20

OCCURRENCES		
Total Number of Fires* (Range: 2010-2018)	**Risk to Health and Safety****	**Property Damage****
32	0 deaths, 0 injuries	$0

*Texas A&M Forest Service, 2023

**NCDC Wildfires Database, 2023

PROBABILITY	
Future Wildfire Events Likelihood	**Reoccurrence Interval**
400% annual chance	1 fire every 91 days

IMPACT		
Wildfire Risk	**Residential Property Risk***	**Non-Residential Property Risk***
Low	$2,997,754	$295,670,442
Moderate	$143,104,334	$299,702,647
High	$4,535,037,823	$3,987,676,702

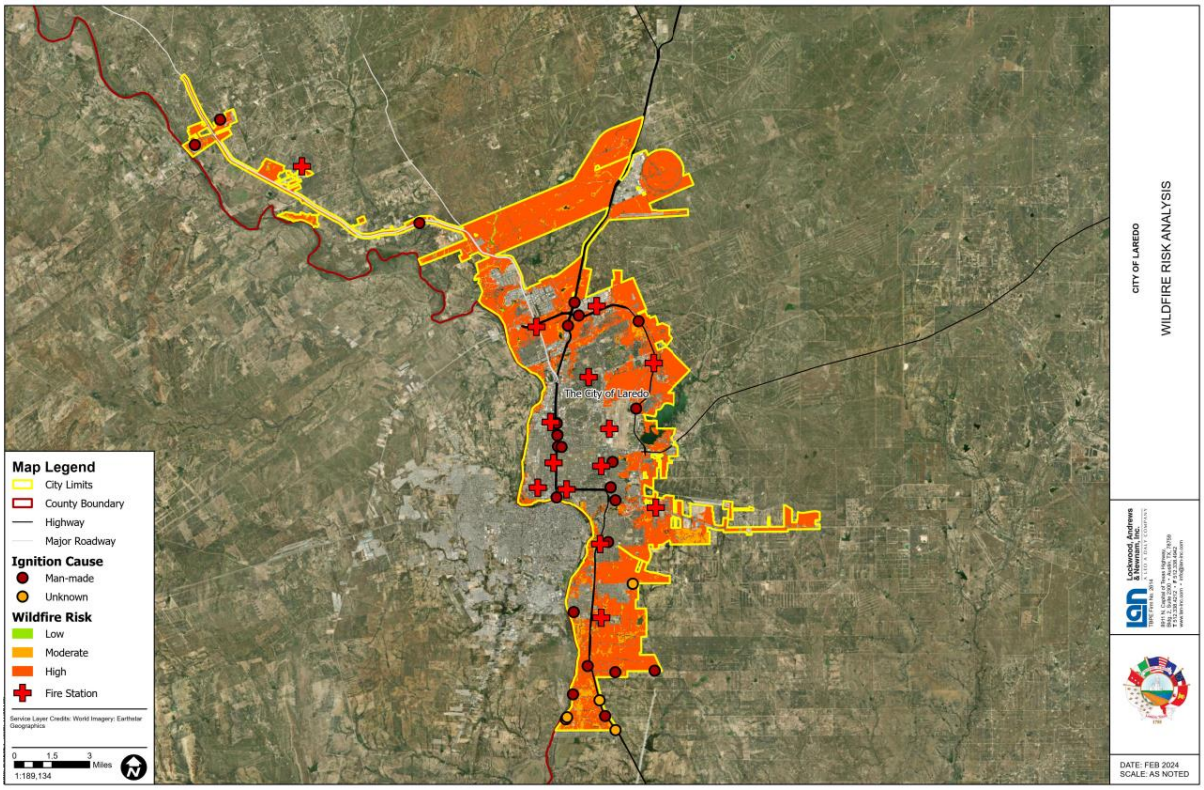
VULNERABILITY			
People at Risk**	**Crop Land (Acres)*****	**Roadway (Mile)**	**Railroad (Mile)**
256,187	765	208	3

*Webb County Appraisal District, 2022

**Census Bureau Population Estimate 2022

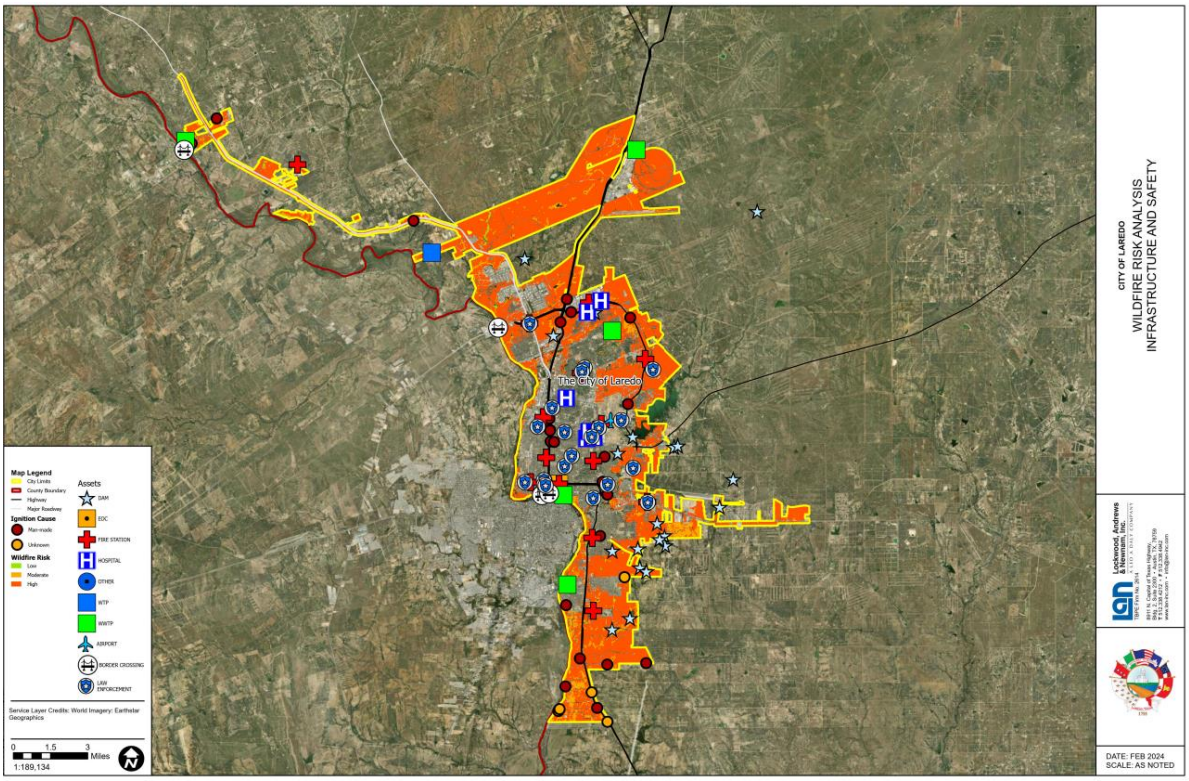
***USDA Crop Land and National Land Cover Dataset, 2021

Figure 15-1. Fire Locations / Origins and Wildfire Threat Index for the City of Laredo*



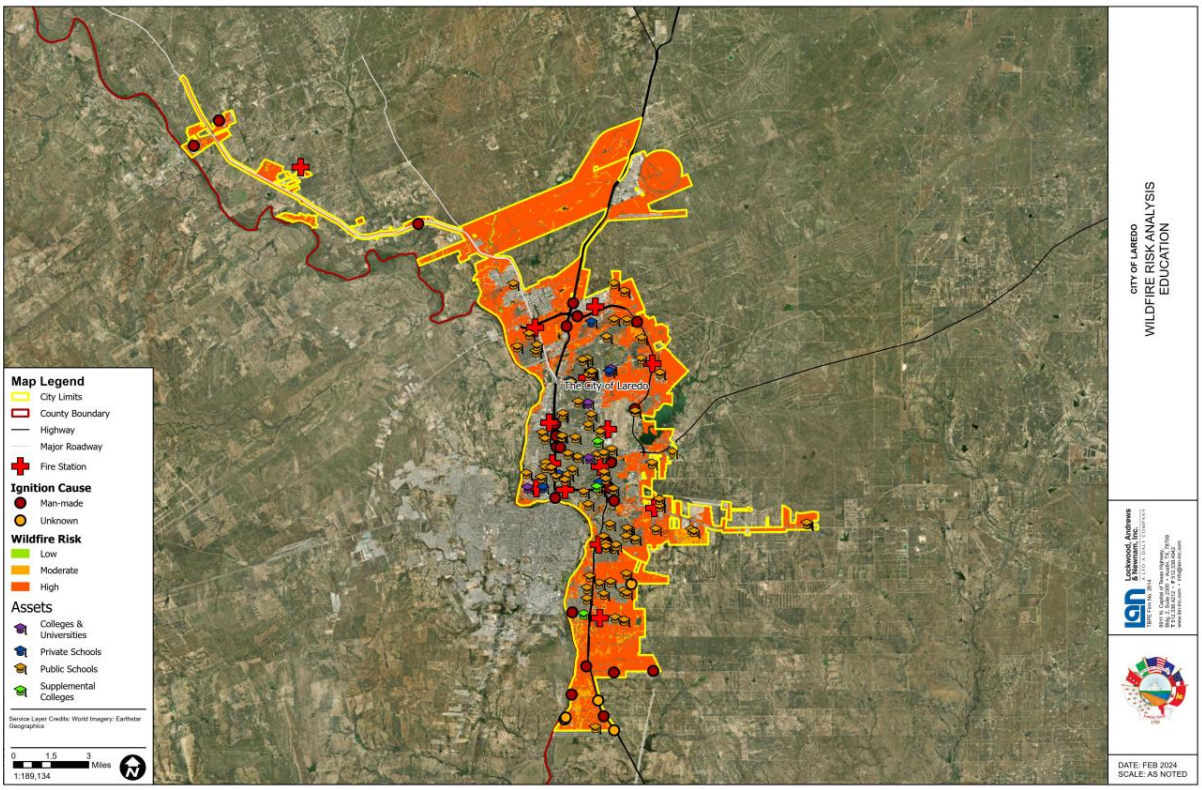
*Texas A&M Forest Service, 2023

Figure 15-1. Fire Locations / Origins and Wildfire Threat Index for the City of Laredo* - (Infrastructure and Safety)



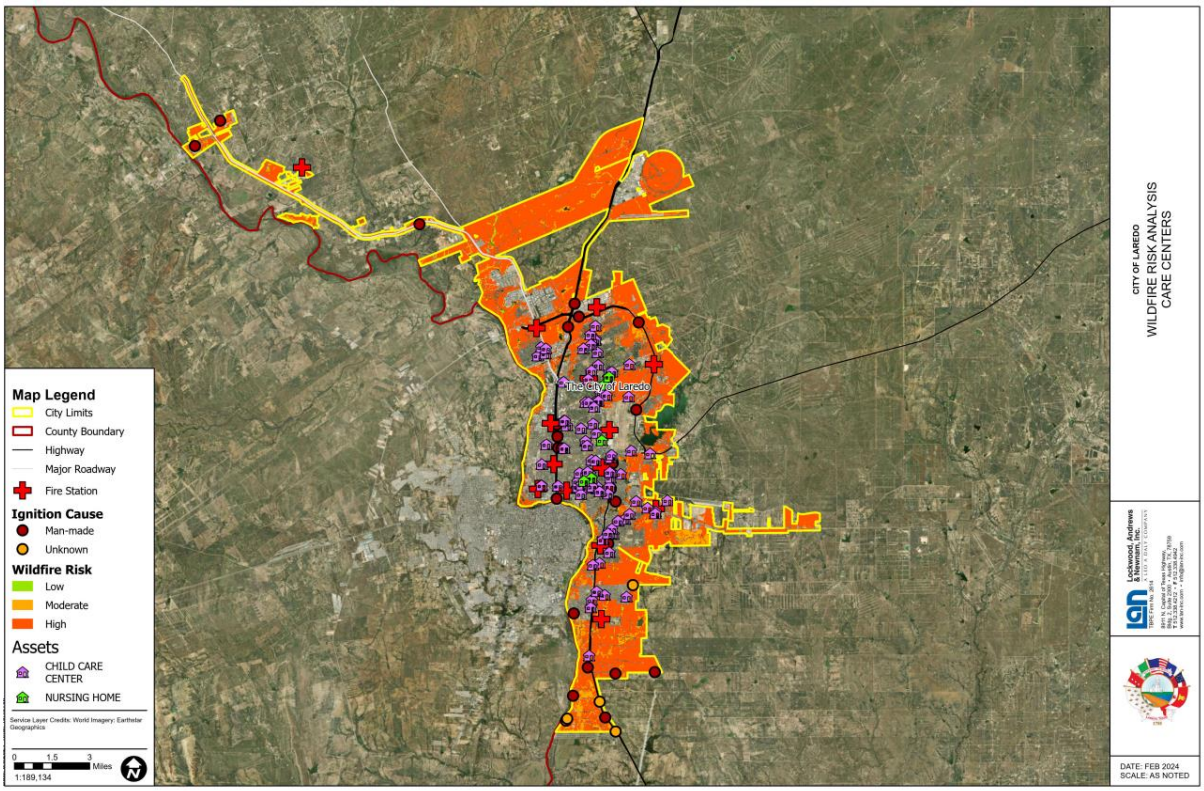
*Texas A&M Forest Service, 2023

Figure 15-1. Fire Locations / Origins and Wildfire Threat Index for the City of Laredo* - (Education)



*Texas A&M Forest Service, 2023

Figure 15-1. Fire Locations / Origins and Wildfire Threat Index for the City of Laredo* - (Care Centers)



*Texas A&M Forest Service, 2023

Section 16: Severe Winter Storms

Severe Winter Storms Hazard Overview

Description

A severe winter storm event is defined as a storm with snow, ice, or freezing rain. Severe winter storms are rare for the Southern Texas area. Severe winter storms may include snowstorms, blizzards, cold waves, and ice storms. Snowstorms include four or more inches of snow in a 12-hour period. Blizzards are characterized by low temperatures and strong winds in excess of 35 mph with large amounts of drifting snow. A cold wave is a winter cold front with a drastic drop in temperature. An ice storm occurs when rain falls out of the warm and moist upper layers of the atmosphere into a cold and dry layer near the ground.[1]

Location

Winter storms vary in location, intensity and duration but are considered rare occurrences in the City of Laredo. Winter storms have the capability to affect the entire planning area

Extent

Table 16−1 below displays the magnitude of severe winter storms. The wind−chill factor is further described in Figure 16−1. This is an index developed by the National Weather Service, although the chart is not applicable when temperatures are over 50˚ or winds are calm.

[1] State of Texas Mitigation Plan Update 2023

Table 16-1. Extent Scale - Winter Weather Alerts

Alert Type	Description
Winter weather advisory	This alert may be issued for a variety of severe conditions. Weather advisories may be announced for snow, blowing or drifting snow, freezing drizzle, freezing rain, or a combination of weather events.
Winter storm watch	Severe winter weather conditions may affect your area (freezing rain, sleet or heavy snow may occur separately or in combination).
Winter storm warning	Severe winter weather conditions are imminent.
Freezing rain or freezing drizzle	Rain or drizzle is likely to freeze upon impact, resulting in a coating of ice glaze on roads and all other exposed objects.
Sleet	Small particles of ice usually mixed with rain. If enough sleet accumulates on the ground, it makes travel hazardous.
Blizzard warning	Sustained wind speeds of at least 35 mph are accompanied by considerable falling or blowing snow. This alert is the most perilous winter storm with visibility dangerously restricted.
Frost/freeze warning	Below freezing temperatures are expected and may cause significant damage to plants, crops and fruit trees.
Wind chill	A strong wind combined with a temperature slightly below freezing can have the same chilling effect as a temperature nearly 50 degrees lower in a calm atmosphere. The combined cooling power of the wind and temperature on exposed flesh is called the wind−chill factor.

Table 16-2 Historical Extents

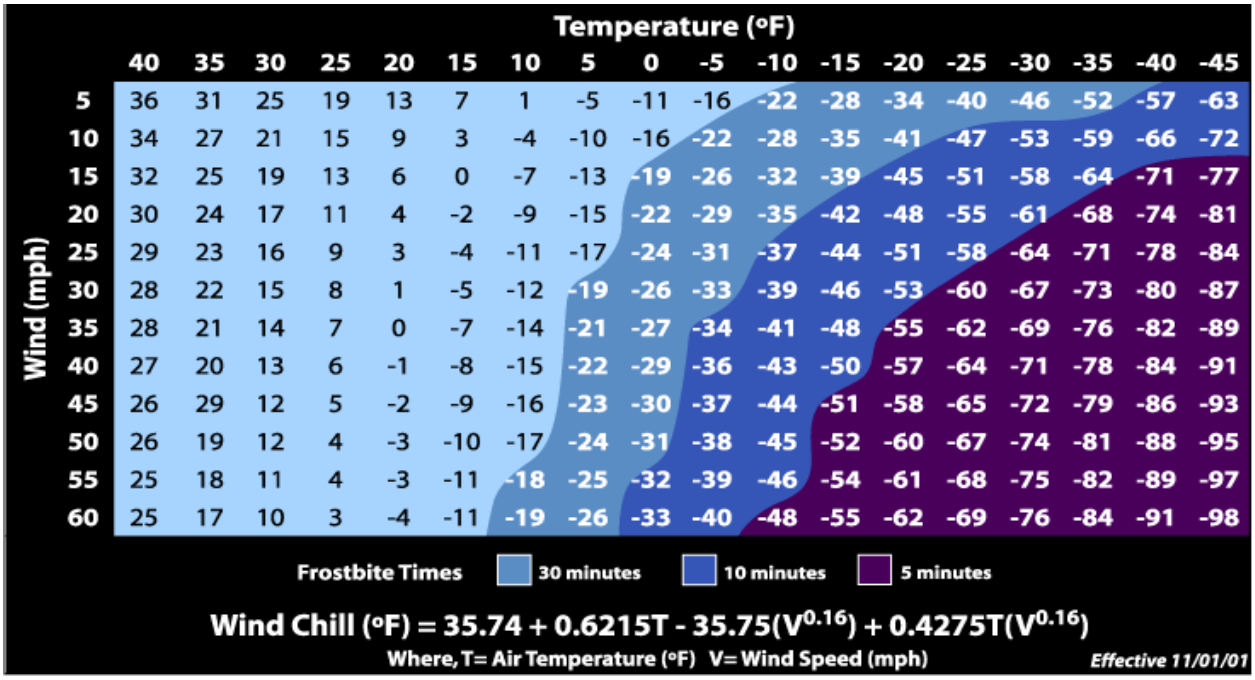
Temperature (°F)	Snowfall (inches)
11°	1.1”

*Records are limited by the presence of a National Weather Service weather station within the planning area.

Wind chill temperature is a measure of how cold the wind makes real air temperature feel to the human body, similar to the heat index for extreme heat (Figure 16−1). Since wind can dramatically accelerate heat loss from the body, a blustery 30˚F Day would feel just as cold as a day with temperatures around 0˚F. The City of Laredo has never experienced a blizzard, but based on previous occurrences, the region has been subject to winter storm watches, warnings, freezing rain, sleet, snow, and wind chill. Historic low temperatures and snowfall amounts have been recorded in Table 16-2.

Based upon historical data, the worst that can be expected in the future in the planning area is 1 inch of snow and a temperature of 10° F. Wind chill factors would further lower the apparent temperature, potentially as low as -12 degrees.

Figure 16-1. Wind Chill Chart[2]



Occurrences

Severe winter storm events in the City of Laredo are rare. January is the month when snow, sleet or freezing rain is most likely to be observed; yet winter weather conditions can occur at any time during the winter and early spring months. Table 16-3 shows historical occurrences for the area since 1950, as well as the type of event and the amount of damage provided by the National Climatic Data Center (NCDC). Although there have been relatively few storms, it is likely that several occurrences have gone unreported. The NCDC has zero reported deaths among these events.

[2] NOAA

Table 16-3. Historical Winter Storm Events, 1950-2023[3]

Date	Event Type	Fatalities	Injuries	Property Damage	Crop Damage
12/24/2004	Heavy Snow	0	0	$0	$0
12/8/2006	Winter Weather	0	0	$0	$0
1/8/2010	Frost/Freeze	0	0	$0	$0
2/3/2011	Ice Storm	0	0	$100,000	$0
12/7/2017	Heavy Snow	0	0	$0	$0
2/14/2021	Cold/Wind Chill	0	0	$1,500,000	$0
2/4/2022	Cold/Wind Chill	0	0	$0	$0
12/22/2022	Cold/Wind Chill	0	0	$0	$0

Probability

Hazard probability or reoccurrence intervals are calculated based upon the number of historical events during the period of examination. For example, in the past seven Winter Storm events that have taken place during a 73-year reporting period, the reoccurrence interval would be about 2.7 years, or a 9.59% annual chance of a winter storm event. This indicates an event is not likely in the next five years. Probabilities of winter storm events are also subject to the effect of future conditions, such as climate change. The effects of climate change include sea level rise, changes in weather patterns like drought and flooding, and much more. As long-term weather patterns and average temperatures change so too will the frequencies and range of anticipated intensities of winter storm events. Climate change could lead to more erratic and extreme weather patterns, including unexpected cold snaps. When winter storms occur, they can cause significant disruption to public infrastructure, including roads, power lines, and water systems, leading to power outages, burst pipes, and dangerous travel conditions. Population growth will increase the demand for emergency services and heating during such events, and expanding development may place more infrastructure at risk from freezing temperatures. Ensuring that buildings and utilities are better insulated and prepared for extreme cold will be necessary to minimize the impacts of future winter storms.

Impact

Winter storms are associated with freezing or frozen precipitation such as freezing rain, sleet, snow and the combined effects of winter precipitation and strong winds. Wind chill is a function of temperature and wind. Low wind chill is a product of high winds and freezing temperatures. The leading cause of death during winter storms is transportation accidents. Hypothermia and frostbite are other dangers from very cold winter temperatures.

[3] NCDC Storm Events Database, https://www.ncdc.noaa.gov/stormevents/

Historical evidence shows that most of the area has a low risk of winter storm activity; however, past reported property damages indicate that, while winter events (typically consisting of snow and ice) do occur, their economic impacts are typically not severe across the entire study area. All buildings and facilities are considered to be exposed to this hazard and could potentially be impacted because it cannot be predicted where a winter storm event may cause damage or disruption. The agricultural industry in the City of Laredo is not usually affected by winter storms as crops are not usually planted during the winter months.

Vulnerability

Winter storm vulnerability in the planning area is widespread and has the potential to affect all assets and residents. Vulnerabilities in the planning area are exacerbated by existing vulnerabilities from other hazards in the HMP. Winter storms in the City of Laredo are rare but do pose an annual reoccurrence chance of 10.95%. All residential, commercial, and agricultural assets within the planning area are vulnerable which can result in direct structural and social damages. Critical facilities are vulnerable in the planning area; schools, border crossings, emergency operations centers, fire stations, dams, hospitals, water treatment plants, wastewater treatment, and airports are all of the critical facilities at risk.

