Draft 2023 San Antonio Regional Flood Plan

Flood Planning Region 12

August 1, 2022

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REGION 12 SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

Texas Water Development Board

Draft 2023 San Antonio Regional Flood Plan

August 2022

Prepared for San Antonio Regional Flood Planning Group

Administered by San Antonio Regional Flood Planning Group Sponsor:

SAN ANTONIO RIVER AUTHORITY

Prepared By:

HDR

HALFF

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DATE: August 1, 2022

Draft 2023 San Antonio Regional Flood Plan

August 2022

San Antonio Regional Flood Planning Group

Voting Members	Non Voting Members
Brian Yanta Goliad County *Agricultural*	Marty Kelly Texas Parks and Wildlife Department
David Wegmann Bexar County *Counties*	Natalie Johnson Texas Division of Emergency Management
Doris Cooksey CPS Energy *Electric Generating Utilities*	Jami McCool Texas Department of Agriculture
Debbie Reid Greater Edwards Aquifer Alliance *Environmental*	Jarod Bowen Texas State Soil and Water Conservation Board
Nefi Garza City of San Antonio / Tetra Tech *Flood Districts*	Kris Robles General Land Office
Cara Tackett Pape-Dawson Engineers *Industries*	Anita Machiavello Texas Water Development Board
Jeffrey Carrol City of Boerne *Municipalities*	Joel Anderson Texas Commission on Environmental Quality
Suzanne Scott Nature Conservancy *Nonprofit*	
John Beasley U.S. Army Environmental Command *Public*	
Derek Boese San Antonio River Authority *River Authorities*	
Steve Gonzales Neel-Schaffer, Inc. *Small Business*	
David Mauk Bandera Co. River Authority & Groundwater District *Water Districts*	
Steven Clouse San Antonio Water System *Water Utilities*	

SAN ANTONIO
RIVER AUTHORITY

July 28, 2022

Ms. Reem Zoun
Director, Flood Planning
Water Supply and Infrastructure
Texas Water Development Board
Stephen F. Austin Bldg.
P.O. Box 13231
Austin, Texas 78711-3231

RE: Draft Regional Flood Plan submittal for the San Antonio Regional Flood Planning Group

Dear Ms. Zoun:

Included in this transmittal are two hard copies and two electronic copies of the Draft San Antonio Regional Flood Plan (Draft Plan), including one in searchable portable document format (PDF) and one in Microsoft Word format. Also included in this submittal are an executive summary and the requested geodatabases with spatial data associated with the Draft Plan.

On July 25, 2022, the San Antonio Regional Flood Planning Group (Region 12) approved and authorized the San Antonio River Authority to submit the Draft Regional Flood Plan and associated data to the Texas Water Development Board. The Draft Plan was developed in accordance with Texas Water Code and 31 TAC Chapters 361 and 362. Region 12 met all requirements under the Texas Open Meetings Act and Public Information Act during development of the Draft Plan.

We look forward to continuing to enrich, update, and enhance the information presented in the Draft Plan toward development of the final plan.

Please contact Kendall Hayes at 210-302-3641 with any questions or comments.

Derek Boese
General Manager

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List of Abbreviations

44 CFR	Title 44 of the Code of Federal Regulations
AF	Acre-Feet
ARPA	American Rescue Plan Act
ASDSO	Association of State Dam Safety Officials
BCA	Benefit-cost Analysis
BCR	Benefit-cost Ratio
BCRAGD	Bandera County River Authority and Groundwater District
BFE	Base Flood Elevation
BIL	Bipartisan Infrastructure Law
BLE	Base Level Engineering
BRIC	Building Resilient Infrastructure and Communities
BRWN	Bexar Regional Watershed Management
CAP	Partnerships with USACE, funded through Continuing Authorities Program
CDBG-DR	Community Development Block Grant Disaster Recovery Funds
CDBG-MIT	Community Development Block Grant – Mitigation
CDC	Centers for Disease Control and Prevention
CIP	Capital Improvement Plans
CoSA	City of San Antonio
CRS	Community Rating System
CTP	Cooperative Technical Partnership
CWSRF	Clean Water State Revolving Fund
D2MR	digital data & modeling repository
DA	Drainage Area
DD	Drainage Districts
DFirm	Digital Flood Insurance Rate Map
Dfund	Texas Water Development Fund
DOD	Department of Defense
EAP	Emergency Action Plan
EPA	Environmental Protection Agency
EWP	Emergency Watershed Protection
FAFDS	First American Flood Data Services
FCD	Flood Control Districts
FEMA	Federal Emergency Management Agency
FIF	Flood Infrastructure Fund
FIMP	Flood Inundation Mapping Program
FIMS	Flood Inundation Maps
FIRM	Flood Insurance Rate Map

FMA	Flood Mitigation Assistance
FME	Flood Management Evaluations
FMP	Flood Management Projects
FMS	Flood Management Strategies
FPR	Flood Planning Region
GI	Green Infrastructure
GIS	Geographic Information Systems
GLO	General Land Office
HALT	Highwater Alert Lifesaving Technology
HEC-RAS	Hydrologic Engineering Center River Analysis System
HHPD	Rehabilitation of High Hazard Potential Dam Grant Program
HIRA	Hazard Identification Risk Assessment
HMAP	Hazard Mitigation Action Plans
HMGP	Hazard Mitigation Grant Program
HUC	Hydrologic Unit Code
HUD	Housing and Urban Development
IIJA	Infrastructure Investment and Jobs Act
LID	Low Impact Development
LOMC	Letters of Map Change
LOS	Level-of-Service
LWC	Low Water Crossing
MS4	Municipal Separate Storm Sewer Systems
MUD	Municipal Utility District
NBI	Nature-based infrastructure
NBS	Nature Based Solutions
NFHL	National Flood Hazard Layer
NFIP	National Flood Insurance Program
NFMF	Natural Flood Mitigation Features
NOAA	National Oceanic and Atmospheric Administration
NRCS	National Resources Conservation Service
NWS	National Weather Service
O&M	Operation and Maintenance
PA	Public Assistance
RFC	River Forecast Centers
RFP	Regional Flood Plan
RFPG	Regional Flood Planning Group
Risk MAP	Risk Mapping, Assessment and Planning
SAFE	San Antonio Flood Emergency
SAFPR	San Antonio Flood Planning Region
SARA	San Antonio River Authority

SARB	San Antonio River Basin
SFHA	Special Flood Hazard Areas
SFP	State Flood Plan
SLFRF	State and Local Fiscal Recovery Funds
STORM	Safeguarding Tomorrow through Ongoing Risk Mitigation
SVI	Social Vulnerability Index
SWCD	Soil and Water conservation District
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDA	Texas Department of Agriculture
TDEM	Texas Division of Emergency Management
TFMA	Texas Floodplain Management Association
TNRIS	Texas Natural Resources Information System
TPDES	Texas Pollutant Discharge Elimination System
TSSWCB	Texas State Soil & Water Conservation Board
TWDB	Texas Water Development Board