Winter storm's ability to affect the planning area at the household level further disrupts economic and social trends by increasing energy consumption for heating sources, increasing household fire risk, impede police and firefighting efforts, and posing structural damages to pipes not fitted for winter storm temperatures.

City of Laredo Severe Winter Storms Hazard

LOCATION
City Wide

OCCURRENCE	EXTENT				
Number of Events 1950-2023	Frost/Freeze	Winter Weather	Ice Storm	Heavy Snow	Cold/Wind Chill
8	1	1	1	2	3

PROBABILITY			
Number of Events 1950-2023	Record Time Period	Time Period Years	Probability
8	01/01/1950 to 01/01/2023	73	1 extreme winter event estimated every 9.125 years

IMPACT				
Number of Events	Deaths	Injuries	Property Damage	Crop Damage
8	0	0	$1,600,000	Negligible

VULNERABILITY				
Population (City)*	Property Value**		Crop Land	
	Commercial	Residential	Acres***	Value****
256,187	$6,211,372,448	$7,920,774,658	765	$28,395,000

* Census Bureau Population Estimate 2022

**Webb County Appraisal District, 2022

***USDA Crop Land and National Land Cover Dataset, 2021

****USDA Webb County Census of Agriculture, 2017

Section 17: Mitigation Actions

Mitigation Strategy

The Planning Team reviewed the goals and objectives from the Previous Pre-Disaster Mitigation Plan and Hazard Analysis. Mitigation actions, new and old, are prioritized to reflect overall mitigation strategy, which is to reduce and eliminate the long-term risk of loss of life and property damage from the full range of disasters affecting the planning area. Each mitigation action is presented in the section below. Each mitigation action included is in priority order (high, moderate, low), by best estimate of cost, if applicable, by potential funding source, by which department or agency will administer the action and by the action timeline. Mitigation priority was assessed qualitatively in discussion with the planning team by looking at anticipated benefits, feasibility of implementation, public perception, and cost. Actions have been updated to reflect plan approval, expiration, and revisions.

The City of Laredo has multiple authorities to implement the mitigation strategy. Authority includes, but is not limited to, local planning and zoning, public works efforts, emergency management, tax authority, annual operation budgets, building codes and ordinances. The City of Laredo participates in the NFIP. General hazard mitigation goals are defined below.

Goal 1
Protect public health and safety.

Objective 1.1

Implement mitigation actions that will assist in protecting lives and property by making homes, businesses, public facilities, and infrastructure more resistant to hazards.

Objective 1.2

Maximize the utilization of the latest technology to provide adequate warning, communication, and mitigation of hazard events.

Objective 1.3

Reduce the danger to, and enhance protection of, high risk areas during hazard events.

Objective 1.4

Ensure that public and private facilities and infrastructure meet established building codes and enforce the codes to address any deficiencies.

Goal 2
Protect new and existing properties.

Objective 2.1

Reduce repetitive losses to the National Flood Insurance Program (NFIP).

Objective 2.2

Use the most cost-effective approach to protect existing buildings and public infrastructure from hazards.

Objective 2.3

Review existing ordinances, building codes, and safety procedures and enforce regulatory measures to ensure they protect lives and property.

Goal 3

Build and support partnerships to enhance mitigation to continuously become less vulnerable to hazards.

Objective 3.1

Build and support local partnerships to continuously become less vulnerable to hazards.

Objective 3.2

Build a cadre of committed volunteers to safeguard the community before, during, and after a disaster.

Objective 3.3

Build hazard mitigation concerns into planning and budgeting processes.

Goal 4

Leverage outside funds for investment in hazard mitigation.

Objective 4.1

Maximize the use of outside sources of funding to help communities with local match requirements for implementing hazard mitigation actions to reduce risk.

Objective 4.2

Maximize participation of property owners in protecting their properties.

Objective 4.3

Maximize insurance coverage to provide financial protection against hazard events.

Objective 4.4

Prioritize mitigation projects based on cost-effectiveness, starting with those sites facing the greatest threat to life, health and property.

Goal 5

Increase the understanding of residents for the need for mitigation, and steps they can take to protect people and properties.

Objective 5.1

Heighten public awareness of the full range of natural and man-made hazards they face.

Objective 5.2

Educate the public on actions they can take to prevent or reduce the loss of life or property from all hazards.

Objective 5.3

Publicize and encourage the adoption of appropriate hazard mitigation measures.

Mitigation Action Status Update

Mitigation actions included in the previous hazard mitigation plan continue to be relevant and are included along with new mitigation actions in Hazard Mitigation Plan update. The communities' priorities have not changed. Mitigation actions from the previous Hazard Mitigation Plan are presented in the tables titled (Previous Plan Mitigation Actions); new mitigation actions will be presented in the tables titled (New Mitigation Actions). Many of the hazard mitigation actions from the previous hazard mitigation plan remain active due to the need for annual implementation or long-term project timelines. Mitigation Actions that are completed have been updated with the action completion date in the timeline field. Since the last version of the plan was approved, in 2009, there has been no incorporation of the mitigation plan into other planning mechanisms.

City of Laredo Mitigation Actions (Previous Plan Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	TIMELINE
Dam Information Deficiency Study Conduct a study to alleviate dam information deficiency	Dams	High	Office of Emergency management budget	Office of Emergency Management	Education and Awareness	N/A	1 year
Tree Management Program Prune trees near power lines and educating the public on how to safely prune tree limbs.	High Winds	Low	HMGP	Public Works	Education and Local Plans	N/A	1 year
Building Retrofit Awareness Educate on mitigating wind damage and identify alternative funding solutions to retrofit existing structures.	High Winds	Low	HMGP	Building Department	Education and Awareness	Existing buildings will be retrofitted to mitigate wind damage	Ongoing

City of Laredo Mitigation Actions (Previous Plan Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	TIMELINE
Jacaman Rd. Retention Pond Project Serves as a reservoir and prevents flooding in the event of excessive rainfall.	Flood	Medium	FMA, TWDB FIF	Environmental Department	Local Plans and Regulations, Structure, and Infrastructure	N/A	3 years
Flooded Roadway Barricade deployment and Sandbag Distribution Program Prevent motorists from driving into flooded roadways so they don't endanger their lives or others.	Flood	Medium	TWDB FIF, BRIC	Public Works	Structure and Infrastructure	N/A	As needed and during flood events
Guatemozin St. Residential Buy-Out Project City buys existing homes that sustain significant flooding damage to eliminate the risk of loss of life or property.	Flood	Medium	FMA, TWDB FIF	Building Department	Structure and Infrastructure	Existing buildings will be purchased by the city and replacement structures will be placed outside of flooded areas	Ongoing

City of Laredo Mitigation Actions (Previous Plan Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	TIMELINE
Low Water Crossing Warning Project Place warning signs at low water crossings to reduce attempts from motorists to cross flooded roadways.	Flood	Medium	HMGP	Traffic Department	Structure and Infrastructure	N/A	Ongoing
Early Severe Weather Warning System Implement an early warning system to give instructions before or during a significant emergency event to save lives by warning those in danger of what to do.	All	Low	BRIC	Fire Department	Education and Awareness Program	N/A	2 Years

City of Laredo Mitigation Actions (Previous Plan Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	TIMELINE
Emergency Alerting System Coordination and Awareness Project Improved coordination of the Emergency Alerting System to allow quality and accurate information to the public. An awareness campaign to explain the program and what do between a test and live alert, conducted in both English and Spanish.	All	Low	HMGP	Fire Department	Education and Awareness Program	N/A	1 Year
City Re-Fueling Station Backup Generators Purchase. Back-up generator is needed in the event of a power outage at the City's refuel facility so that there is a dependable means of re-fueling for first responders in an emergency.	All	Low	BRIC	Fleet Management	Structure and Infrastructure	Addition of a back-up generator to the City's fuel facility	1 year

City of Laredo Mitigation Actions (Previous Plan Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	TIMELINE
Portable Radios Power Inverter Installation. For an emergency or power outage power converters in city units allow for a reliable source for re-charging portable radio batteries.	All	Low	BRIC	Fleet Management	Structure and Infrastructure	Power converters placed in city units for recharging portable radio batteries	1 Year
Canal Street Drainage Improvement Canal street drainage needs improvements to reduce flooding and the City would benefit from additional resources to achieve this.	Flood	Medium	FMA	Utilities Department	Structure and Infrastructure	N/A	2 Years
Outreach and Public Awareness. Promoting at-risk populations to use the accessible heating and cooling centers during periods of extreme hot/cold.	Extreme Heat	Low	CDBG	Fire Department	Education and Awareness Program	N/A	Ongoing

City of Laredo Mitigation Actions (Previous Plan Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	TIMELINE
Prepare Vulnerable Populations for Winter Weather Create disaster supply kits for special needs facilities and work with special needs populations on alternative heating systems and there proper/safe use.	Extreme Heat	Low	CDBG	Fire Department	Education and Awareness Program, Local Plans and Regulations	N/A	1 Year
Water Saving Measures Educating citizens on the positive benefits of water saving measures (Ex. low-flow water saving showerheads and toilets) when extra water is needed during the summer months.	Drought	Low	City of Laredo Public Works Budget	Utilities Department	Education and Awareness Program	N/A	Ongoing

City of Laredo Mitigation Actions (Previous Plan Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	TIMELINE
Water Use Ordinances The City has passed an ordinance (2005-O-339 passed on 12/19/05) to regulate the use of non-essential water consumption during droughts.	Drought	Low	City of Laredo Public Works Budget	Utilities Department	Local Plans and Regulations	N/A	Ongoing
Public Education for Fire Safe Construction Promoting non-combustible roof covering, fire safe construction, smoking hazards, risk of recreational fires, and the importance of clearing brush and grass away from buildings.	Fire	Low	HMGP	Fire Department	Education and Awareness Program	N/A	1 Year

City of Laredo Mitigation Actions (Previous Plan Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	TIMELINE
Public Education for Fire Safety Creating a Fire Prevention Campaign to educate the public on fire safety can prevent the number of fires and lives lost each year.	Fire	Low	HMGP	Fire Department	Education and Awareness Program	N/A	1 Year
Smoke Alarm Distribution Investing in an inventory of fire alarms to distribute to those in need.	Fire	Low	CDBG	Fire Department	Education and Awareness Program, Local Plans and Regulations	Addition of a fire alarm to existing buildings	1 Year
Reduce Risk of Hazardous Material Incidents Enhance railroad chemical spill mitigation.	Hazard Materials	Low	HMGP	Fire Department	Local Plans and Regulations	N/A	Ongoing

City of Laredo Mitigation Actions (Previous Plan Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	TIMELINE
Reduce the Impacts of a Hazardous Materials Incident Educate teachers and staff in areas near hazardous materials facilities /transportation routes how to limit exposure to hazardous materials to students during and incident.	Hazard Materials	Low	HMGP	Fire Department	Education and Awareness Program	N/A	1 Year
Manufactured Home Protection Educating owners about the need to anchor their manufactured homes and exterior attachments to prevent injury. Identification of alternative funding solutions so that owners can implement this action.	Tornado	Low	CDBG	Community Development	Education and Awareness Program	Anchoring manufactured homes and exterior attachments	2 Year

City of Laredo Mitigation Actions (Previous Plan Mitigation Actions)							
PROJECT TITLE AND DESCRIPTION	**HAZARD ADDRESSED**	**PRIORITY**	**POTENTIAL FUNDING SOURCE**	**RESPONSIBLE AGENCY**	**TYPE OF ACTION**	**EFFECT ON NEW AND EXISTING BUILDINGS**	**TIMELINE**
Reduce Risks and Vulnerability of People in Tornado Hazard-Prone Areas Through Public Awareness. Educating the public on tornado safety like emergency sheltering, evacuation routes, personal emergency preparedness, and coordination with media to assure appropriate warning.	Tornado	Low	BRIC	Fire Department	Education and Awareness Program	N/A	1 Year

City of Laredo Mitigation Actions (New Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	INCORPORATION INTO EXISTING PLANS & PROCEDURES	TIMELINE
Conduct Annual Risk Assessment	Drought, Hurricane and Tropical Storm, Flood, Windstorm, Extreme Heat, Lightning, Tornado, Hailstorm, Expansive Soils, Dam and Levee Failure, Wildfire, Winter Storm	High	HMGP	City of Laredo Fire Department	Local Plans and Regulations	Emergency Operations Plan	Emergency Planning and Emergency Operations Plan	1 year
Review and Update Business Continuity Plan	Drought, Hurricane and Tropical Storm, Flood, Windstorm, Extreme Heat, Lightning, Tornado, Hailstorm, Expansive Soils, Dam and Levee Failure, Wildfire, Winter Storm	High	HMGP	City of Laredo Fire Department	Local Plans and Regulations	Emergency Operations Plan	Annual Budget	1 year

City of Laredo Mitigation Actions (New Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	INCORPORATION INTO EXISTING PLANS & PROCEDURES	TIMELINE
Review and Update Damage Assessment Policy	Drought, Hurricane and Tropical Storm, Flood, Windstorm, Extreme Heat, Lightning, Tornado, Hailstorm, Expansive Soils, Dam and Levee Failure, Wildfire, Winter Storm	High	HMGP	City of Laredo Fire Department	Local Plans and Regulations	Emergency Operations Plan	Annual Budget Emergency Planning and Emergency Operations Plan	1 year
Implement Public Education programs to educate population on dangers and mitigation options	Drought, Hurricane and Tropical Storm, Flood, Windstorm, Extreme Heat, Lightning, Tornado, Hailstorm, Expansive Soils, Dam and Levee Failure, Wildfire, Winter Storm	High	HMGP, CDBG	City of Laredo Fire Department	Local Plans and Regulations	Emergency Operations Plan	Annual Budget, and Emergency Planning and Emergency Operations Plan	1 year

City of Laredo Mitigation Actions (New Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	INCORPORATION INTO EXISTING PLANS & PROCEDURES	TIMELINE
Implement Special Needs Public Education and Outreach	Drought, Hurricane and Tropical Storm, Flood, Windstorm, Extreme Heat, Lightning, Tornado, Hailstorm, Expansive Soils, Dam and Levee Failure, Wildfire, Winter Storm	High	HMGP	City of Laredo Fire Department	Local Plans and Regulations	Emergency Operations Plan	Annual Budget, Emergency Planning and Emergency Operations Plan	1 year
Install Emergency Generators for Emergency Operations & Logistics Support	Dam and Levee Failure, Flood, Hurricane and Tropical Storm	Medium	BRIC	City of Laredo Fire Department	Local Plans and Regulations	Emergency Operations Plan	Annual Budget, Emergency Planning and Emergency Operations Plan, Critical Facilities	1 year

City of Laredo Mitigation Actions (New Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	INCORPORATION INTO EXISTING PLANS & PROCEDURES	TIMELINE
Chacon Creek Flood Control Project	Flood	High	FMA	United States Corps of Engineers, City of Laredo Environmental Services Department	Structure and Infrastructure	Will provide protection to new and existing buildings	Floodplain Ordinance/ Stormwater Management	5 years (2025-30)
Manadas & Zacate Creek Floodplain Studies	Flood	High	TWDB FIF	Texas Water Development Board (TWDB), City of Laredo Environmental Services Department	Structure and Infrastructure	Floodplain Ordinance/ Stormwater Management	Floodplain Ordinance/ Stormwater Management, Land Use Maps and New Flood Studies	1 year (2024)
Ponderosa Hills Flood Control Project	Flood	High	Locally Bond Funded, Private Landowner Funded	City of Laredo Environmental Services Department	Structure and Infrastructure	Will provide protection to new and existing buildings	Floodplain Ordinance/ Stormwater Management	N/A
Forest Loop Drainage Channel	Flood	High	Locally Bond Funded	City of Laredo Environmental Services Department	Structure and Infrastructure	Will provide protection to new and existing buildings	Floodplain Ordinance/ Stormwater Management	N/A

City of Laredo Mitigation Actions (New Mitigation Actions)

PROJECT TITLE AND DESCRIPTION	HAZARD ADDRESSED	PRIORITY	POTENTIAL FUNDING SOURCE	RESPONSIBLE AGENCY	TYPE OF ACTION	EFFECT ON NEW AND EXISTING BUILDINGS	INCORPORATION INTO EXISTING PLANS & PROCEDURES	TIMELINE
MS4 Underground Drainage Study	Flood	High	TWDB FIF	Texas Water Development Board (TWDB), City of Laredo Environmental Services Department	Structure and Infrastructure	Floodplain Ordinance/ Stormwater Management, Land Use Maps and New Flood Studies	Floodplain Ordinance/ Stormwater Management, Land Use Maps and New Flood Studies	N/A
Shade Haven: Laredo's Urban Forest Project for Health and Resilience - Environmental and Climate Justice Community Change Grants Program	Extreme Heat, Drought	High	EPA Grant	City of Laredo Public Health Department	Education and Awareness	N/A	Annual Budget, and Emergency Planning and Emergency Operations Plan	3 Years
Roadway Low Water Crossing Warning System	Flood	High	HMGP	Laredo City Engineering	Structure and Infrastructure	Emergency Planning and Emergency Operations Plan, and Floodplain Ordinance/ Stormwater Management	Emergency Planning and Emergency Operations Plan, and Floodplain Ordinance/ Stormwater Management	N/A

Section 18: Plan Maintenance

Plan Maintenance Procedures

The following is an explanation of how the Planning Team will implement the Hazard Mitigation Action Plan and continue to evaluate and enhance it over time. In order to ensure that the Plan remains current and relevant, the following plan maintenance procedures will be addressed:

- Ensure the mitigation strategy remains current and is implemented according to Plan procedures.
- Secure and maintain an ongoing mitigation program throughout the community.
- Integrate short and long-term mitigation objectives into community officials' daily roles and responsibilities.
- Continued Public Involvement and maintain momentum by routine engagement of the Plan's progress.

Monitoring and Evaluation

Periodic tracking of the Plan is required to ensure that the goals, objectives, and mitigation action plans are implemented over time. Revisions may be necessary to ensure that the Plan is in full compliance with federal regulations and state statutes. This section outlines the procedures for completing such revisions, updates, and Plan review. Table 18-1 indicates the department or title responsible for this action.

Table 18-1. Team Members Responsible for Plan Maintenance

TITLE
Emergency Management Coordinator
Mayor
Superintendent of ISD
City Secretary
Emergency Management Coordinator
City Administrator
City Secretary
Emergency Management Coordinator
Fire Chief/Emergency Management Coordinator
Vice-Chairman
District Manager
Information Technology
City Compliance Manager
City Emergency Management Director
City Community Development Director
City Planning Department Director
City Health Director
City Director of Operations
City Planning and Zoning Director
City Utilities Director
City Program Administration Director
City Epidemiology Director

Monitoring

The Hazard Mitigation planning team will convene a meeting annually to monitor the plan and track the status of each mitigation actions over the 5-year cycle of the Plan. Mitigation Actions will be assigned to team members in advance of the meetings to prepare status reports to share with the team. Mitigation action status updates will include continued feasibility for implementation and funding.

Evaluation

The City of Laredo will evaluate changes in risk, determine whether the implementation of mitigation actions is on schedule, or if there are any implementation issues such as changes in stated purposes or goals that affect mitigation priorities. The Plan Maintenance group will meet on an annual basis to identify any needed changes in the Plan based upon their evaluation activities.

Updating

Annual reports submitted by the designated Team member from each community evaluating the Plan will be used to keep the Plan updated.

Five Year Review

The Plan will be thoroughly reviewed by the appointed Planning Team at the end of three years from the approval date to determine whether there have been any significant changes in the area that may necessitate changes in the types of mitigation actions proposed. The City of Laredo will begin the update process 2 years prior to plan expiration. New flood studies and new development in flood-prone areas, an increased exposure to hazards, disaster declarations, the increase or decrease in capability to address hazards, and changes to federal or state regulations are examples of factors that may affect the content of the Plan.

The Plan review provides the Planning Team an opportunity to evaluate those actions that have been successful and to explore documenting potential losses avoided due to the implementation of specific mitigation measures. The Plan review also provides the opportunity to address mitigation actions that may not have been successfully implemented as assigned. It is recommended that the Planning Team meet to review the Plan at the end of three years as grant funds may be necessary for the development of a five-year update. Due to the timelines for grant cycles, it is wise to begin planning grant options in advance of the five-year deadline. Following the review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and Plan amendment process outlined herein. Upon completion of the review and update/amendment process, the revised Plan will be submitted to TDEM for final review and approval in coordination with FEMA.

Incorporating the Plan into Other Planning Mechanisms

The City of Laredo will work to integrate the hazard mitigation strategies into other planning mechanisms. The Planning Team will ensure that future growth, disaster recovery, historic preservation, flood response plans, and other planning mechanisms will be consistent with the goals of the Plan.

Key Planning Team members, will meet annually, and more often if warranted, to ensure mitigation actions prioritized as high to moderate are tracked and monitored based on federal Disaster Declarations, HMGP and PDM funding cycles, and other non-federal funding sources that would help communities meet the local HMA match.

The potential funding sources listed for each identified action may be used when the Planning Team member begins to seek funds to implement actions. An implementation time period, or a specific implementation date, has been assigned to each action as an incentive for completing each task and gauging whether actions are implemented in a timely manner.

Existing plans for the City of Laredo will be reviewed in light of the Plan, and Team Members will incorporate any mitigation policies and actions into these plans as appropriate. Table 18-1 indicates Planning Team member roles for incorporating actions, method of incorporation, and approving authority. Table 18-2 identifies planning mechanisms available for the City of Laredo and provides examples of how the Plan will be incorporated into current efforts.

Table 18-2. Planning Mechanisms and Method to Incorporate into the Plan

EXISTING PLANNING MECHANISM	METHOD OF USE IN HAZARD MITIGATION PLAN
Annual Budget	Funding mitigation projects and local match requirements
Emergency Planning and Emergency Operations Plan	Identifying hazards and assessing vulnerabilities
Mutual Aid Agreements	Assessing vulnerabilities/needs
Floodplain Ordinance/ Stormwater Management	Mitigation strategies; higher regulatory considerations
Land Use Maps and New Flood Studies	Assessing vulnerabilities and flood risk; development trends; long-term growth
Critical Facilities	Location and protection

EXISTING PLANNING MECHANISM	METHOD OF USE IN HAZARD MITIGATION PLAN
Building and Zoning Codes	Development trends; future growth
State Hazard Mitigation Plan	Risk analysis

It will be the responsibility of The City of Laredo to determine department or title of personnel responsible for implementation of mitigation strategies and implementation procedures.

The City of Laredo will comply with local and state requirements while incorporating this Plan into existing planning mechanisms. **Table 18-3** identifies existing hazard mitigation capabilities to support mitigation actions. The existing hazard mitigation capabilities consist of existing building codes, land use ordinances, and regulatory plans. A list of planning mechanisms and capabilities available to the City of Laredo can be found in Appendix E. The mitigation actions in Section 17 describe the planning mechanisms into which the mitigation actions will be integrated. In the process of integrating the mitigation actions into new and existing planning mechanisms. The City of Laredo will present new and existing planning mechanisms to the City Council. Upon approval by the City Council, approved actions will be acted upon and/or integrated into existing planning mechanisms.

Expansion of Capabilities

Planning Mechanism	Expansive Capabilities
City of Laredo	
City Staff	Staff are involved in the planning process and the implementation of mitigation actions. Staff will be able to help planning team members, serve as stakeholders, and coordinate the monitoring and maintenance process of this Plan.
Annual Budget Review	The City of Laredo will have an annual budget review. The city will incorporate the Plan while conducting their annual budget reviews. High priority mitigation actions will be reviewed and may potentially receive funds to
Stormwater Management Plan / Ordinance	The Plan will be consulted when updating and maintaining the City's stormwater management plan. Both documents share the goal of reducing damage and minimizing the negative impacts of development on stormwater.
Emergency Operations Plan	The Plan will be consulted when updating and maintaining the City's Emergency Operations Plan. Both documents share the goal of public safety. Many of the mitigation actions in this Plan relate to emergency operations and must be integrated.
Capital Improvement Plan	Many of the mitigation actions found in this Plan will be enacted through capital improvement projects. Consequently, the City's Capital Improvement Plan must consult the Plan for hazard mitigation projects that could be incorporated into the Capital Improvement Plan. Prioritization should be given to high priority actions.

Wildfire Protection Plan	Several of the mitigation actions defined in this Plan relate to wildfire mitigation. When updating the Community Wildfire Protection Plan, this Plan should be consulted. Likewise, when planning or executing any of the wildfire mitigation actions in this Plan, the Community Wildfire Protection Plan should be consulted. Both plans have the ultimate goal of reducing the loss of property and life from wildfire hazards.
Floodplain Ordinance	The ordinances will be used in updating the floodplain order and ensuring sound floodplain management. The goals of both documents are to reduce vulnerability to flooding hazards. The Plan will be consulted for NFIP compliance, flood risk, and extent. Information from this Plan will be reviewed for inclusion in other documents, including the floodplain order.
Comprehensive/Master Plan	The Plan will be consulted when updating the Comprehensive/Master Plan. It is important to ensure that development occurs in a manner that does not increase hazard risk. The Plan includes information regarding the location, extent, and probability of many natural hazards. By incorporating this information into the Comprehensive/Master Plan, development can be guided in a hazard-resilient manner.
Stormwater Ordinance	The Plan will be consulted when updating and maintaining the City's stormwater ordinance. The goal of reducing damage and minimizing the negative impacts of development on stormwater.
Floodplain Management Plan	The Plan will be consulted when updating and maintaining the City's Floodplain management plan. The goal of reducing damage and minimizing the negative impacts of development on stormwater.
Economic Development Plan	The Plan will be consulted during economic development. The goal of the plan is to have framework and regulation for economic growth in the city.
Transportation Plan	The Plan will be consulted when updating city planning and implementing roadway projects. The goal is to create a systematic approach to transportation solution in the city.
Zoning Ordinance	Zoning ordinances will regulate city development by creating a regulated approach to development in the City.

Continued Public Involvement

Input from the stakeholders and public was an integral part of the preparation of this Plan and will continue as the Plan grows and changes. This Plan will be posted on the City of Laredo website where local officials and the public will be invited to provide ongoing feedback. The task of notifying stakeholders and community members on an annual basis will be held with the identified Planning Team members tasked with updates and annual Plan review. The Planning Team will have the added task of maintaining the Plan as a part of their job description. Media such as the local newspaper and radio stations will be used to notify the public of any maintenance or periodic review activities taking place. Public participation will be sought during the implementation, monitoring, and evaluation phases of the plan.

Appendix A: Meeting Documentation

Table of Contents

Public Announcements

Newsroom

FEMA Hazard Mitigation Plan Public Meeting

Post Date: 10/31/2023 4:00 PM

The City of Laredo will hold a public meeting on Tuesday, November 21, 2023, to gather input for the FEMA Hazard Mitigation Plan. The meeting will be held either in person at the Fire Administration Center or virtually via a Microsoft Teams meeting. The public, area businesses, and organizations located throughout the City of Laredo and Webb County are invited and encouraged to attend.

Public Meeting Date / Time	Tuesday, November 21, 2023 5:30-6:00 p.m.
In-Person: Fire Administration Center, 1st Floor Classroom	616 E. Del Mar Blvd. Laredo, TX 78041
Virtually: Microsoft Teams Meeting ID Download Teams | Join on the web	269 741 392 564
Passcode	9iVthu
Call in Phone Number	(402) 541-7284 ID: 248 789 288#

With the FEMA-approved Plan, the City of Laredo will be eligible to apply for grant funding opportunities under the Hazard Mitigation Assistance (HMA) program to fund critical projects such as backup generators, drainage projects, and hardening of critical facilities to minimize future damage from natural disasters that affect the City's planning area.

The purpose of the public meeting is to provide an update from LAN, consultant to the project, and solicit information from citizens. Public input will help the Planning Team to identify potential projects for reducing hazard impact throughout the City of Laredo.

The planning process is as important as the plan itself. Any successful planning activity, such as developing a comprehensive plan or local land use plan, involves a cross-section of stakeholders and the public to reach a consensus on desired outcomes or to resolve a community problem. The result is a common set of community values and widespread support for directing financial, technical, and human resources to an agreed-upon course of action, usually identified in the plan. The same is true for mitigation planning. An effective and open planning process helps ensure that citizens understand risks and vulnerability, and can work with the jurisdiction to support policies, actions, and tools that over the long term will lead to a reduction in future losses. Leadership, staffing, and in-house knowledge may fluctuate over time. Therefore, the description of the planning process serves as a permanent record that explains how decisions were reached and who was involved.

We encourage you to take the FEMA Hazard Mitigation Public Survey for the City of Laredo via link:

https://www.surveymonkey.com/r/LaredoHMP

or click on QR Code:

Newsroom

FEMA Hazard Mitigation Plan Public Meeting

The City of Laredo will hold a public meeting on Tuesday, November 21, 2023, to gather input for the FEMA Hazard Mitigation Plan.

10/31/2023 4:00 PM

CITY OF LAREDO
TEXAS

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GOVERNMENT DEPARTMENTS BUSINESSES SERVICES

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- BIDS & RFP'S
- BID TABULATIONS
- BOARDS, COMMISSIONS & COMMITTEES
- CAPITAL IMPROVEMENT PLAN
- CITY CHARTER
- CITY MANAGER'S OFFICE
- CITY MAPS
- CITY SECRETARY'S OFFICE
- CODE OF ORDINANCES
- \+ ECONOMIC DEVELOPMENT
- ETHICS CODE RESOURCES
- FINANCIAL TRANSPARENCY
- INTERNAL AUDIT

Government »

Newsroom

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FEMA Hazard Mitigation Plan Public Meeting

Post Date: 10/31/2023 4:00 PM

The City of Laredo will hold a public meeting on Tuesday, November 21, 2023, to gather input for the FEMA Hazard Mitigation Plan. The meeting will be held either in person at the Fire Administration Center or virtually via a Microsoft Teams meeting. The public, area businesses, and organizations located throughout the City of Laredo and Webb County are invited and encouraged to attend.

Public Meeting Date / Time	Tuesday, November 21, 2023 5:30-6:00 p.m.
In-Person: Fire Administration Center, 1st Floor Classroom	616 E. Del Mar Blvd. Laredo, TX 78041
Virtually:	269 741 392 564

FOR IMMEDIATE RELEASE
Contact: Tak Makino
LAN Engineering
Date: 2/26/2024

FEMA Hazard Mitigation Plan Public Meeting
March 11, 2024

The City of Laredo (City) will hold a public meeting on Monday, March 11, 2024, to update the public on the project and gather input for the FEMA Hazard Mitigation Plan, which is currently in development. The meeting will be held virtually via Teams Meeting. The public, area businesses and organizations located throughout the City and surrounding areas are invited and encouraged to attend.

Hazard Mitigation planning is an initiative to lessen the impact of natural hazards that the City of Laredo faces. During this meeting, we will review the results of the Vulnerability Assessment from the City and explain the mitigation action requirements. The next step is to develop mitigation projects for each hazard that affects the City. Best of all, completing an approved Hazard Mitigation Plan will open a stream of funds for the City that will benefit the area.

By participating in this meeting, you can represent your community and give valuable experiences and ideas to the mitigation strategies planning process. The City will seek to ensure that the public, businesses, and other stakeholders remain aware of the planning process and are given an opportunity to participate and comment. This includes making components of the Draft plan available for public review and comment in advance of any formal consideration or approval.

Public Meeting Information:

When: **Monday, March 11, 2024**
Time: **3:00-3:30 p.m.**
Where: **Virtual / Microsoft Teams Meeting**

Join on your computer, mobile app or room device.

Click here to join the meeting
Meeting ID: 264 876 652 401
Passcode: bc2xxR

Download Teams | Join on the web

Or call in (audio only)
+1 402-541-7284 Phone Conference ID: 724 432 811#

Detailed information about the planning process can be obtained by contacting Tak Makino, Project Manager, LAN Engineering, 713-821-0359

CITY OF LAREDO HAZARD MITIGATION PLAN
PLANNING TEAM MITIGATION STRATEGY MEETING

The City of Laredo is holding a Planning Team Hazard Mitigation Strategy meeting as the next step in the development of the FEMA Hazard Mitigation Plan. The goal of the Plan is to minimize or eliminate the long-term risk to human life and property from known hazards. Upon FEMA approval of the Plan, the City of Laredo will be eligible for certain FEMA Hazard Mitigation Assistance grant funds to implement cost-effective mitigation projects in their local jurisdiction. LAN Engineering, project consultant, will be facilitating the meeting.

During the meeting, we will review the results of the vulnerability assessment and discuss mitigation strategies. We will introduce some example mitigation actions for consideration and explain the mitigation action requirements.

You are being invited to participate as a member of the Planning Team leading this effort. Please make every effort to attend this important meeting. Strong leadership from Planning Team members throughout the planning process is critical; therefore, key department personnel from the City of Laredo and stakeholders are required to attend workshops, assess hazard risks, create mitigation strategies, involve the public, and adopt the local Plan.

A public meeting to provide outreach and an update of the project to the public will be held prior to this Planning Team meeting.

Planning Team Meeting Information:

Date: Monday, March 11, 2024
Time: 3:30-4:00 p.m.
Location: Virtual - Microsoft Teams Meeting

Join on your computer, mobile app or room device

Click here to join the meeting

Meeting ID: 212 545 159 77 Passcode: BjntMg

Download Teams | Join on the web

Or call in (audio only) +1 402-541-7284 Phone Conference ID: 747 456 251#

Detailed information about the planning process can be obtained by contacting Tak Makino, Project Manager, LAN Engineering, 713-821-0359

City of Laredo - Government
1h ·

Join us in a FEMA Hazard Mitigation Plan Public Meeting to learn about the project and submit your input. Open to the public, businesses, and organizations!
📅 ⏰Monday, March 11, 2024, from 3:00 - 3:30 PM
💻🖥️Join virtually: https://bit.ly/3SUunIE
📞📱Join via phone call: +1 402-541-7284 Conference ID: 724 432 811# (Audio Only)

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FEMA HAZARD MITIGATION PLAN PUBLIC MEETING
MARCH 11TH, 2024
MON, 3:00 - 3:30 PM
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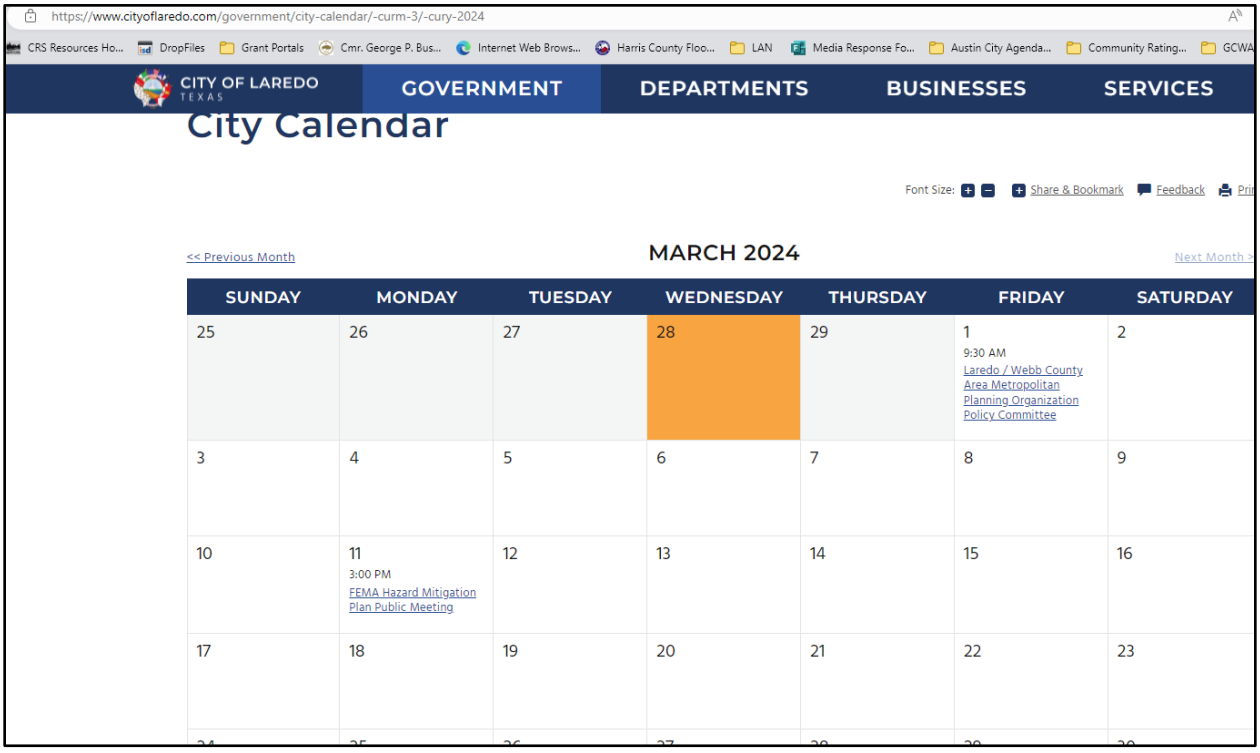
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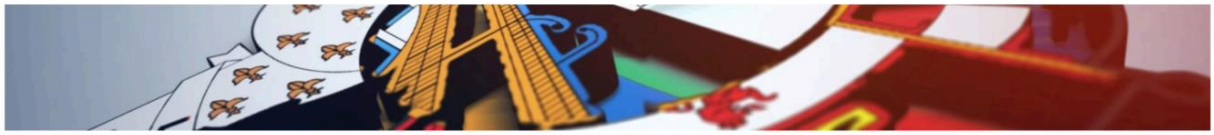

City Calendar

FEMA Hazard Mitigation Plan Public Meeting

Date: 03/11/2024 3:00 PM - 3:30 PM

City of Laredo & FEMA to Host Hazard Mitigation Plan Public Meeting

LAREDO, Texas – The City of Laredo (City) will hold a public meeting on Monday, March 11, 2024, to update the public on the project and gather input for the FEMA Hazard Mitigation Plan, which is currently in development. The meeting will be held virtually via Teams Meeting. The public, businesses, and organizations located throughout the city and surrounding areas are invited and encouraged to attend.

Hazard Mitigation planning is an initiative to lessen the impact of natural hazards that the City of Laredo faces. During this meeting, we will review the results of the Vulnerability Assessment from the City and explain the mitigation action requirements. The next step is to develop mitigation projects for each hazard that affects the City. Best of all, completing an approved Hazard Mitigation Plan will open a stream of funds for the City that will benefit the area.

By participating in this meeting, you can represent your community and give valuable experiences and ideas to the mitigation strategies planning process. The City will seek to ensure that the public, businesses, and other stakeholders remain aware of the planning process and are given an opportunity to participate and comment. This includes making components of the Draft plan available for public review and comment before any formal consideration or approval.

Public Meeting Information:

WHEN: **Monday, March 11, 2024**
TIME: **3:00-3:30 p.m.**
WHERE: **Virtual / Microsoft Teams Meeting**

Join on your computer, mobile app or room device.

Click here to join the meeting

Meeting ID: 264 876 652 401
Passcode: bc2xxR

Download Teams | Join on the web

Or call in (audio only)

+1 402-541-7284 Phone Conference ID: 724 432 811#

Detailed information about the planning process can be obtained by contacting Tak Makino, Project Manager, LAN Engineering, 713-821-0359.

La Ciudad de Laredo y FEMA Organizarán una Reunión Pública Sobre el Plan de Mitigación de Riesgos

Laredo, Texas – La Ciudad de Laredo (Ciudad) llevará a cabo una reunión pública el lunes, 11 de marzo del 2024, para actualizar al público sobre el proyecto y recopilar opiniones para el Plan de Mitigación de Riesgos de FEMA, que se encuentra actualmente en desarrollo. La reunión estará disponible virtualmente a través de la aplicación Teams Meeting. Se invita y exhorta a asistir al público, empresas y organizaciones de toda la ciudad y sus alrededores.

El Plan de Mitigación de Peligros es una iniciativa para disminuir el impacto de los peligros naturales que enfrenta la ciudad de Laredo. Durante esta reunión, revisaremos los resultados de la Evaluación de Vulnerabilidad de la Ciudad y explicaremos los requisitos de las acciones de mitigación. El siguiente paso es desarrollar proyectos de mitigación para cada peligro que afecta a la ciudad. Lo mejor de todo es que la aprobación de un Plan de Mitigación de Riesgos abrirá un flujo de fondos para la Ciudad que beneficiará al área.

Al participar en esta reunión, la comunidad puede representar a su comunidad y aportar experiencias e ideas valiosas al proceso de planificación de estrategias de mitigación. La Ciudad buscará garantizar que el público, las empresas y otras entidades interesadas sigan siendo conscientes del proceso de planificación y tengan la oportunidad de participar y comentar. Esto incluye hacer que los componentes del borrador del plan estén disponibles para revisión y comentarios públicos antes de cualquier consideración o aprobación formal.

Información de la reunión pública:

CUÁNDO: Lunes, 11 de marzo del 2024

HORA: **De 3:00 p.m. - 3:30 p.m.**

DÓNDE: **Reunión Virtual / Microsoft Teams**

Los participantes pueden unirse desde su computadora, aplicación móvil o dispositivo de sala.

Haga clic aquí para unirse a la reunión

ID de reunión: 264 876 652 401

Código de acceso: bc2xxR

Descargar Teams | Unirse en la web

O llame (solo audio)

+1 402-541-7284 ID de conferencia telefónica: 724 432 811#

Los interesados puede obtener información detallada sobre el proceso de planificación comunicándose con Tak Makino, Director de Proyectos, LAN Engineering, 713-821-0359.


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FEMA HAZARD MITIGATION PLAN PUBLIC MEETING
Join us to learn about the project and submit your input for the FEMA Hazard Mitigation Plan, which is currently in development. Open to the public, businesses, and organizations!
MARCH 11TH, 2024
MON, 3:00 - 3:30 PM
JOIN THE MEETING VIA TEAMS:
MEETING ID: 264 876 652 401
PASSCODE: BC2XXR
JOIN BY CALLING
+1 402-541-7284 (AUDIO ONLY)
CONFERENCE ID: 724 432 811#
The hazard mitigation planning is an initiative to lessen the impact of natural hazards that the City of Laredo faces.
officialcityoflaredo • Follow
officialcityoflaredo Join us in a FEMA Hazard Mitigation Plan Public Meeting to learn about the project and submit your input. Open to the public, businesses, and organizations!
Monday, March 11, 2024, from 3:00 - 3:30 PM
Join virtually: https://bit.ly/3SUunIE
Join via phone call: +1 402-541-7284 Conference ID: 724 432 811# (Audio Only)
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Kickoff Public Meeting Presentation, November 21, 2023

Kickoff Public Meeting Attendance, November 21, 2023

City of Laredo Kickoff Meeting

Public Team Sign-In Sheet

Subject:	City of Laredo Hazard Mitigation Plan Public Meeting	**Date:** 11/21/2023	**Time:** 5:30-6:00 pm	
Hosted by:	City of Laredo	**Location:** Fire Administration Center, 616 E. Del Mar Blvd., Laredo, Texas 78041 or Virtual Teams Meeting ID 269 741-392-564 Call in 402-541-7284		

	Agency	Name	Title	Email	Phone
1	City - CD	Edgar R. Campos	Compliance manager	ercampos@ci.laredo.tx.us	956 795-5760
2	COL -CD/MH	Humberto Delgado	Municipal Housing Manager	hdelgado@ci.laredo.tx.us	956-795-2320
3	COL-PLANNING	Rafael Vidaurri	Planner IV	rvidaurri@ci.laredo.tx.us	956-794-1613
4	COL-COUNCIL	Melissa R Cigarroa	CM D3	district3@ci.laredo.tx.us	956 206 7590
5	LAN	Tak Makino	Consultant	TMMakino@lan-inc.com	713-821-0359
6	LAN	Dalen Keith	Consultant	DHKeith@lan-inc.com	512-338-4212
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Kickoff Planning Team Meeting Presentation, November 11, 2023

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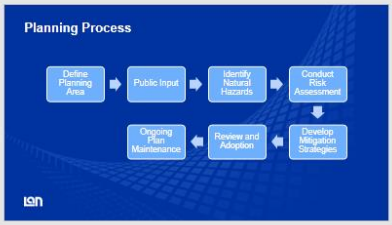

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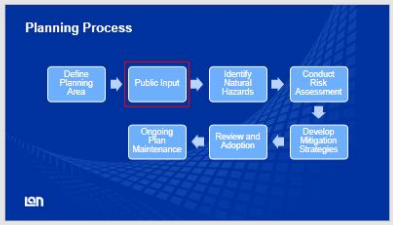

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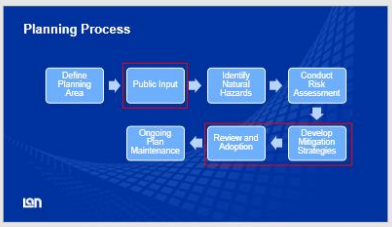

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Kickoff Planning Team Meeting Attendance, November 11, 2023

City of Laredo Kickoff Meeting

Planning Team Sign-In Sheet

Subject:	City of Laredo Hazard Mitigation Plan Planning Team Meeting	**Date:** 11/21/2023	**Time:** 6:00-6:30 pm	
Hosted by:	City of Laredo	Location: Fire Administration Center, 616 E. Del Mar Blvd., Laredo, Texas 78041 or Virtual Teams Meeting ID 292 817 546 002 Passcode BQVUVK Call in 402-541-7284 ID: 394 846 06#		

	Agency	Name	Title	Email	Phone
1	Fire Department	Guillermo Heard	Fire Chief	gheard@ci.laredo.tx.us	(956)718-6020
2	Fire Department	Chris Niles	Assistant Emc	cniles@ci.laredo.tx.us	(956) 718-6099
3	City - CD	Edgar Campos	Compliance manager	ercampos@ci.laredo.tx.us	(956) 795-5700
4	COL - CD/HMA	Humberto Delgado	Municipal Housing Manager	hdelgado@ci.laredo.tx.us	956-795-2320
5	Health Department	Amelia Solis	Epidemiology Administrator	asolis4@ci.laredo.tx.us	956-712-6016
6	Planning Department	Rafael Vidaurri	Planner IV	rvidaurri@ci.laredo.tx.us	956-794-1613
7	LAN	Tak Makino	Consultant	TMMakino@lan-inc.com	713-821-0359
8	LAN	Dalen Keith	Consultant	DHKeith@lan-inc.com	512-338-4212
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Mitigation Strategy Public Meeting Presentation, March 11, 2024

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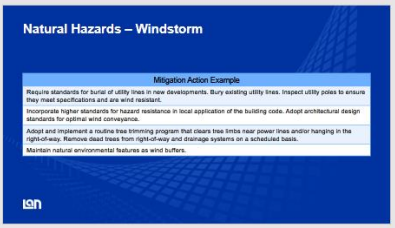

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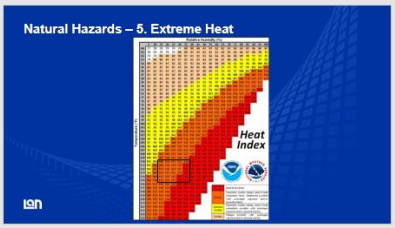

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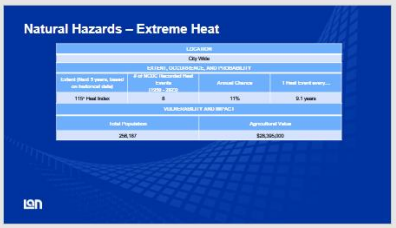

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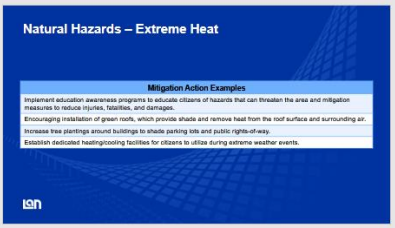

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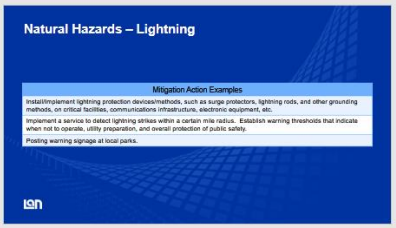

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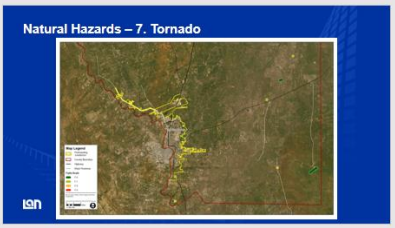

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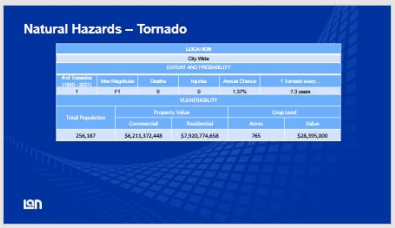

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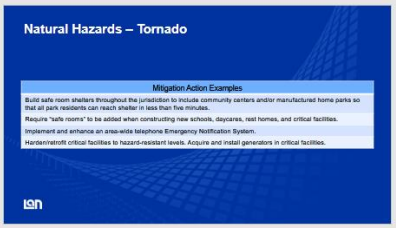

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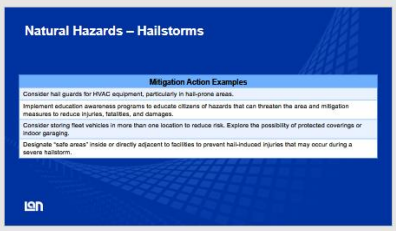

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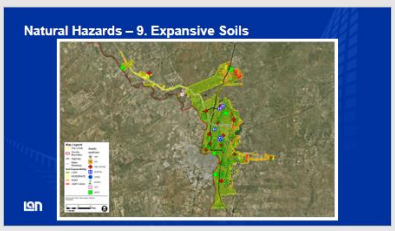

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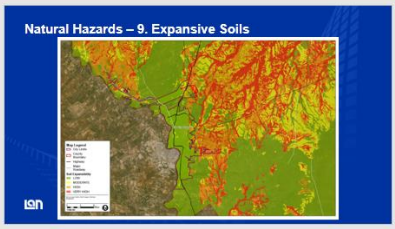

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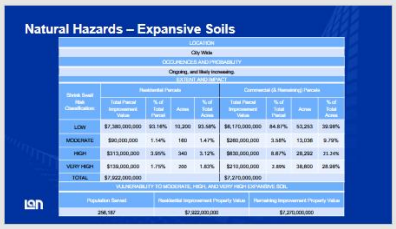

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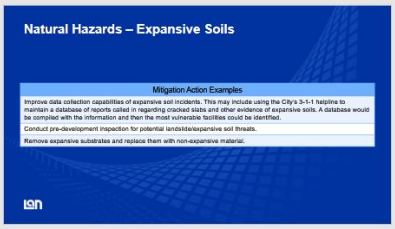

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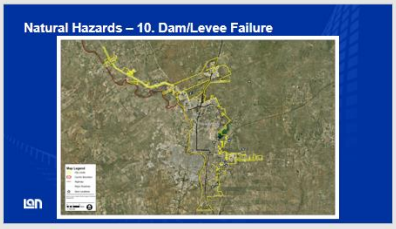

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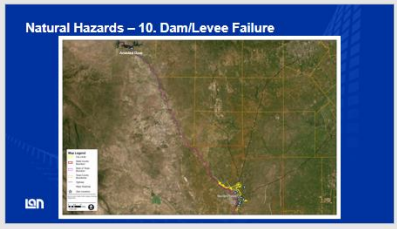

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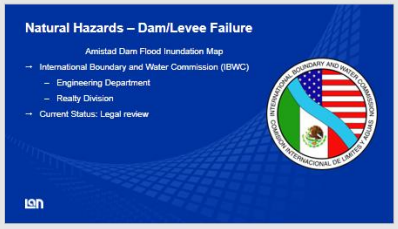

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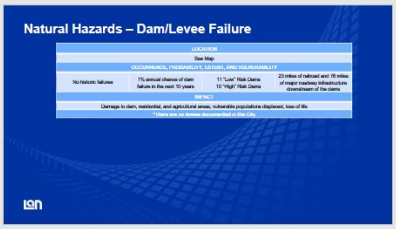

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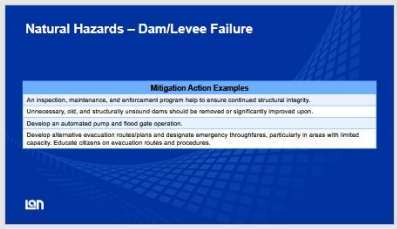

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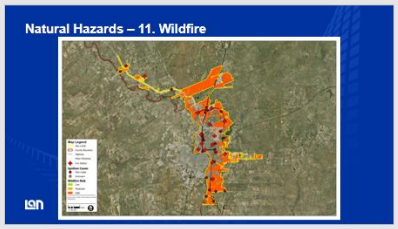

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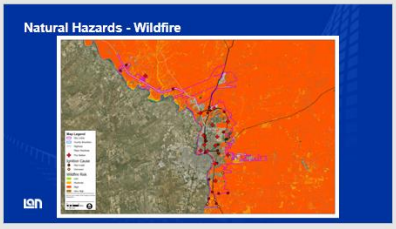

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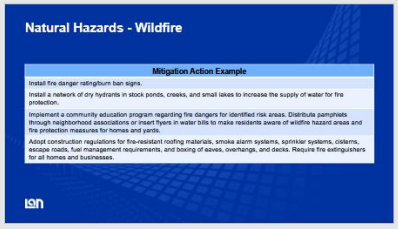

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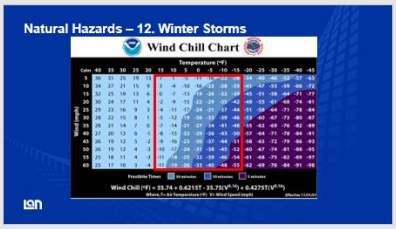

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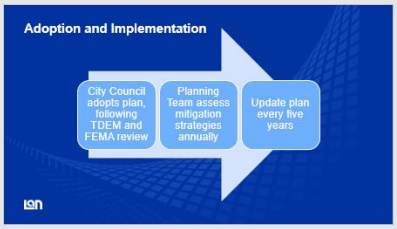

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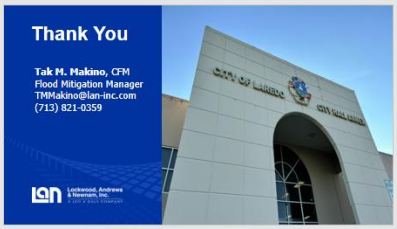

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Mitigation Strategy Public Meeting Attendance, March 11, 2024

City of Laredo Hazard Mitigation Plan Meeting

Public Team Sign-In Sheet

Subject:	City of Laredo Hazard Mitigation Plan Public Meeting	**Date:** 3/11/2024	**Time: 3:00-3:30 pm**
Hosted by:	City of Laredo	**Location: Virtual Teams Meeting ID 264 876 652 401 Passcode bc2xxR** Teams Meeting Call in 402-541-7284 ID 724 432 811#	

	Agency	Name	Title	Email	Phone
1	City of Laredo	Edgar Campos	Community Development Compliance Manager		956-795-5711
2	City of Laredo	Amelia E. Solis	Epidemiology Administrator	asolis1@ci.laredo.tx.us	956-63-2915
3	City of Laredo	Chris Niles	Asst Emergency Management Coordinator	cniles@ci.laredo.tx.us	956-718-6099
4	City of Laredo	Tina Martinez	Community Development Director	mmartinez2@ci.laredo.tx.us	956-795-2675
5	City of Laredo	Vanessa Guerra	Asst/Interim Director – Planning Department		
6	City of Laredo	Marcela Cervantes	Program Administrator – Community Development		956-795-2675
7	LAN Consultants	Tak Makino	Project Manager	TMMakino@lan-inc.com	
8	LAN Consultants	Dalen Keith	Project Coordinator	DHKeith@lan-inc.com	512-338-2734
9	Laredo	Reynolds			
10	Laredo	J Lara			
11	City of Laredo	Adriana Morales	Health Education	admorales@ci.laredo.tx.us	956-552-2876
12	City of Laredo	Arturo Garcia	Utilities Director	agarcia15@ci.laredo.tx.us	956-721-2000
13	Laredo & Webb County	Eddie Bernal	MPO	ebernal1@ci.laredo.tx.us	
14	TCEQ	Victor Wong		victor.wong@tceq.texas.gov	
15	Laredo Webb County	Juan Mendive	MPO	jmendive@ci.laredo.tx.us	
16	Laredo	Kathy Chavez			

17	City of Laredo Public Health Department	Jaime Perez		japerez@ci.laredo.tx.us	
18	City of Laredo – Planning and Zoning	Laura Recio-Garcia	Planner		
19	Laredo	Monica Sifuentes		mtsifuente@Laredotexas.Gov	
20	City of Laredo Public Health	Denise Martinez		dmartinez6@ci.laredo.tx.us	
21	City of Laredo	Isabel Sosa-Castaneda	Public Information Specialist		956-791-7462
22	City of Laredo - Health	Erika Martinez	Asst Director of Operations	emartinez8@ci.laredo.tx.us	956-795-4922

23	Laredo	Omar Garcia		ogarcia2@Laredotexas.Gow	
24	Laredo	Michelle DeLeon		mdeleon3@Laredotexas.Gov	
25	City of Laredo	Roanaq Mia	City of Laredo Health	icisneros@ci.laredo.tx.us	
26		Ismael Cisneros			
27	City of Laredo	Brenda Perez			956-791-7425
28	TAMU	C. Perez			
29		Erica Lopez			
30	City of Laredo	Richard Chamberlain	Health Director	rchamberla@ci.laredo.tx.us	956-795-4900
31		Raul Soto			
32	Laredo	Myria Astrain		mfastrain@Laredotexas.Gov	
33	City of Laredo - Health	Lyssie Hernandez	Epidemiology Supervisor	shernande2@ci.laredo.tx.us	956-763-2786
34		Carolina Aguirre			

Mitigation Strategy Planning Team Meeting Presentation, March 11, 2024

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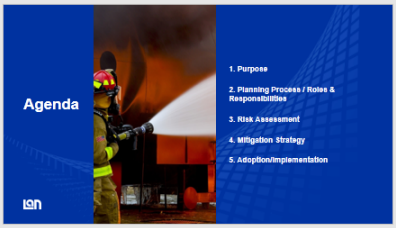

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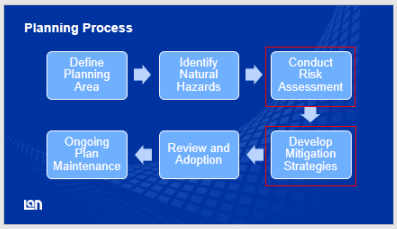

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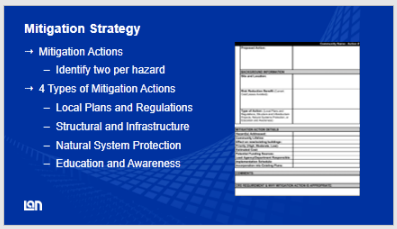

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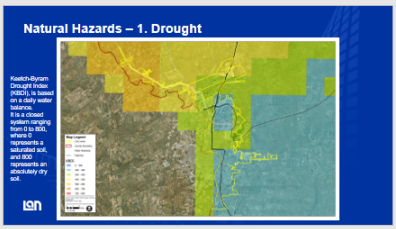

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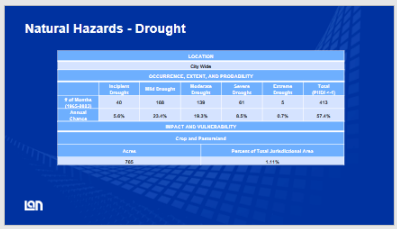

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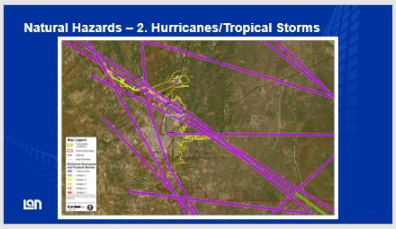

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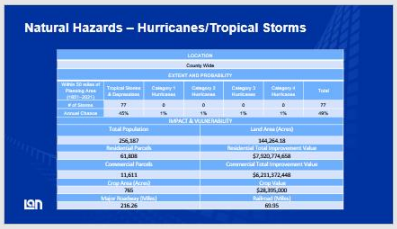

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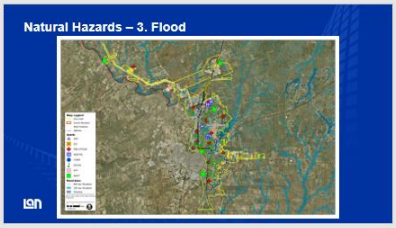

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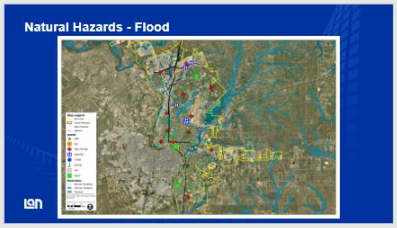

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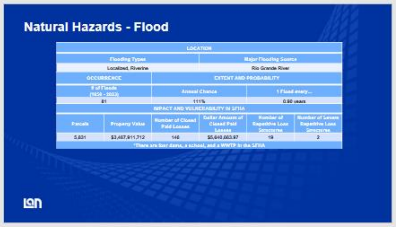

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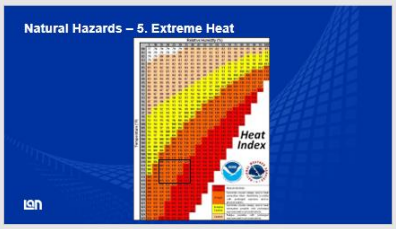

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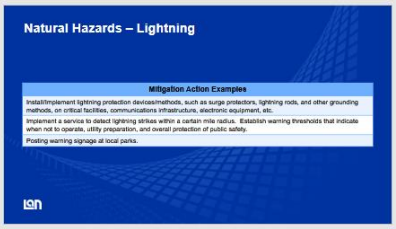

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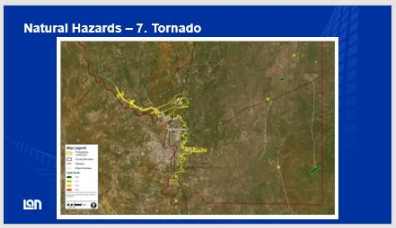

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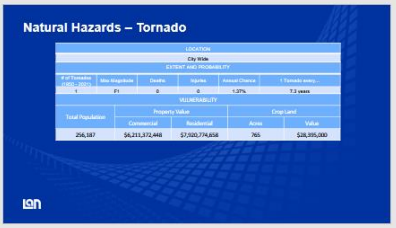

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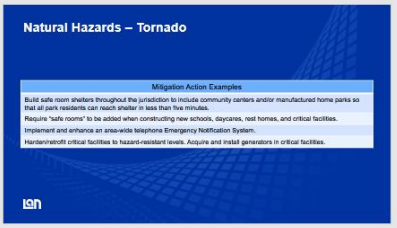

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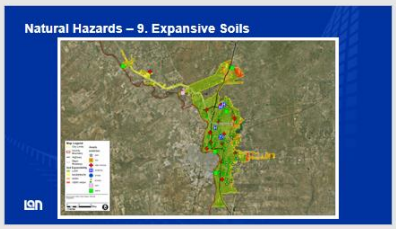

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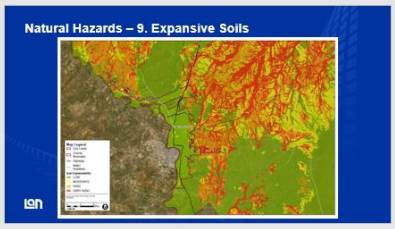

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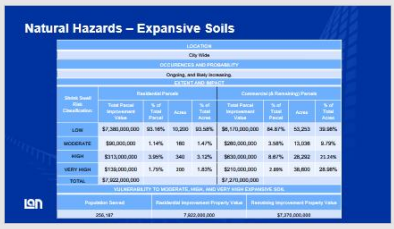

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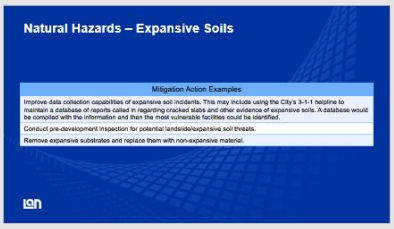

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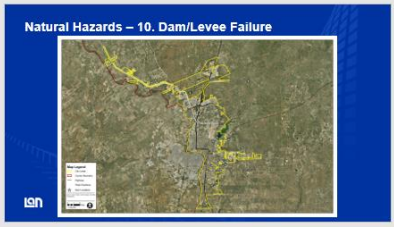

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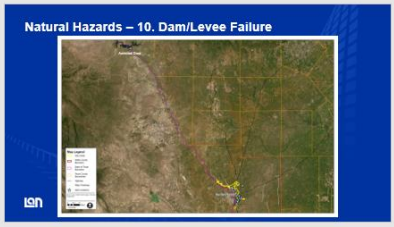

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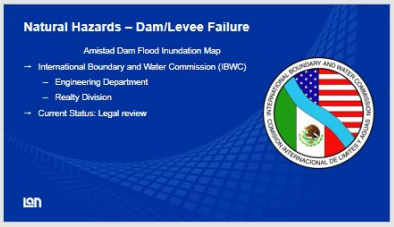

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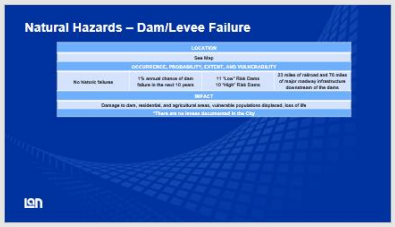

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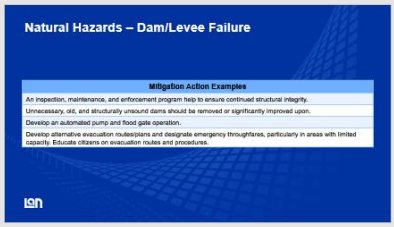

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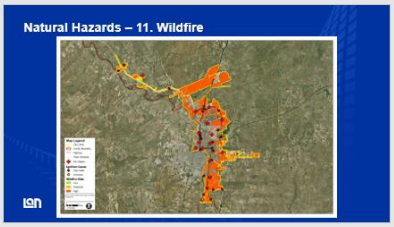

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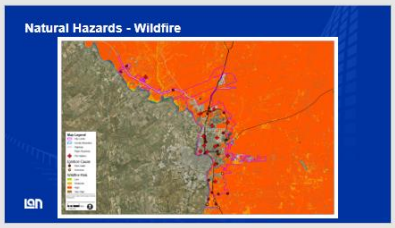

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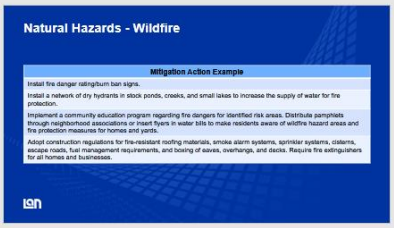

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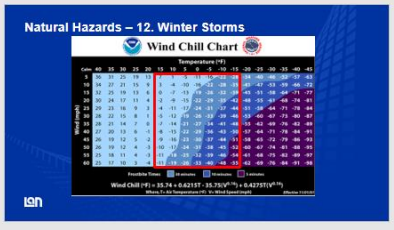

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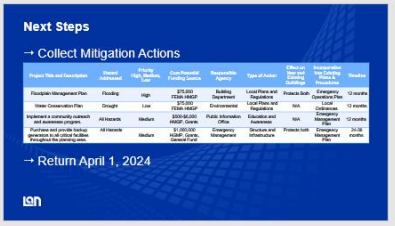

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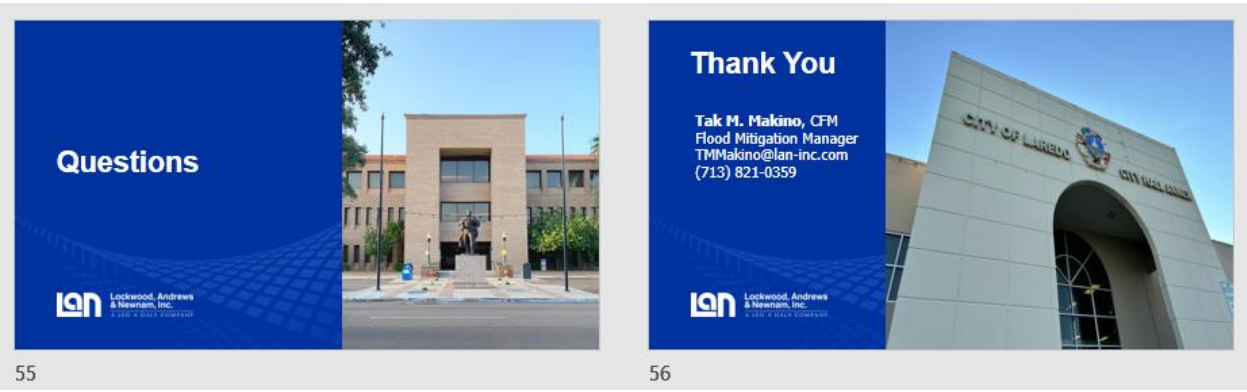


Mitigation Strategy Planning Team Attendance, March 11, 2024

City of Laredo Hazard Mitigation Strategy Meeting

Planning Team Sign-In Sheet

Subject:	City of Laredo Hazard Mitigation Strategy Meeting - Planning Team	**Date:** 3/11/2024	**Time: 3:30-4:00 pm**
Hosted by:	City of Laredo	Location: **Virtual Teams Meeting ID 292 817 546 002 Passcode BjntMg** Teams Meeting Call in 402-541-7284 ID: 747 456-251#	

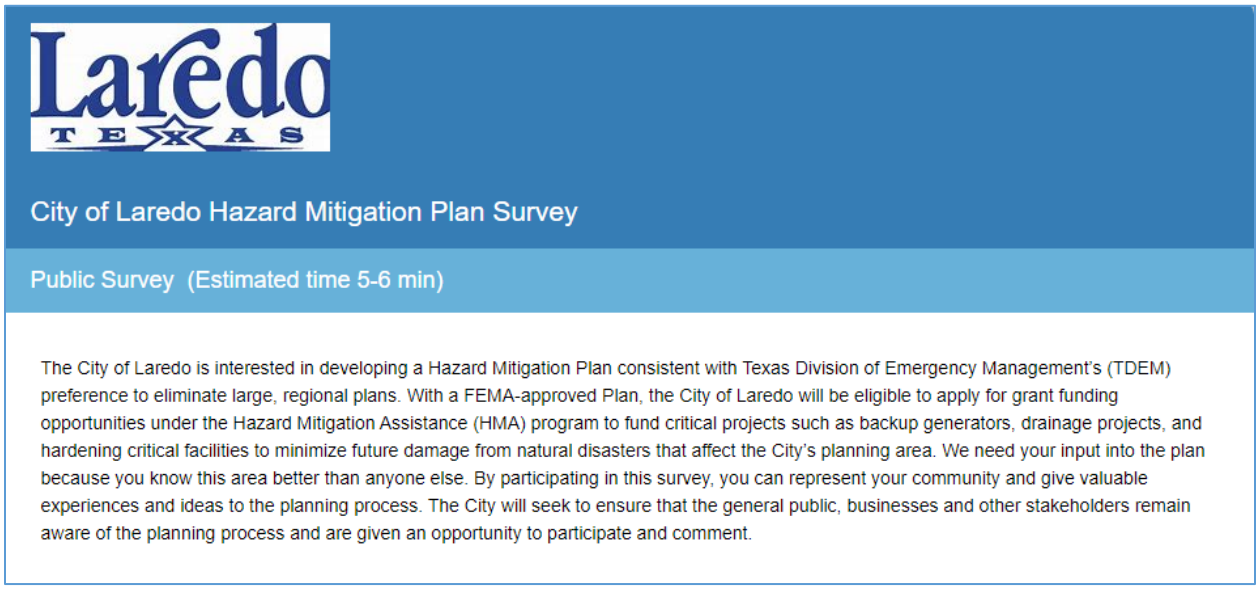
	Agency	Name	Title	Email	Phone
	City of Laredo	Edgar Campos	Compliance Mgr.		956-795-5711
	City of Laredo	Amelia E. Solis	Epidemiology Administrator	asolis1@ci.laredo.tx.us	956-63-2915
	City of Laredo	Chris Niles	Asst Emergency Management Coordinator	cniles@ci.laredo.tx.us	956-718-6099
	City of Laredo	Tina Martinez	Community Development Director	mmartinez2@ci.laredo.tx.us	956-795-2675
	City of Laredo	Vanessa Guerra	Interim Director – Planning Department		
	City of Laredo	Cervantes	Program Administrator – Community Development		
	LAN Consultants	Tak Makino	Project Manager	TMMakino@lan-inc.com	713-821-0359
	LAN Consultants	Dalen Keith	Project Coordinator	DHKeith@lan-inc.com	512-338-2734

Appendix B: Public Survey

Overview

The City of Laredo prepared a survey with questions for the public concerning their opinions regarding natural hazards. The survey QR Code was made available on the City of Laredo website at https://www.surveymonkey.com/r/LaredoHMP. Survey results are depicted on the following pages, showing the percentage of responses for each answer. For questions that did not provide a multiple-choice answer, or that required an explanation, comments are summarized where similar.

Figure B-1: Screen Shot of Public Survey Linked via QC Code on City of Laredo Website

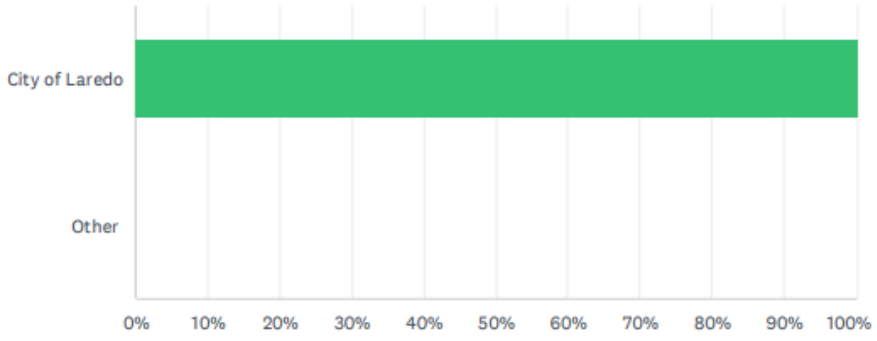


Public Survey Questions & Results

Question #1:

Q1 Please state the area, jurisdiction, or entity in which you reside or represent.

Answered: 46 Skipped: 0



ANSWER CHOICES	RESPONSES	
City of Laredo	100.00%	46
Other	0.00%	0
TOTAL		46

Question #2

Q2 Please provide your zip code.

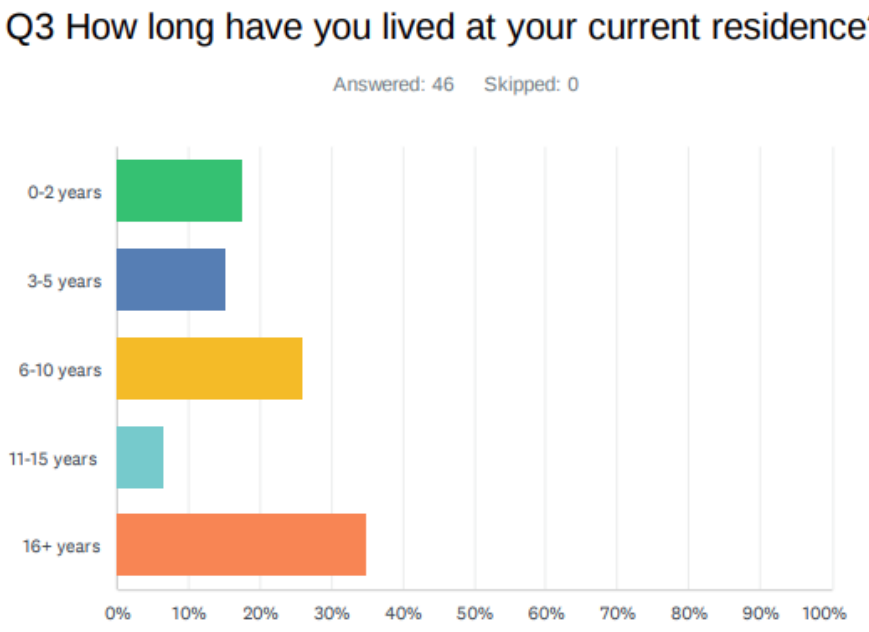
Answered: 43 Skipped: 3

#	RESPONSES	DATE
1	78043	1/17/2024 8:23 AM
2	78041	1/17/2024 7:35 AM
3	78041	1/12/2024 9:42 AM
4	78045	1/11/2024 9:08 AM
5	78046	1/11/2024 8:42 AM
6	78043	1/11/2024 8:29 AM
7	78045	1/10/2024 4:38 PM
8	78046	1/10/2024 4:08 PM
9	78041	1/10/2024 4:06 PM
10	78046	1/10/2024 3:49 PM
11	78046	1/10/2024 3:47 PM
12	78046	1/10/2024 3:45 PM
13	78045	1/4/2024 5:56 PM
14	78045	1/4/2024 3:46 PM
15	78043	1/4/2024 3:21 PM
16	78045	1/4/2024 3:20 PM
17	78040	12/28/2023 7:26 PM
18	78041	12/5/2023 11:11 AM
19	78043	11/27/2023 11:32 AM
20	78045	11/22/2023 10:39 PM
21	78046	11/21/2023 6:04 PM
22	78045	11/21/2023 4:32 PM
23	78046	11/21/2023 9:07 AM
24	78041	11/17/2023 11:44 AM
25	78041	11/9/2023 11:03 AM
26	78040	11/8/2023 7:47 AM
27	78045	11/7/2023 4:21 PM
28	78043	11/7/2023 4:07 PM
29	78043	11/7/2023 1:56 PM
30	78045	11/7/2023 1:47 PM
31	78045	11/7/2023 1:29 PM
32	78043	11/7/2023 1:18 PM
33	78045	11/7/2023 12:43 PM

Question #2 (continued)

34	78045	11/7/2023 12:19 PM
35	78045	11/7/2023 12:11 PM
36	78041	11/7/2023 12:01 PM
37	78040	11/7/2023 11:57 AM
38	78040	11/7/2023 11:53 AM
39	78041	11/7/2023 11:52 AM
40	78043	11/7/2023 11:52 AM
41	78046	11/7/2023 11:49 AM
42	78045	11/7/2023 11:05 AM
43	78043	11/7/2023 10:55 AM

Question #3

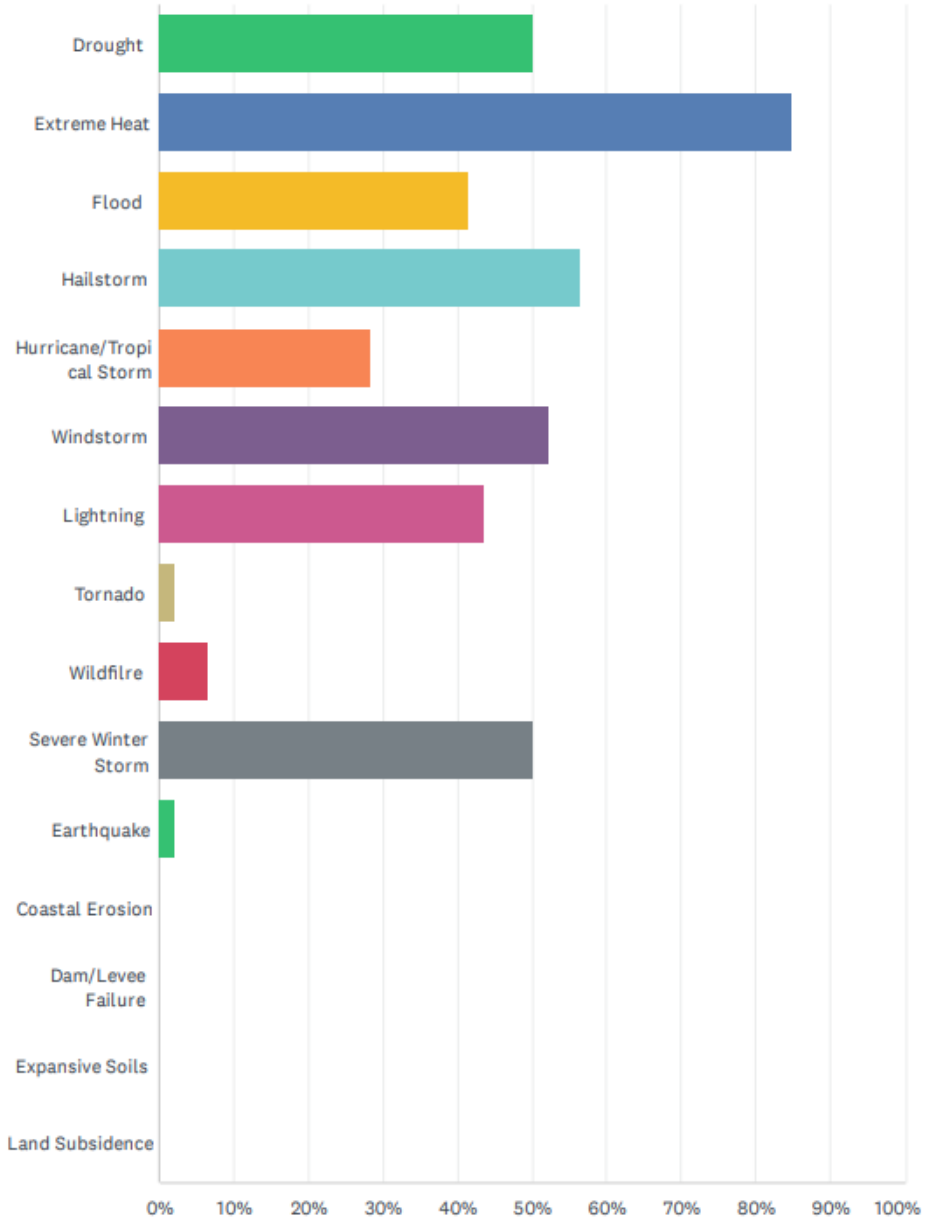


ANSWER CHOICES	RESPONSES	
0-2 years	17.39%	8
3-5 years	15.22%	7
6-10 years	26.09%	12
11-15 years	6.52%	3
16+ years	34.78%	16
TOTAL		46

Question #4

Q4 Which of the following natural hazard events have you or has anyone in your household experienced within the past 20 years. Select all that apply:

Answered: 46 Skipped: 0



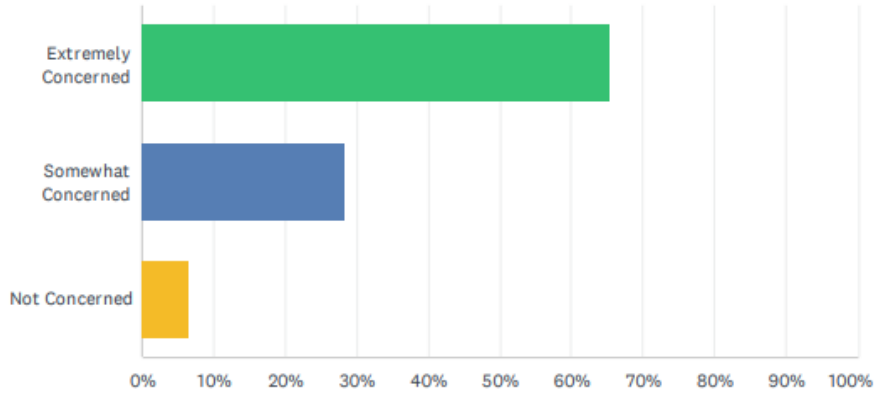
Question #4 (continued)

ANSWER CHOICES	RESPONSES	
Drought	50.00%	23
Extreme Heat	84.78%	39
Flood	41.30%	19
Hailstorm	56.52%	26
Hurricane/Tropical Storm	28.26%	13
Windstorm	52.17%	24
Lightning	43.48%	20
Tornado	2.17%	1
Wildfilre	6.52%	3
Severe Winter Storm	50.00%	23
Earthquake	2.17%	1
Coastal Erosion	0.00%	0
Dam/Levee Failure	0.00%	0
Expansive Soils	0.00%	0
Land Subsidence	0.00%	0
Total Respondents: 46		

Question #5

Q5 How concerned are you about the possibility of potable water production being impacted by a natural disaster?

Answered: 46 Skipped: 0

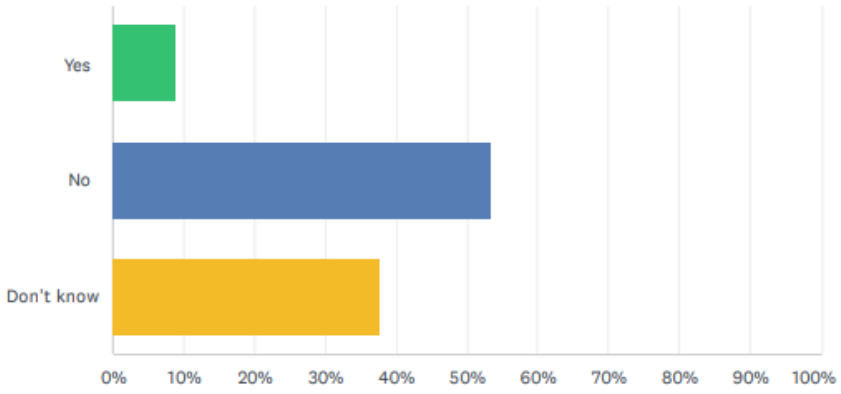


ANSWER CHOICES	RESPONSES	
Extremely Concerned	65.22%	30
Somewhat Concerned	28.26%	13
Not Concerned	6.52%	3
TOTAL		46

Question #6

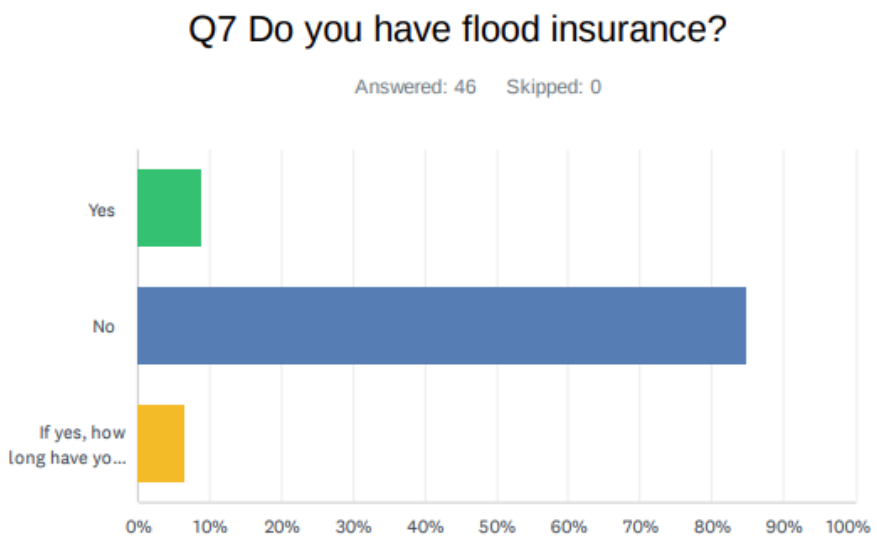
Q6 Are you located in a FEMA designated floodplain? If you do not know, you can find out at http://msc.fema.gov/portal/home.

Answered: 45 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	8.89%	4
No	53.33%	24
Don't know	37.78%	17
TOTAL		45

Question #7

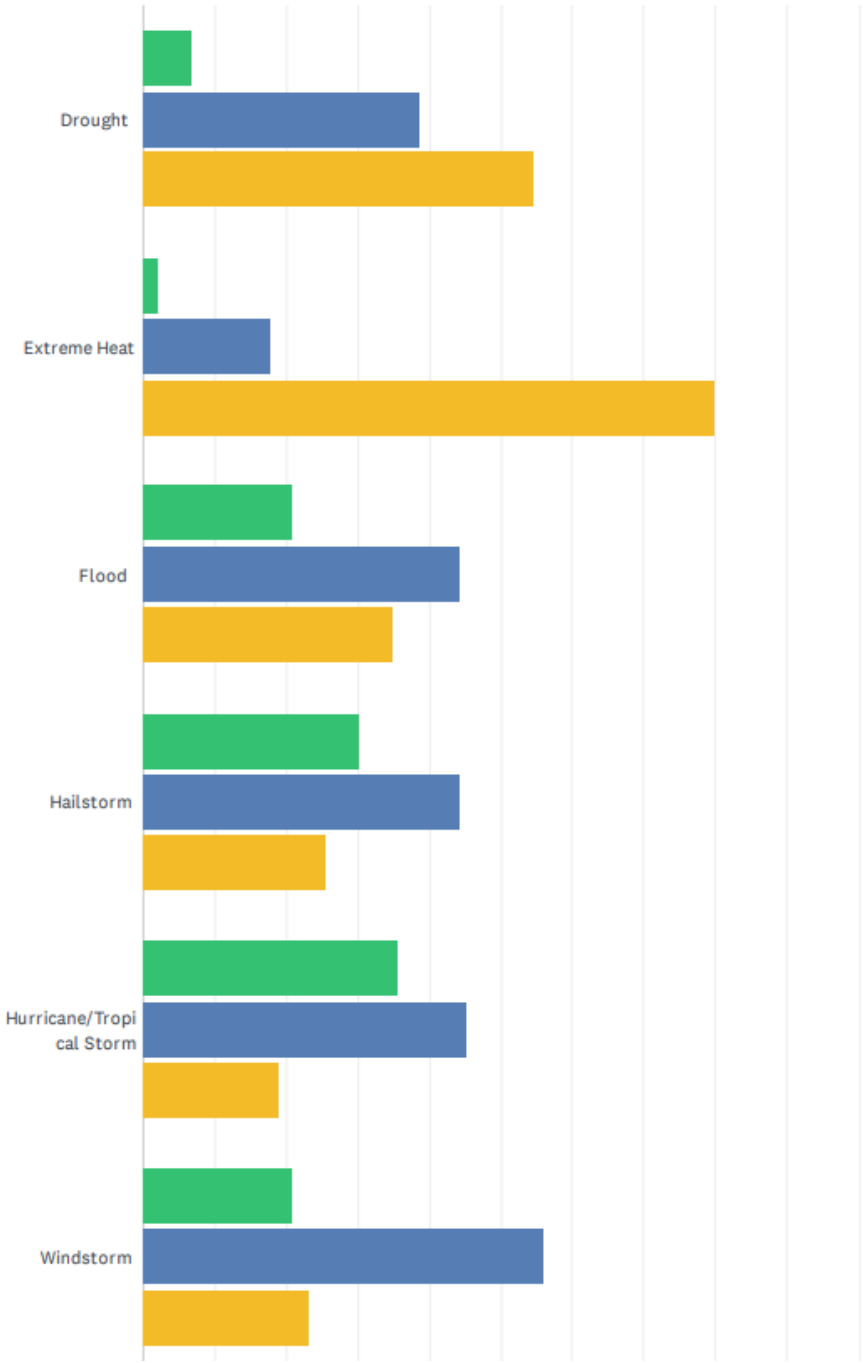


ANSWER CHOICES	RESPONSES	
Yes	8.70%	4
No	84.78%	39
If yes, how long have you had a flood insurance policy?	6.52%	3
TOTAL		46

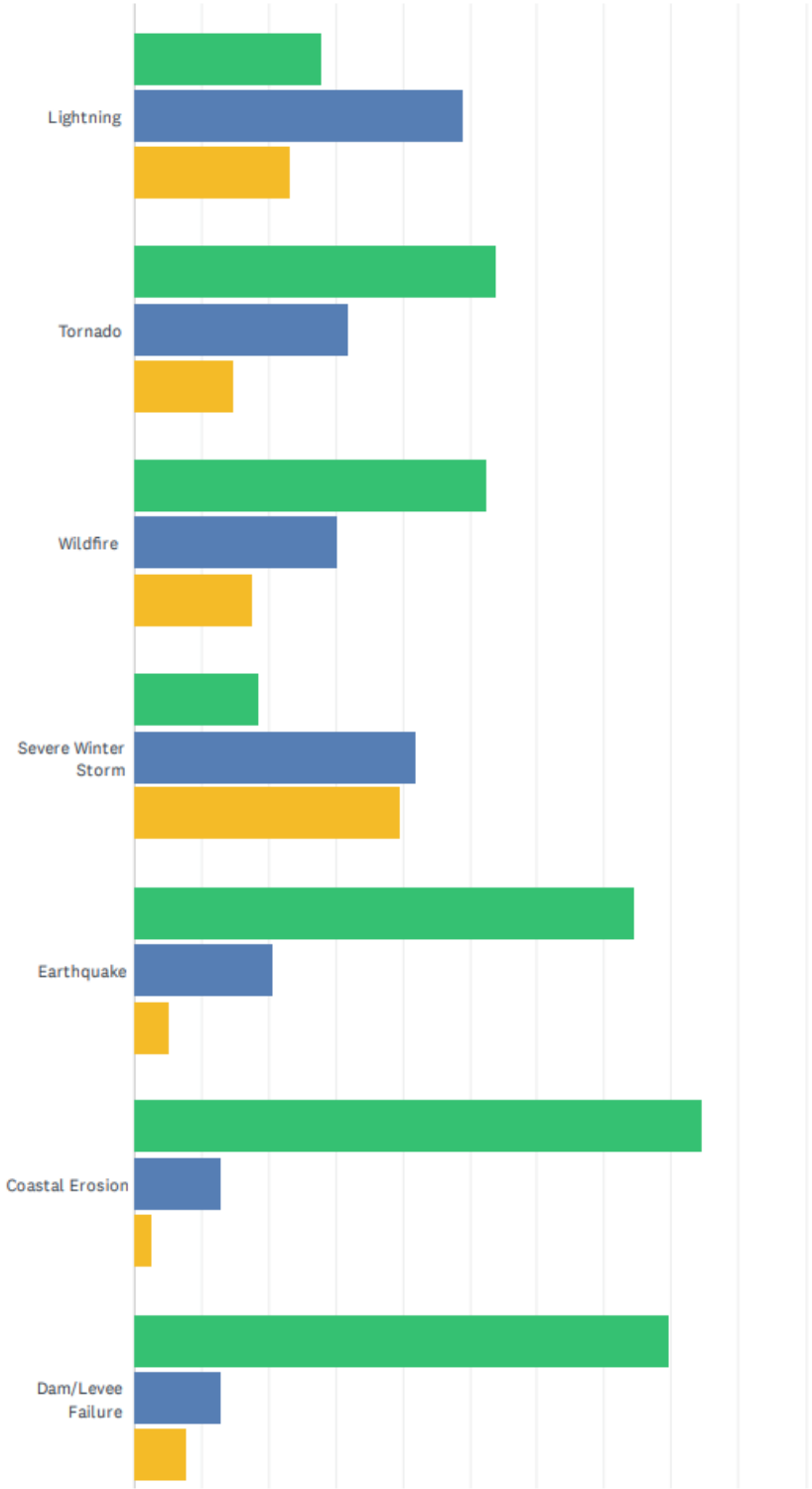
Question #8

Q8 In general, how concerned are you about the following natural hazards in your area? (check one box for each)

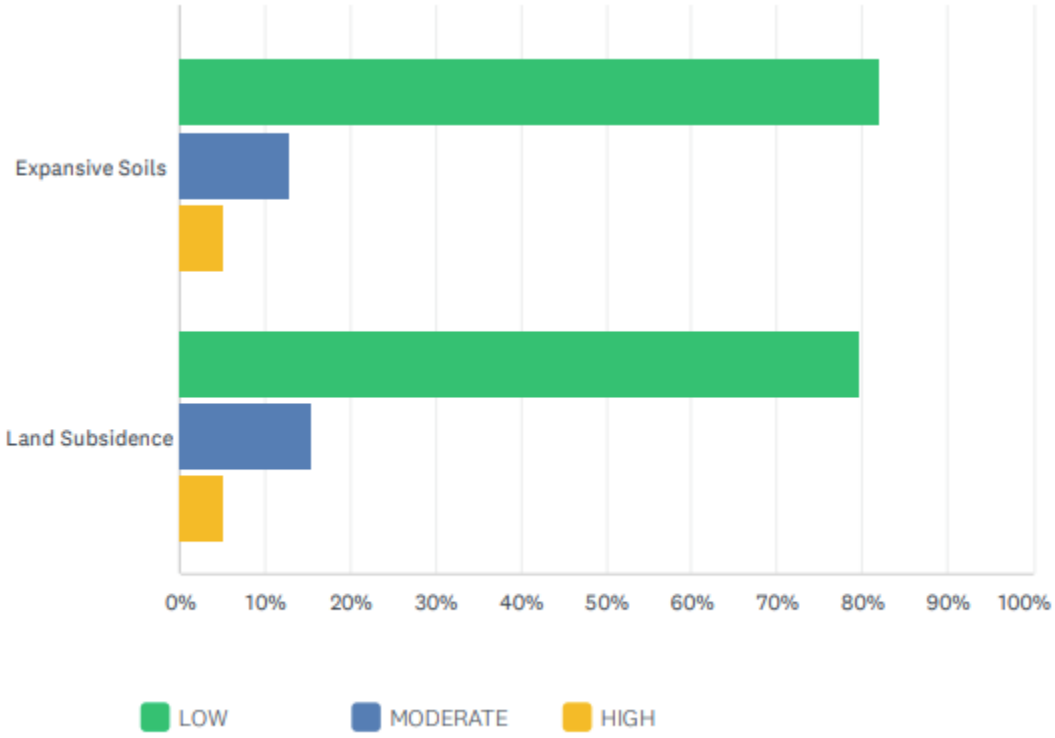
Answered: 46 Skipped: 0



Question #8 (continued)



Question #8 (continued)

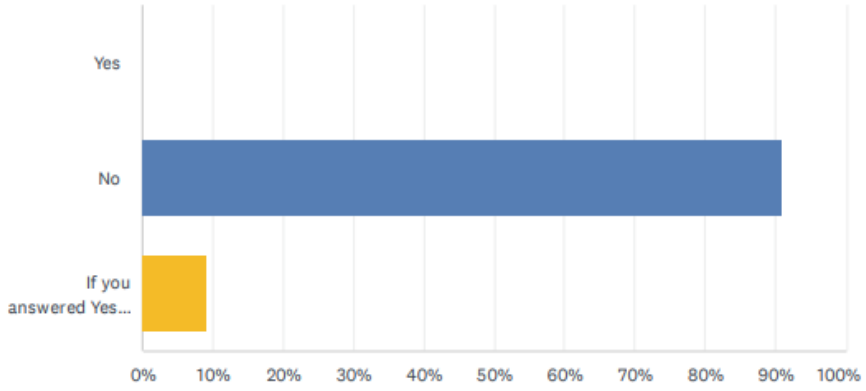


	LOW	MODERATE	HIGH	TOTAL	WEIGHTED AVERAGE
Drought	6.82% 3	38.64% 17	54.55% 24	44	2.48
Extreme Heat	2.22% 1	17.78% 8	80.00% 36	45	2.78
Flood	20.93% 9	44.19% 19	34.88% 15	43	2.14
Hailstorm	30.23% 13	44.19% 19	25.58% 11	43	1.95
Hurricane/Tropical Storm	35.71% 15	45.24% 19	19.05% 8	42	1.83
Windstorm	20.93% 9	55.81% 24	23.26% 10	43	2.02
Lightning	27.91% 12	48.84% 21	23.26% 10	43	1.95
Tornado	53.66% 22	31.71% 13	14.63% 6	41	1.61
Wildfire	52.50% 21	30.00% 12	17.50% 7	40	1.65
Severe Winter Storm	18.60% 8	41.86% 18	39.53% 17	43	2.21
Earthquake	74.36% 29	20.51% 8	5.13% 2	39	1.31
Coastal Erosion	84.62% 33	12.82% 5	2.56% 1	39	1.18
Dam/Levee Failure	79.49% 31	12.82% 5	7.69% 3	39	1.28
Expansive Soils	82.05% 32	12.82% 5	5.13% 2	39	1.23
Land Subsidence	79.49% 31	15.38% 6	5.13% 2	39	1.26

Question #9

Q9 Is there another natural hazard not listed above that you think represents a wide-scale threat to the City of Laredo area? If yes, please explain:

Answered: 44 Skipped: 2

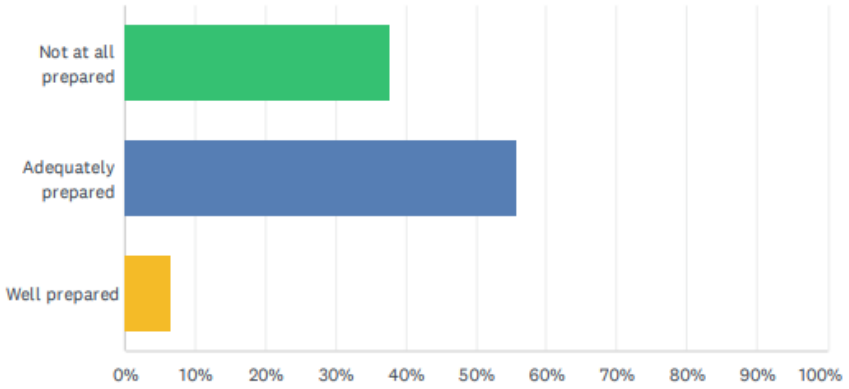


ANSWER CHOICES	RESPONSES	
Yes	0.00%	0
No	90.91%	40
If you answered Yes, please describe.	9.09%	4
TOTAL		44

Question #10

Q10 Ready.gov provides important information on how to prepare you and your family in the event of a disaster. How prepared is your household for a natural hazard event? (check one)

Answered: 45 Skipped: 1

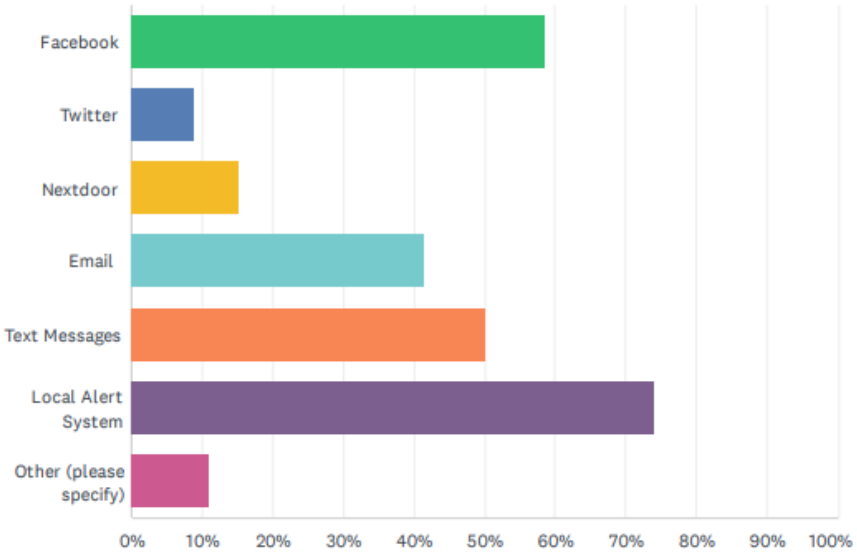


ANSWER CHOICES	RESPONSES	
Not at all prepared	37.78%	17
Adequately prepared	55.56%	25
Well prepared	6.67%	3
Total Respondents: 45		

Question #11

Q11 What media outlets do you subscribe to that you receive news and information, including natural hazard mitigation? (check all that apply)

Answered: 46 Skipped: 0



ANSWER CHOICES	RESPONSES	
Facebook	58.70%	27
Twitter	8.70%	4
Nextdoor	15.22%	7
Email	41.30%	19
Text Messages	50.00%	23
Local Alert System	73.91%	34
Other (please specify)	10.87%	5
Total Respondents: 46		

Question #12

Q12 In your opinion, what are some steps the City of Laredo could take to reduce or eliminate the risk of future natural hazard damages?

Answered: 35 Skipped: 11

#	RESPONSES	DATE
1	Need to secure a secondary water source	1/11/2024 9:08 AM
2	Don't know	1/11/2024 8:42 AM
3	conservation of water	1/11/2024 8:29 AM
4	Better development of response teams (CERT, Red Cross, etc.) especially within a community setting. More investment in hazard mitigation strategies like cleaning storm drains. Other things include increased community trainings on hazard reduction and preparedness.	1/10/2024 3:47 PM
5	Teach the vulnerable to prepare for such events.	1/10/2024 3:45 PM
6	Good preparation and dissemination of information to residents.	1/4/2024 5:56 PM
7	Send timely text messages.	1/4/2024 4:45 PM
8	Disseminate more information about how to prepare	1/4/2024 3:46 PM
9	Practice drills and being prepared with resources both human and materials	1/4/2024 3:22 PM
10	Encourage its residents to develop a personal plan so that they don't solely depend on the city for assistance	1/4/2024 3:21 PM
11	Improve drainage infrastructure	1/4/2024 3:20 PM
12	Providing shelter for people escaping extreme heat or cold; community outreach in the event of extreme heat or cold for wellness checks for the vulnerable populations; establishing a secondary water source in case of dam failure	12/28/2023 7:26 PM
13	an other water cleaning plant / underground shelters	12/5/2023 11:11 AM
14	Educate the leaders AND the community using words that easy to understand with examples	11/27/2023 11:32 AM
15	Better drainage	11/22/2023 10:39 PM
16	Better infrastructure, better water drainage systems	11/21/2023 6:04 PM
17	On-going planning; sustainable development and building practices; resiliency planning; preparedness awareness.	11/21/2023 9:07 AM
18	give timely notices	11/17/2023 11:44 AM
19	Have a plan in motion for citizens to go to in case of a natural disaster happens and funds	11/9/2023 11:03 AM
20	Occasionally have first responders and weather experts have town hall meeting	11/8/2023 7:47 AM
21	Hold private & public business accountable for water waste	11/7/2023 4:21 PM
22	always communicate	11/7/2023 4:07 PM
23	Having some type of sprinkler system in high risk areas	11/7/2023 1:56 PM
24	More PSA with general info and additional links for citizens	11/7/2023 1:47 PM
25	More generators	11/7/2023 1:18 PM
26	Better water systems and power grid. They are always the first to go down in even the smallest storms.	11/7/2023 12:43 PM
27	Invest in more resilient public infrastructure and weatherization of that infrastructure.	11/7/2023 12:19 PM

Question #12 (continued)

28	Better use of funds to enhance current failing infrastructure.	11/7/2023 12:11 PM
29	Advising with time	11/7/2023 12:01 PM
30	get the street gutters clean, pick up the trash on the streets	11/7/2023 11:57 AM
31	TRAINING EVENTS	11/7/2023 11:53 AM
32	Provide notice of potential risks beforehand so that we can prepare our homes.	11/7/2023 11:52 AM
33	more preperation	11/7/2023 11:49 AM
34	Secure a second water source	11/7/2023 11:05 AM
35	Develop Hazard Mitigation Plan	11/7/2023 10:55 AM

Q13 Do you have any other comments, questions, or concerns?

Answered: 21 Skipped: 25

#	RESPONSES	DATE
1	no	1/11/2024 9:08 AM
2	No	1/11/2024 8:42 AM
3	no	1/11/2024 8:29 AM
4	N/A	1/10/2024 3:45 PM
5	No	1/4/2024 5:56 PM
6	Not at this moment.	1/4/2024 3:46 PM
7	Concerned how well prepared we are as a community and not going through some practice drills	1/4/2024 3:22 PM
8	No	1/4/2024 3:21 PM
9	The City of Laredo should work toward a regional alliance in resiliency in the face of catastrophic dam failure in order to be prepared for a worst case scenario	12/28/2023 7:26 PM
10	Great job involving stakeholders and the public.	11/21/2023 9:07 AM
11	n/a	11/17/2023 11:44 AM
12	n/a	11/9/2023 11:03 AM
13	No	11/7/2023 4:21 PM
14	none	11/7/2023 4:07 PM
15	Nope	11/7/2023 1:47 PM
16	N/A	11/7/2023 1:18 PM
17	not at this time.	11/7/2023 12:19 PM
18	No	11/7/2023 12:11 PM
19	n/a	11/7/2023 11:57 AM
20	N/A	11/7/2023 11:53 AM
21	No	11/7/2023 10:55 AM

Q14 If you would like to receive information regarding upcoming publicevents and other participatory opportunities regarding hazard mitigation,please provide your email address below.

Answered: 19 Skipped: 12

Note: Personal email addresses were redacted from these results for privacy.

#	RESPONSES	DATE
1	[redacted]	1/10/2024 3:47 PM
2		1/4/2024 3:46 PM
3		1/4/2024 3:22 PM
4		1/4/2024 3:20 PM
5		12/28/2023 7:26 PM
6		12/5/2023 11:11 AM
7		11/21/2023 9:07 AM
8		11/9/2023 11:03 AM
9		11/8/2023 7:47 AM
10		11/7/2023 1:56 PM
11		11/7/2023 1:47 PM
12		11/7/2023 11:57 AM
13		11/7/2023 10:55 AM

Appendix C: Critical Facilities

Asset Name	Asset Class
Laredo International Airport	AIRPORT
Border Crossing	BORDER CROSSING
Border Crossing	BORDER CROSSING
Border Crossing	BORDER CROSSING
Border Crossing	BORDER CROSSING
ABC DISCOVERY LEARNING CENTER	CHILD CARE CENTER
ACADEMY OF YOUNG SCHOLARS II, LLC	CHILD CARE CENTER
ALL STAR KIDS, INC.	CHILD CARE CENTER
APPLE BEE LEARNING CENTER LLC	CHILD CARE CENTER
ARTS AND LEARNING CENTER	CHILD CARE CENTER
BEST LIL SCHOOLHOUSE 2	CHILD CARE CENTER
BEST LIL SCHOOLHOUSE ACADEMY, LLC	CHILD CARE CENTER
BEST LIL SCHOOLHOUSE N TEXAS	CHILD CARE CENTER
BLOOMING KIDS LLC	CHILD CARE CENTER
CAROUSEL LEARNING ACADEMY OF LAREDO	CHILD CARE CENTER
CAROUSEL LEARNING ACADEMY OF LAREDO HEIGHTS	CHILD CARE CENTER
CATERPILLARS TO BUTTERFLIES LEARNING CENTER	CHILD CARE CENTER
CHILDREN'S FOUNTAIN OF KNOWLEDGE LEARNING CENTER, INC	CHILD CARE CENTER
CPLC MSHS LAREDO	CHILD CARE CENTER
CREATIVE KIDS LEARNING ACADEMY	CHILD CARE CENTER
EDUCATION CENTER - CONCORD HILLS	CHILD CARE CENTER
FINLEY HEAD START CENTER	CHILD CARE CENTER
FIRST CLASS LEARNING CENTER	CHILD CARE CENTER
GLORIA'S DAY CARE CENTER, LLC	CHILD CARE CENTER
HAPPY BEGINNINGS CHILDCARE AND LEARNING CENTER	CHILD CARE CENTER
HAPPY DAYS DAY CARE	CHILD CARE CENTER
HAPPY HEARTS LEARNING CENTER	CHILD CARE CENTER
HAPPY HEARTS LEARNING CENTER 2	CHILD CARE CENTER
HOLY HANDS LEARNING CENTER	CHILD CARE CENTER
JASMINE'S CHILD DAY CARE CENTER	CHILD CARE CENTER
JOHNSON'S DAY CARE AND LEARNING CENTER	CHILD CARE CENTER
JOHNSON'S DAYCARE AND LEARNING CENTER NUMBER 2	CHILD CARE CENTER
JOHNSON'S DAYCARE AND LEARNING CENTER NUMBER 3	CHILD CARE CENTER
KIDZ PREP ACADEMY INC	CHILD CARE CENTER

Asset Name	Asset Class
KINDERCLUB LEARNING CENTER TOO, LLC	CHILD CARE CENTER
KINDERCLUB LEARNING CENTER, LLC.	CHILD CARE CENTER
KRISTI - LINS ACADEMY, LLC	CHILD CARE CENTER
LARGA VISTA HEADSTART CENTER	CHILD CARE CENTER
LIL' BLOOMING STARS LEARNING CENTER	CHILD CARE CENTER
LIL' KIDZ KLUB DAYCARE AND LEARNING CENTER	CHILD CARE CENTER
LIL' KIDZ KLUB JR. DAYCARE AND LEARNING CENTER	CHILD CARE CENTER
LITTLE BUDDIES CHILD CARE CENTER	CHILD CARE CENTER
LITTLE CHARACTER'S DAYCARE AND LEARNING CENTER NUMBER 2, LLC	CHILD CARE CENTER
LITTLE CHARACTERS DAYCARE AND LEARNING CENTER, LLC	CHILD CARE CENTER
LITTLE FEET AND LEARNING DAY CARE CENTER	CHILD CARE CENTER
LITTLE FRIENDS L.C. LLC	CHILD CARE CENTER
LITTLE HARVARD ACADEMY	CHILD CARE CENTER
LITTLE HEARTS CHILD DEVELOPMENT CENTER	CHILD CARE CENTER
LITTLE HUNTER'S LEARNING CENTER NUMBER 2 LLC	CHILD CARE CENTER
LITTLE HUNTER'S LEARNING CENTER LLC	CHILD CARE CENTER
LITTLE PALOMINOS HEAD START CENTER	CHILD CARE CENTER
LITTLE PEOPLE NORTH	CHILD CARE CENTER
LITTLE PEOPLE SOUTH	CHILD CARE CENTER
LITTLE PEOPLE TOO	CHILD CARE CENTER
LITTLE PEOPLE'S BRIGHT BEGINNING	CHILD CARE CENTER
LITTLE PEOPLE'S LEARNING KINGDOM	CHILD CARE CENTER
LITTLE TREASURES LEARNING CENTER	CHILD CARE CENTER
LOLLIPOP LEARNING CENTER	CHILD CARE CENTER
MI CASITA CHILD CARE, INC.	CHILD CARE CENTER
MIRACLES AND DREAMS, INC.	CHILD CARE CENTER
MUNDO MONTESSORI, INC..	CHILD CARE CENTER
MY KIDS LEARNING CENTER	CHILD CARE CENTER
MY KIDS' ACADEMY	CHILD CARE CENTER
MY LITTLE COLLEGE	CHILD CARE CENTER
MY LITTLE SCHOOL OF MINDS	CHILD CARE CENTER
NATY'S LEARNING CENTER AND DAY CARE INC.	CHILD CARE CENTER
NEW LAND KINDERGARTEN, INC	CHILD CARE CENTER
ONCE UPON A DREAM LEARNING CENTER, LLC	CHILD CARE CENTER
ONCE UPON A TIME LEARNING CENTER LLC	CHILD CARE CENTER
PAPILLO'S	CHILD CARE CENTER
PEE WEES SCHOOLHOUSE, LLC	CHILD CARE CENTER

Asset Name	Asset Class
POKA DOTS NUMBER 2 DAYCARE AND LEARNING CENTER	CHILD CARE CENTER
POKA DOTS DAY CARE	CHILD CARE CENTER
PRADA HEAD START CENTER	CHILD CARE CENTER
PRECIOUS BLESSINGS DAYCARE AND LEARNING CENTER	CHILD CARE CENTER
PRECIOUS TREASURES LEARNING CENTER	CHILD CARE CENTER
REGINA'S SCHOOLHOUSE LEARNING CENTER	CHILD CARE CENTER
REYESITOS DAY - NIGHT CARE AND LEARNING CENTER NUMBER 1	CHILD CARE CENTER
REYESITOS DAY CARE CENTER NUMBER 2	CHILD CARE CENTER
RICARDO FLOYD HEADSTART CENTER	CHILD CARE CENTER
RIGHT START CHILDCARE AND LEARNING	CHILD CARE CENTER
RIGHT START CHILDCARE AND LEARNING CTR 2 INC	CHILD CARE CENTER
ROOSEVELT HEAD START CENTER	CHILD CARE CENTER
SANDY'S DAYCARE AND LEARNING CENTER	CHILD CARE CENTER
SCHOOL OF WONDER, INC.	CHILD CARE CENTER
SIERRA VISTA HEADSTART	CHILD CARE CENTER
SPROUTLETS DAYCARE AND LEARNING CENTER	CHILD CARE CENTER
STAR POINT KIDS	CHILD CARE CENTER
STEPPING STONES CHILD CARE AND LEARNING CENTER, LLC	CHILD CARE CENTER
SUNSHINE ACADEMY	CHILD CARE CENTER
SUNSHINE ACADEMY LCC	CHILD CARE CENTER
SUPERSTARS ITC DAYCARE AND LEARNING CENTER	CHILD CARE CENTER
SWEET SMILES DAYCARE AND LEARNING CENTER	CHILD CARE CENTER
THE LEARNING PATCH ACADEMY LLC	CHILD CARE CENTER
THE LIGHTHOUSE CHILD CARE	CHILD CARE CENTER
TINY KIDS WORLD	CHILD CARE CENTER
VICTORY LAND DAYCARE	CHILD CARE CENTER
VIVACE MUSIC ACADEMY AND LEARNING CENTER, LLC	CHILD CARE CENTER
Rafael B Garcia Dam	DAM
Paul Young Ranch Lake Dam	DAM
Middle Pasture Lake Dam	DAM
Lake Casa Blanca Dam	DAM
Clark Lake Dam	DAM
San Isidro Detention Pond No 3 Dam	DAM
Wright Dam No 2	DAM
Lomas Del Sur Detention Pond Dam	DAM
Minnie Martin Lake Dam	DAM
Lago Del Valle Dam	DAM

Asset Name	Asset Class
Link Lake No 2 Dam	DAM
Farias Farm Lake Dam	DAM
Killam No1 82 Pond Dam	DAM
Link Lake No 1 Dam	DAM
Leo Flores Lake Dam No 2	DAM
Wright Dam No 4	DAM
Wright Dam No 5	DAM
Leo Flores Lake Dam	DAM
Killam Lake No 2 Dam	DAM
Wright Dam No 1	DAM
Amistad Dam	DAM
WEBB COUNTY EMERGENCY OPERATIONS CENTER	EOC
Laredo Fire Department Station 11	FIRE STATION
Laredo Fire Department Station 5	FIRE STATION
Laredo Fire Department Station 7	FIRE STATION
Laredo Fire Department	FIRE STATION
Laredo Fire Department Station 14	FIRE STATION
Laredo Fire Department Station 6	FIRE STATION
Laredo Fire Department Station 2	FIRE STATION
Laredo Fire Department Ambulance Service	FIRE STATION
Laredo Fire Department Station 9	FIRE STATION
Laredo Fire Department Station 12	FIRE STATION
Laredo Fire Department Station 13	FIRE STATION
Laredo Fire Department Station 10	FIRE STATION
Laredo Fire Department Station 4	FIRE STATION
Laredo Fire Department Station 8	FIRE STATION
DOCTORS HOSPITAL OF LAREDO	HOSPITAL
LAREDO MEDICAL CENTER	HOSPITAL
LAREDO REHABILITATION HOSPITAL	HOSPITAL
LAREDO SPECIALTY HOSPITAL	HOSPITAL
PROVIDENCE HOSPITAL	HOSPITAL
STAT SPECIALTY HOSPITAL OF LAREDO	HOSPITAL
BORDER REGION BEHAVIORAL HEALTH CENTER - CASA AMISTAD	HOSPITAL
UNITED INDEPENDENT SCHOOL DISTRICT POLICE DEPARTMENT	LAW ENFORCEMENT
WEBB COUNTY SHERIFFS DEPARTMENT	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT	LAW ENFORCEMENT
LAREDO INDEPENDENT SCHOOL DISTRICT POLICE DEPARTMENT	LAW ENFORCEMENT

Asset Name	Asset Class
LAREDO INTERNATIONAL AIRPORT POLICE DEPARTMENT	LAW ENFORCEMENT
LAREDO COMMUNITY COLLEGE POLICE DEPARTMENT	LAW ENFORCEMENT
TEXAS A AND M INTERNATIONAL UNIVERSITY POLICE DEPARTMENT	LAW ENFORCEMENT
WEBB COUNTY JAIL	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT - PRECINCT 14	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT - PRECINCT 8	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT - PRECINCT 12	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT - PRECINCT 13	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT - PRECINCT 10	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT - PRECINCT 5	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT - PRECINCT 4	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT - PRECINCT 6	LAW ENFORCEMENT
TEXAS DEPARTMENT OF PUBLIC SAFETY - HIGHWAY PATROL REGION 8 DISTRICT B SERGEANT 0 AREA 1	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT - PRECINCT 3	LAW ENFORCEMENT
UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT SAN ANTONIO POLICE DEPARTMENT LAREDO CAMPUS	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT - PRECINCT 11	LAW ENFORCEMENT
LAREDO POLICE DEPARTMENT - PRECINCT 9	LAW ENFORCEMENT
REGENT CARE CENTER OF LAREDO	NURSING HOME
RETAMA MANOR NURSING CENTER/LAREDO-WEST	NURSING HOME
LAREDO NURSING AND REHABILITATION CENTER	NURSING HOME
RETAMA MANOR/LAREDO SOUTH	NURSING HOME
LAS ALTURAS NURSING & TRANSITIONAL CARE	NURSING HOME
LAREDO CHI ACADEMY BEAUTY SCHOOL	SCHOOL
LAREDO COLLEGE	SCHOOL
TEXAS A & M INTERNATIONAL UNIVERSITY	SCHOOL
THE PROFESSIONAL COSMETOLOGY ACADEMY	SCHOOL
LAREDO BEAUTY COLLEGE INC	SCHOOL
OUR LADY OF GUADALUPE SCHOOL	SCHOOL
BLESSED SACRAMENT SCHOOL	SCHOOL
ST PETERS MEMORIAL SCHOOL	SCHOOL
MARY HELP OF CHRISTIANS SCHOOL	SCHOOL
UNITED DAY SCHOOL	SCHOOL
MUNDO MONTESSORI	SCHOOL
THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT SAN ANTONIO - LAREDO CAMPUS	SCHOOL
SOUTH TEXAS TRAINING CENTER - LAREDO CAMPUS	SCHOOL

Asset Name	Asset Class
LAREDO COMMUNITY COLLEGE - SOUTH CAMPUS	SCHOOL
HARMONY SCHOOL OF EXCELLENCE - LAREDO	SCHOOL
YOUTH VILLAGE DETENTION CENTER	SCHOOL
CASA ESPERANZA RECOVERY HOME	SCHOOL
RADCLIFFE & SUE KILLAM EL	SCHOOL
ELIAS HERRERA MIDDLE	SCHOOL
RAUL PERALES MIDDLE	SCHOOL
SALVADOR GARCIA MIDDLE	SCHOOL
LOS OBISPOS MIDDLE	SCHOOL
F S LARA ACADEMY	SCHOOL
JUDITH ZAFFIRINI EL	SCHOOL
MACDONELL EL	SCHOOL
BONNIE L GARCIA EL	SCHOOL
BRUNI EL	SCHOOL
BONNIE L GARCIA EL	SCHOOL
FRANKLIN D ROOSEVELT EL	SCHOOL
TRIUMPH PUBLIC HIGH SCHOOLS-LAREDO SOUTH	SCHOOL
FARIAS EL	SCHOOL
FINLEY EL	SCHOOL
AMPARO GUTIERREZ EL	SCHOOL
JOHN B ALEXANDER H S	SCHOOL
PREMIER H S OF LAREDO	SCHOOL
PRADA EL	SCHOOL
DR MALAKOFF EL	SCHOOL
MATIAS DE LLANO EL	SCHOOL
UNITED STEP ACADEMY	SCHOOL
LYNDON B JOHNSON	SCHOOL
SANTA MARIA EL	SCHOOL
TRIUMPH PUBLIC HIGH SCHOOLS-LAREDO NORTH	SCHOOL
SALINAS EL	SCHOOL
NIXON H S	SCHOOL
LEYENDECKER EL	SCHOOL
CHARLES BORCHERS EL	SCHOOL
TARVER EL	SCHOOL
RUIZ EL	SCHOOL
HECTOR J GARCIA EARLY COLLEGE H S	SCHOOL
LIGARDE EL	SCHOOL

Asset Name	Asset Class
LAMAR BRUNI VERGARA MIDDLE	SCHOOL
SIGIFREDO PEREZ EL	SCHOOL
BARBARA FASKEN EL	SCHOOL
RYAN EL	SCHOOL
PIERCE EL	SCHOOL
MEMORIAL MIDDLE	SCHOOL
JULIA BIRD JONES MULLER EL	SCHOOL
HARMONY SCIENCE ACADEMY - LAREDO	SCHOOL
UNITED MIDDLE	SCHOOL
D D HACHAR EL	SCHOOL
NEW EL	SCHOOL
VETERANS MEMORIAL EL	SCHOOL
FREEDOM EL	SCHOOL
NEWMAN EL	SCHOOL
YOUTH RECOVERY HOME	SCHOOL
FREEDOM EL	SCHOOL
SAN ISIDRO EL	SCHOOL
JOHN W ARNDT EL	SCHOOL
T SANCHEZ EL / H OCHOA EL	SCHOOL
H B ZACHRY EL	SCHOOL
JOHN W ARNDT EL	SCHOOL
CLARK EL	SCHOOL
J KAWAS EL	SCHOOL
KAZEN EL	SCHOOL
JUVENILLE JUSTICE ALTERNATIVE PROGRAM	SCHOOL
DON JOSE GALLEGO	SCHOOL
UNITED H S	SCHOOL
DAICHES EL	SCHOOL
MARTIN H S	SCHOOL
CHRISTEN MIDDLE	SCHOOL
MARTIN H S	SCHOOL
LAMAR MIDDLE	SCHOOL
WEBB COUNTY J J A E P	SCHOOL
TRAUTMANN EL	SCHOOL
GEORGE WASHINGTON MIDDLE	SCHOOL
HENRY CUELLAR EL	SCHOOL
ANTONIO GONZALEZ MIDDLE	SCHOOL

Asset Name	Asset Class
HEIGHTS EL	SCHOOL
COL SANTOS BENAVIDES EL	SCHOOL
HENRY CUELLAR EL	SCHOOL
CLARK MIDDLE	SCHOOL
UNITED SOUTH MIDDLE	SCHOOL
TRAUTMANN MIDDLE	SCHOOL
RODOLFO C CENTENO EL	SCHOOL
UNITED SOUTH H S	SCHOOL
DOVALINA EL	SCHOOL
NYE EL	SCHOOL
DR LEO CIGARROA H S	SCHOOL
HARMONY SCHOOL OF INNOVATION - LAREDO	SCHOOL
JOAQUIN CIGARROA MIDDLE	SCHOOL
SANTO NINO EL	SCHOOL
MILTON EL	SCHOOL
J C MARTIN JR EL	SCHOOL
RICARDO MOLINA MIDDLE	SCHOOL
AQUERO MIDDLE	SCHOOL
THE COVES EL	SCHOOL
El Pico	WTP
Zacate Creek	WWTP
South Laredo	WWTP
North Laredo	WWTP
Colombia Laredo	WWTP
Unitech	WWTP

Appendix D: Floodplain Ordinance

ORDINANCE NO. 2019-O-087

AMENDING SECTION 24.69 OF THE CITY OF LAREDO LAND DEVELOPMENT CODE, FLOOD DAMAGE PREVENTION, BY ADDING A "STATUTORY AUTHORIZATION" AND "FINDING OF FACT" SECTIONS, REVISING SECTION 24.69.4 - A, DESIGNATION OF THE FLOODPLAIN ADMINISTRATOR, INCLUDING THE TEXAS COMMISSION OF ENVIRONMENTAL QUALITY (TCEQ) IN SECTION 24.69.4 - B6, REVISING THE ELEVATION REQUIREMENTS OF SERVICE EQUIPMENT IN SECTION 24.69.5 - A4, AND REVISING SECTION NUMBERS; PROVIDING FOR PUBLICATIONAND EFFECTIVE DATE.

WHEREAS, the Laredo Land Development Code currently provides standards and requirements regarding Flood Plan development and,

WHEREAS, the amendments proposed herein provide for the orderly and healthful development of the City of Laredo; and

WHEREAS, the amendments of said standards and requirements has been deemed necessary and appropriate; and

WHEREAS, the Planning and Zoning Commission, after a public hearing on April 18, 2019 has recommended the City Council of Laredo pass this amendment to the City of Laredo Land Development Code.; and,

WHEREAS, the City Council has held a public hearing on May 20, 2019 on this amendment and finds the ordinance appropriate and consistent with the General Plan of the City of Laredo and in the best interest of the public health safety and welfare.

NOW, THEREFORE BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LAREDO THAT:

Section 1: Section 24.69 of the Laredo Land Development Code is hereby is amended as follows:

SECTION 24.69.1 STATUTORY AUTHORIZATION

The Legislature of the State of Texas has in the Flood Control Insurance Act, Texas Water Code, Section 16.315, delegated the responsibility to local governmental units to adopt regulations designed to minimize flood losses. Therefore, the City of Laredo, Texas does ordain as follows:

SECTION 24.69.2. FINDINGS OF FACT

(1) The flood hazard areas of City of Laredo are subject to periodic inundation, which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief, all of which adversely affect the public health, safety and general welfare.

(2) These flood losses are created by the cumulative effect of obstructions in floodplains which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, floodproofed or otherwise protected from flood damage.

SECTION 24.69.~~1~~ 3 STATEMENT OF PURPOSE

It is the purpose of this ordinance 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:

(A) Protect human life and health;

(B) Minimize expenditure of public money for costly flood control projects;

(C) Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;

(D) Minimize prolonged business interruptions;

(E) Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in floodplains;

(F) 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; and

(G) Insure that potential buyers are notified that property is in a flood area.

SECTION 24.69.2 ~~4~~ METHODS OF REDUCING FLOOD LOSSES

In order to accomplish its purposes, this ordinance uses the following methods:

(A) Restrict or prohibit uses that are dangerous to health, safety or property in times of flood, or cause excessive increases in flood heights or velocities;

(B) Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

(C) Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of flood waters;

(D) Control filling, grading, dredging and other development which may increase flood damage;

(E) Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands.

SECTION 24.69.3 ~~5~~ GENERAL PROVISIONS

A. Lands to which this ordinance applies

The ordinance shall apply to all areas of special flood hazard with the jurisdiction of The City of Laredo.

B. Basis for Establishing the Areas of Special Flood Hazard

The areas of special flood hazard identified by the Federal Emergency Management Agency in the current scientific and engineering report entitled, "The Flood Insurance Study (FIS) for Webb County Texas and Incorporated Areas," dated April 2, 2008 (which included Community Number 480651 and index panel numbers: 48479C0975C, 1000C, 1015C, 1020C, 1030C, 1040C, 1045C, 1185C, 1195C, 1205C, 1210C, 1215C, 1220C, 1360C, 1380C, 1385C, 1390C, 1405C, 1535C, 1555C), with accompanying Flood

Insurance Rate Maps and/or Flood Boundary-Floodway Maps (FIRM and/or FBFM) dated April 2, 2008, and any revisions thereto are hereby adopted by reference and declared to be a part of this ordinance.

C. Establishment of Development Permit

A Floodplain Development Permit shall be required to ensure conformance with the provisions of this ordinance and is hereby established for all construction and other development to be undertaken in areas of special flood hazard in this community. It shall be unlawful to undertake any development in an area of special flood hazard, as shown on the Flood Insurance Rate map enumerated in Section 24.69.3 (B), without a valid floodplain development permit.

D. Compliance

No structure or land shall hereafter be located, altered, or have its use changed without full compliance with the terms of this ordinance and other applicable regulations.

E. Abrogation and Greater Restrictions

This ordinance is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this ordinance and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

F. Interpretation

In the interpretation and application of this ordinance, all provisions shall be; (1) considered as minimum requirements; (2) liberally construed in favor of the governing body; and (3) deemed neither to limit nor repeal any other powers granted under State statutes.

G. Warning and Disclaimer or Liability

The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. On rare occasions greater floods can and will occur and flood heights may be increased by man-made or natural causes. This ordinance does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This ordinance shall not create liability on the part of the community or any official or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

SECTION 24.69.4-6 ADMINISTRATION

A. Designation of the Floodplain Administrator

The ~~Planning Director~~ *Building Director* is hereby appointed the Floodplain Administrator to administer and implement the provisions of this ordinance and other appropriate sections of 44 CFR (Emergency Management and Assistance - National Flood Insurance Program Regulations) pertaining to floodplain management.

B. Duties & Responsibilities of the Floodplain Administrator

Duties and responsibilities of the Floodplain Administrator shall include, but not be limited to, the following:

(1) Maintain and hold open for public inspection all records pertaining to the provisions of this ordinance.

(2) Review permit application to determine whether to ensure that the proposed building site project, including the placement of manufactured homes, will be reasonably safe from flooding.

(3) Review, approve or deny all applications for development permits required by adoption of this ordinance.

(4) Review permits for proposed development to assure that all necessary permits have been obtained from those Federal, State or local governmental agencies (including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334) from which prior approval is required.

(5) Where interpretation is needed as to the exact location of the boundaries of the areas of special flood hazards (for example, where there appears to be a conflict between a mapped boundary and actual field conditions) the Floodplain Administrator shall make the necessary interpretation.

(6) Notify, in riverine situations, adjacent communities, the State Coordinating Agency, which is the Texas Water Development Board (TWDB), *and the Texas Commission on Environmental Quality (TCEQ)*, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency.

(7) Assure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained.

(8) When base flood elevation data has not been provided in accordance with Section 24.69.3, the Floodplain Administrator shall obtain, review and reasonably utilize any base flood elevation data and floodway data available from a Federal, State or other source, in order to administer the provisions of Section 24.69.5.

(9) When a regulatory floodway has not been designated, the Floodplain Administrator must require that no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

(10) Under the provisions of 44 CFR Chapter 1, Section 65.12, of the National Flood Insurance Program regulations, a community may approve certain development in Zones A1-30, AE, AH, on the community's FIRM which increases the water surface elevation of the base flood by more than 1 foot, provided that the community first completes all of the provisions required by Section 65.12.

C. Permit Procedure

(1) Application for a Floodplain Development Permit shall be presented to the Floodplain Administrator on forms furnished by him/her and may include, but not be limited to, plans in duplicate drawn to scale showing the location, dimensions, and elevation of proposed landscape alterations, existing and proposed structures, including the placement of manufactured homes, and the location of the foregoing in relation to areas of special flood hazard. Additionally, the following information is required:

(a) Elevation (in relation to mean sea level), of the lowest floor (including basement) of all new and substantially improved structures;

(b) Elevation in relation to mean sea level to which any nonresidential structure shall be floodproofed;

(c) A certificate from a registered professional engineer or architect that the non-residential floodproofed structure shall meet the floodproofing criteria of, Section 24.69 (2);

(d) Description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of proposed development;

(e) Maintain a record of all such information in accordance with Section 24.69.4 (B)(1);

(f) An elevation certificate shall be required before pouring of foundation for any new or substantially improved structure.

(g) All applications for a floodplain development permit shall be accompanied by an application fee of $200.00.

(h) Floodplain verification letter requests shall incur a fee of $ 25.00.

(2) Approval or denial of a Floodplain Development Permit by the Flooplain Administrator shall be based on all of the provisions of this ordinance and the following relevant factors:

(a) The danger to life and property due to flooding or erosion damage;

(b) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;

(c) The danger that materials may be swept onto other lands to the injury of others;

(d) The compatibility of the proposed use with existing and anticipated development;

(e) The safety of access to the property in times of flood for ordinary and emergency vehicles;

(f) The costs of providing governmental services during and after flood conditions including maintenance and repair of streets and bridges, and public utilities and facilities such as sewer, gas, electrical and water systems;

(g) The expected heights, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site;

(h) The necessity to the facility of a waterfront location, where applicable;

(i) The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use.

(3) A description of the extent to which any watercourse will be altered or relocated as a result of proposed development. Computations by a licensed professional engineer must be submitted that demonstrate that the altered or relocated segment will provide equal or greater conveyance than the original stream segment. If buildable lots are proposed adjacent to the altered watercourse and fall within the existing floodplain, then the applicant must submit any maps, computations or other material required by the Federal Emergency Management Agency (FEMA) to revise the documents enumerated in Section 24.69.2, when notified by the Local Administrator, and must pay any fees or other costs assessed by FEMA for this purpose.

D. Variance Procedures

(1) The Board of Adjustment shall hear and render judgment on requests for variances from the requirements of this ordinance.

(2) The Board shall hear and render judgment on an appeal only when it is alleged there is an error in any requirement, decision, or determination made by the Floodplain Administrator in the enforcement or administration of this ordinance.

(3) Any person or persons aggrieved by the decision of the Board may appeal such decision in the courts of competent jurisdiction.

(4) The Floodplain Administrator shall maintain a record of all actions involving an appeal and shall report variances to the Federal Emergency Management Agency upon request.

(5) Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places, without regard to the procedures set forth in the remainder of this ordinance.

(6) Variances may be issued for new construction and substantial improvements to be erected on a lot of 1/2 acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing the relevant factors in C (2) of this Section have been fully considered. As the lot size increases beyond the 1/2 acre, the technical justification required for issuing the variance increases.

(7) Upon consideration of the factors noted above and the intent of this ordinance, the Board may attach such conditions to the granting of variances as it deems necessary to further the purpose and objectives of this ordinance (Section 24.69.1).

(8) Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

(9) Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

(10) Prerequisites for granting variances:

(a) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

(b) Variances shall only be issued upon: (i) showing a good and sufficient cause; (ii) a determination that failure to grant the variance would result in exceptional hardship to the applicant, and (iii) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

(c) Any application to which a variance is granted shall be given written notice that the structure will be permitted to be built with the lowest floor elevation below the base flood elevation, and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.

(11)Variances may be issued by a community for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that (i) the criteria outlined in Section 24.69.4 (D) (1)-(9) are met, and (ii) the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

SECTION 24.69.5 ~~7~~ PROVISIONS FOR FLOOD HAZARD REDUCTION

A. General Standards

In all areas of special flood hazards the following provisions are required for all new construction and substantial improvements:

(1) All new construction or substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy;

(2) All new construction or substantial improvements shall be constructed by methods and practices that minimize flood damage;

(3) All new construction or substantial improvements shall be constructed with materials resistant to flood damage;

(4) All new construction or substantial improvements shall be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed (example: flood proofing) and/or located (example: elevated *18 inches (or more)* above the BFE) so as to prevent water from entering or accumulating within the components during conditions of flooding;

(5) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system;

(6) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the system and discharge from the systems into flood waters; and,

(7) On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

B. Specific Standards

In all areas of special flood hazards where base flood elevation data has been provided as set forth in (i) Section 24.69.3 B, (ii) Section 24.69.4 B (8), or (iii) Section 24.69.5 C (3), the following provisions are required:

(1) Residential Construction - new construction and substantial improvement of any residential structure shall have the lowest floor (including basement), together with attendant utilities (for example, junction boxes, breaker boxes, electrical outlets, switches, plugs, HVAC systems, a/c ductwork, hot water heaters or any non-structural system which when inundated with water would make the structure uninhabitable), elevated 18 inches (or more) above the base flood elevation. A registered professional engineer, architect, or land surveyor shall submit a certification to the Floodplain Administrator that the standard of this subsection as proposed in Section 24.69.4 C (1) a., is satisfied.

(2) Nonresidential Construction - new construction and substantial improvements of any commercial, industrial or other nonresidential structure shall either have the lowest floor (including basement), together with attendant utilities (for example, junction boxes, breaker boxes, electrical outlets, switches, plugs, HVAC systems, a/c ductwork, hot water heaters or any non-structural system which when inundated with water would make the structure uninhabitable), elevated 18 inches (or more) above the base flood level or together with attendant utility and sanitary facilities, be designed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered professional engineer or architect shall develop and/or review structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice as outlined in this subsection. A record of such certification which includes the specific elevation (in relation to mean sea level) to which such structures are flood proofed shall be maintained by the Floodplain Administrator.

(3) Enclosures - new construction and substantial improvements, with fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access or storage in an area other than a basement and which are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria:

(a) A minimum of two openings on separate walls having a total net area of not less than 1 square inch for every square foot of enclosed area subject to flooding shall be provided.

(b) The bottom of all openings shall be no higher than 1 foot above grade.

(c) Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

(4) Manufactured Homes

(a) Require that all manufactured homes to be placed within Zone A on a community's FHBM or FIRM shall be installed using methods and practices which minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces.

(b) Require that manufactured homes that are placed or substantially improved within Zones A1-30, AH, and AE on the community's FIRM on sites (i) outside of a manufactured home park or subdivision, (ii) in a new manufactured home park or subdivision, (iii) in an expansion to an existing manufactured home park or subdivision, or (iv) in an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as a result of a flood, be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated 18 inches (or more) above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

(c) Require that manufactured homes be placed or substantially improved on sites in an existing manufactured home park or subdivision with Zones A1-30, AH and AE on the community's FIRM that are not subject to the provisions of paragraph (4) of this section be elevated so that either:

(i) the lowest floor of the manufactured home is 18 inches (or more) above the base flood elevation, or

(ii) the manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

(5) Recreational Vehicles - Require that recreational vehicles placed on sites within Zones A1-30, AH, and AE on the community's FIRM either (i) be on the site for fewer than 180 consecutive days, or (ii) be fully licensed and ready for highway use, or (iii) meet the permit requirements of Section 24.69.4 C (1), and the elevation and anchoring requirements for "manufactured homes" in paragraph (4) of this section. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.

C. Standards for Subdivision Proposals

(1) All subdivision proposals including the placement of manufactured home parks and subdivisions shall be consistent with Sections 24.69.1 B and C, and Section 24.69.2 of this ordinance.

(2) All proposals for the development of subdivisions including the placement of manufactured home parks and subdivisions shall meet Floodplain Development Permit requirements of Section 24.69.3 C; Section 24.69.4 C; and the provisions of Section 24.69.5 of this ordinance.

(3) Base flood elevation data shall be generated for subdivision proposals and other proposed development including the placement of manufactured home parks and subdivisions which is greater than 50 lots or 5 acres, whichever is lesser, if not otherwise provided pursuant to Section 24.69.3 B or Section 24.69.4 B (8) of this ordinance.

(4) All subdivision proposals including the placement of manufactured home parks and subdivisions shall have adequate drainage provided to reduce exposure to flood hazards.

(5) All subdivision proposals including the placement of manufactured home parks and subdivisions shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize or eliminate flood damage.

D. Standards for Areas of Shallow Flooding (AO/AH Zones)

Located within the areas of special flood hazard established in Section 24.69.3 B, are areas designated as shallow flooding. These areas have special flood hazards associated with flood depths of 1 to 3 feet where a clearly defined channel does not exist, where the path of flooding is unpredictable, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow; therefore, the following provisions apply:

(1) All new construction and substantial improvements of residential structures have the lowest floor (including basement) elevated 18 inches (or more) above the base flood elevation or the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least 3 feet if no depth number is specified).

(2) All new construction and substantial improvements of non-residential structures;

(a) have the lowest floor (including basement) elevated to or above the base flood elevation or the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least 3 feet if no depth number is specified), or

(b) together with attendant utility and sanitary facilities be designed so that below the base specified flood depth in an AO Zone, or below the Base Flood Elevation in an AH Zone, level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads of effects of buoyancy.

(3) A registered professional engineer or architect shall submit a certification to the Floodplain Administrator that the standards of D herein, as proposed in Section 24.69.4 C are satisfied.

(4) Require within Zones AH or AO adequate drainage paths around structures on slopes, to guide flood waters around and away from proposed structures.

SECTION E - FLOODWAYS

Floodways - located within areas of special flood hazard established in Section 24.69.3 B, are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles and erosion potential, the following provisions shall apply:

(1) Encroachments are prohibited, including fill, new construction, substantial improvements and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

(2) If Section 24.69.5 E (1) above is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of Section 24.69.5.

(3) Under the provisions of 44 CFR Chapter 1, Section 65.12, of the National Flood Insurance Program Regulations, a community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that the community first completes all of the provisions required by Section 65.12.

SECTION F – SEVERABILITY

If any section, clause, sentence, or phrase of this Ordinance is held to be invalid or unconstitutional by any court of competent jurisdiction, then said holding shall in no way affect the validity of the remaining portions of this Ordinance.

SECTION G - PENALTIES FOR NON COMPLIANCE

No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this court order and other applicable regulations. Violation of the provisions of this court order by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute a misdemeanor. Any person who violates this court order or fails to comply with any of its requirements shall upon conviction thereof be fined not more than $ 500 for each violation, and in addition shall pay all costs and expenses involved in the case. Nothing herein contained shall prevent The City of Laredo from taking such other lawful action as is necessary to prevent or remedy any violation.

Section 2: This ordinance shall be published in a manner provided by Section 2.09 (D) of the Charter of the City of Laredo.

Section 3: This ordinance shall become effective as and from the date of publication specified in Section 2.

Section 4: Severability

If any provision, section subsection, sentence, clause, or phrase of this ordinance, or the application of the same to any person or set of circumstances is for any reason held to be unconstitutional, void or invalid, the validity of the remaining portions of this ordinance or their application to other persons or sets of circumstances shall not be affected thereby, it being the intent of the City Council in adopting this ordinance that no portion hereof or provision or regulation contained herein shall become inoperative or fail by reason of any unconstitutionality, voidness or invalidity or another portion hereof, and all provisions of this ordinance are declared to be severable for that purpose.

Section 5: Open Meeting

The City Council officially finds, determines, recites and declares that a sufficient written notice of the date, hour, place and subject of this meeting of the City Council was posted at a place convenient to the public at the city hall of the City for the time required by law preceding this meeting as required by the Open Meeting Law, Article 6252-17, Texas Revised Civil Statutes Annotated; and that this meeting has been open to the public as required by law at all times during which this ordinance and the subject matter approves and confirms such written notice and the contents and posting hereof.

PASSED BY THE CITY COUNCIL AND APPROVED BY THE MAYOR ON THIS THE 3 DAY OF June, 2019.

PETE SAENZ, JR.
MAYOR

ATTEST:

JOSE A. VALDEZ, JR.
CITY SECRETARY

APPROVED AS TO FORM:

KRISTINA K. LAUREL-HALE
CITY ATTORNEY

City Council-Regular
Meeting Date: 06/03/2019
Initiated By: Robert A. Eads, Co-Interim City Manager
Initiated By: Planning Department
Staff Source: Fernando C. Morales, Jr.

Prior Action: This item was introduced by the Honorable Roberto Balli at the regular City Council meeting of May 20, 2019.

SUBJECT

2019-O-087 regarding the revision of the City of Laredo Land Development Code, Section 24-69, Flood Damage Prevention, by adding "Statutory Authorization" and "Finding of Fact" sections, revising Section 24.69.4 - A, Designation of the Floodplain Administrator as the Building Director, including the Texas Commission of Environmental Quality (TCEQ) in Section 24.69.4 - B6, revising the elevation requirements of service equipment in Section 24.69.5 - A4, and revising section numbers; providing for publication and effective date.

Planning and Zoning Commission recommended **approval** and **staff supports** the proposed revision.

VENDOR INFORMATION FOR COMMITTEE AGENDA

N/A

BACKGROUND

On February 28, 2019, The Texas water Development Board, during their Community Assistance Visit, suggested revisions to the Flood Damage Prevention Prevention Ordinance in order to comply with the new requirements.

On April 4, 2019, this item (Revisions to Section 24-69 - Flood Damage Prevention Ordinance) was brought to the P & Z commission for their review.

On April 18, 2019 this item (Revisions to Section 24-69 - Flood Damage Prevention Ordinance) was brought to the P & Z commission for discussion and possible action. The P & Z commission approved this item.

COMMITTEE RECOMMENDATION

The Planning and Zoning Commission in a 7 to 0 vote recommended approval of the Laredo Land Development Code Section 24-69 revision.

STAFF RECOMMENDATION

Staff recommended Approval of the Laredo Land Development Code Section 24-69 revision.

Fiscal Impact

Fiscal Year:
Bugeted Y/N?:
Source of Funds:
Account #:
Change Order: Exceeds 25% Y/N:
FINANCIAL IMPACT:
N/A

Attachments

Ordinance No. 2019-O-087
Flood Damage Prevention Ordinance

OR (956)206-8089 | ing $109K SOLD

LEGALS 250 | LEGALS 250

ORDINANCE NO. 2019-O-083
AMENDING THE ZONING ORDINANCE (MAP) OF THE CITY OF LAREDO BY AUTHORIZING A CONDITION USE PERMIT FOR A BAR ON LOT 6, BLOCK 1, SAN ISIDRO MONARCH SUBDIVISION, LOCATED AT 10211 GOLONDRINA DR. BUILDING A (110SF); PROVIDING FOR PUBLICATION AND EFFECTIVE DATE.
L-25

LEGALS 250 | LEGALS 250

ORDINANCE NO. 2019-O-087
AMENDING SECTION 24.69 OF THE CITY OF LAREDO LAND DEVELOPMENT CODE, FLOOD DAMAGE PREVENTION, BY ADDING A "STATUTORY AUTHORIZATION AND "FINDING OF FACT" SECTIONS, REVISING SECTION 24.69.4 – A, DESIGNATION OF THE FLOODPLAIN ADMINISTRATOR, INCLUDING THE TEXAS COMMISSION OF ENVIRONMENTAL QUALITY (TCEQ) IN SECTION 24.69.4 – B6, REVISING THE ELEVATION REQUIREMENTS OF SERVICE EQUIPMENT IN SECTION 24.69.5 – A4, AND REVISING SECTION NUMBERS; PROVIDING FOR PUBLICATION AND EFFECTIVE DATE.
L-27

Laredo Webb County Texas. Managing Members of said LLC are Reynaldo Rocha, Samuel Rocha, Rolando Rocha and Luis Reynaldo Rocha Jr.
L-18

APPLICATION HAS BEEN MADE WITH THE TEXAS ALCOHOLIC BEVERAGE COMMISSION FOR A WINE AND BEER PERMIT BY HORIZON JR LAREDO, LLC, DBA JOHNNY ROCKETS TO BE LOCATED AT 1600 WATER STREET, UNIT A300 LAREDO, WEBB COUNTY, TEXAS. OFFICERS OF SAID CORORATION ARE GARY SKOIEN-PRESIDENT, JAMES HARRIS-VICE PRESIDENT-DAVID TINKHAM-VICE PRESIDENT, ARTURO VELAZQUEZ-VICE PRESIDENT
L-33

LEGALS 250 | LEGALS 250

NOTICE OF PUBLIC SALE

Pursuant to Chapter 59, Texas Property Code, South Meadow Self Storage will hold a public auction of property being sold to satisfy a landlord's lien. Sale will be at 10:00 am June 22 nd , 2019 at 1320 South Meadow Ave. Property will be sold to highest bidder for cash. Deposit for removal and cleanup may be temporarily required. Seller reserves the right to not accept any bid and to withdraw property from sale. Property in each space may be sold item-by-item, in batches, or by the space. Property being sold includes contents in space(s) of the tenants listed below, with a brief description of contents in the space(s).

Unit	Name	General Description
06	Perla Aripe	Table, Sofa, Chairs
20	Sandra Gomez	Refrigerator, Clothes, Dresser
28	Patricia Ruiz	Clothes, Chairs, Misc. Items
43	Juan Jose Esparza	Misc. Items
57	Leticia Morales	Sofa, Chairs, Misc. Items
102	Jose Vital	Sofa, Chairs, Misc. Items
218	Jose Luis Villanueva	Clothes, Dresser, Misc. Items

L-19

LEGALS 250 | LEGALS 250

ORDINANCE NO. 2019-O-084
AMENDING THE ZONING ORDINANCE (MAP) OF THE CITY OF LAREDO BY AUTHORIZING THE ISSUANCE OF A SPECIAL USE PERMIT FOR A RESTAURANT SERVING ALCOHOL ON LOTS 7A & 8A, BLOCK 1, SAN ISIDRO MONARCH SUBDIVISION, UNIT 6, LOCATED AT 2445 SAN ISIDRO PARKWAYS; PROVIDING FOR PUBLICATION AND EFFECTIVE DATE.
L-26

LEGALS 250 | LEGALS 250

(SINGLE FAMILY MANUFACTURED HOUSING DISTRICT) TO R-1A (SINGLE FAMILY REDUCED AREA DISTRICT); PROVIDING FOR PUBLICATION AND EFFECTIVE DATE.
L-24

PUBLICATION POLICY
Publisher reserves the right to edit or reject copy to comply with policy of newspaper.

ERRORS and CORRECTIONS
Corrections of errors by the newspaper may be called in any day during business hours and will be corrected for the following day, except Wednesday, Saturday and Sunday.

ERROR RESPONSIBILITIES
The Laredo Morning Times does not assume any responsibility for an ad beyond the cost of ad itself. We are responsible only for the first incorrect insertion of an ad. Advertisers are advised to check their ad immediately after it appears in the paper and report at once any error found. Notice of errors must be given before second insertion of claims or extensions will be recognized.

AD CANCELLATIONS
An ad may be cancelled for the next following day during business hours daily, except on Wednesday, Saturday and Sunday.

OMISSION OF ADS
The Laredo Morning Times shall not be liable for any damages or loss that might occur from error or omissions in advertisements as printed in excess of the amount charged therefore in case an ad fails to appear, no liability shall exist on the part of The Laredo Morning Times, except that no charge shall be made therefore.

LEGALS 250 | HOMES FOR SALE 61

OPEN HOUSE SATURDAY 11AM-2PM

1762 Arenosa Pass Dr., 5/3; LA 2,467 sq ft; Lot Size 5,940 sq. ft. Master Bedroom downstairs. Beautiful home with upgrades. Roger Perales Real Estates Services (956) 763 0838 or (956) 763-0004

WAREHOUSES FOR LEASE

7,500 sq. ft. 4 doors, parking for 15 trailer tractors. Plus 1,000 sq. ft of office space. Also available other bigger warehouses with spacious parking.
(956) 722-2202

REAL ESTATE

NATIONAL HOCKEY LEAGUE

Stars re-sign Mattias Janmark, Roman Polak to 1-year deals

ASSOCIATED PRESS

Appendix E: Capability Assessment

Jurisdiction and/or Dept.:	**City of Laredo**
Name and Title:	Guillermo Heard, Fire Chief/Emergency Management Coordinator

1. PLANNING AND REGULATORY CAPABILITY - Please indicate whether the following planning or regulatory tools (plans, ordinances, codes or programs) are currently in place or under development for your jurisdiction. Please provide additional comments or explanations in the space provided or with attachments.

Planning and Regulatory Resource	In Place	Under Development	Comments
Comprehensive / Master Plan	**Yes**		Link: https://www.openlaredo.com/planning/2017_Comprehensive_Plan-Viva_Laredo.pdf
Stormwater Management Plan / Ordinance	**Yes**		Section 24-59 – Land Development Code. Link: https://www.cityoflaredo.com/home/showpublisheddocument/908/638101091990530000#page=65 Consult with City Engineer regarding ordinance.
Emergency Operations Plan	**Yes**		City Annex
Capital Improvements Plan	**Yes**		Link: https://www.cityoflaredo.com/departments/budget Consult with Budget Department and Engineering Department
Floodplain Management Plan	**Yes**		See – Floodplain Ordinance Section.
Economic Development Plan	**Yes**		We have Chapter 9 Economic Development in the Viva Laredo Comprehensive plan. Advisory meeting held 12/14/23 to review and update the section and provide new recommendations to the plan.

Transportation Plan	**Yes**		Active Transportation Plan Link: https://www.cityoflaredo.com/home/showpublisheddocument/2226/638109347438970000 Future Thoroughfare Plan Link: https://www.cityoflaredo.com/home/showpublisheddocument/10254/638273408739870000 Consult with Metropolitan Planning Organization, City Planning, City Traffic Department.
Wildfire Protection Plan	**Yes**		
Stormwater Ordinance	**Yes**		
NFIP Community Rating System (CRS Program)	**No**	**In Progress/Under Development**	Link to FEMA list of eligible communities (October – 2023): https://www.fema.gov/sites/default/files/documents/fema_crs_eligible-communities_oct-2023.pdf
Floodplain Ordinance	**Yes**		Flood Damage Prevention Section 24-69 – Land Development Code. Link: https://www.cityoflaredo.com/home/showpublisheddocument/908/638101091990530000#page=164
Continuity of Operations Plan			
Building Code (include name/year under Comments)	**Yes**		Link to Adopted Building Code Listing: https://www.cityoflaredo.com/departments/building-development-services International Building Code 2018.
Zoning Ordinance	**Yes**		Zoning Regulations: Article IV of Land Development Code: https://www.cityoflaredo.com/home/showpublisheddocument/908/638101091990530000#page=97
Acquisition of Land for Open Space/Recreation Use	**Yes**		Parkland Dedication Section of Land Development Code Article III – Link: https://www.cityoflaredo.com/home/showpublisheddocument/908/638101091990530000#page=37 Consult with Parks Department (Elizabeth Carrera) for latest Parks Master Plan and Parkland Dedication.

2. ADMINISTRATIVE AND TECHNICAL CAPABILITY - Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources			
Staff / Personnel Resources	**Yes**	**No**	**Comments**
Maintenance program to reduce risk (tree trimming, clearing drainage systems)	**Yes**		Environmental Services, Public Works, Parks have a Maintenance Program.
Mutual Aid Agreements (between neighboring jurisdictions)	**Yes**		Formal Mutual Aid Agreements with Nuevo Laredo, Mexico. Informal Mutual Aid Agreements: Webb County, Webb County Sherriff's Office, Constable's Office and an agreement between the City of Laredo Utilities Department with Webb County.
Mitigation Planning Committee	**Yes**		The team was created for the Hazard Mitigation Plan. The Office of Emergency Management also has a team consisting of the City Manager's Office, Fire Chief, Police Chief, Community Development, Health, Utilities, Engineering, and the Public Works Department.
Community Planner	**Yes**		City of Laredo Planning Department – Orlando Navarro, Planning and Zoning Director.
Staff Engineer	**Yes**		Ramon Chavez, Engineer
Emergency manager	**Yes**		Guillermo Heard, Fire Chief/EMC
Floodplain manager	**Yes**		John Hickle, Building Services Director
Personnel skilled in Geographic Information Systems (GIS)	**Yes**		IST Department, Environmental Services Department, Building Department, Planning Department, Utilities, Engineering.
Warning Systems/outdoor siren, reverse 911, other	**Yes**		IPAWS system managed by 911 dispatchers under the Laredo Police Department. The Police Chief is in charge of emergency communications.
Grant Writer	**Yes**		There are some City departments that have staff who do grant writing/submit grant applications. Also, these departments have staff that manage and report on grants awarded. Fire, Police, Health, Community Development, and Economic Development.

Hazard Data/historical disaster data	**Yes**		Fire, Utilities, and Environmental Services have Hazard Data/Historical Disaster Data.
Chief Building Official	**Yes**		Gerardo Pinzon, Building Official.
3. FISCAL CAPABILITY - Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources *for hazard mitigation purposes*			
Financial Resources	**Yes**	**No**	**Comments**
Capital Improvement Programming	**Yes**		Capital Improvement Plan: cityoflaredo.com/home/showpublisheddocument/9990/638267662197530000
Community Development Block Grants (CDBG)	**Yes**		In place, as long as resources comply with HUD standards.
Stormwater Utility Fees	**Yes**		Storm Water Fee Ordinance Link: https://esd.cityoflaredo.com/ESDWeb/rate05.pdf In place, for certain hazards.
Development Impact Fees		**No**	Impact Fee Committee created by Council. Development of Impact Fees is ongoing. Requires council approval.
Authority to levy taxes for specific purposes	**Yes**		City Council has the authority to levy taxes under the City Charter.
Other: _____			
4. EDUCATION AND OUTREACH - Please identify any education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information such as school programs, StormReady, FireWise programs, environmental protection, evacuation plan, emergency preparedness, public education programs.			
1. Environmental Protection Outreach 2. SKYWARN 3. Fire Prevention Month – yearly School Visits 4. Implementation of Doppler Radar into Weather Early Warning			

5. PREVIOUS MITIGATION ACTIVITIES - Please list any previous mitigation activities (e.g. structural and/or planning projects or grants) that have been or will be implemented for your community. Please include the title of the project or grant along with any start or completion dates and the department or agency responsible.
1. Yearly Airport Disaster Drill 2. Natural Gas Disaster Drill (April 2024) 3. Implementing Alert Media 4. Opioid Awareness Program

Appendix F: Adoption Resolution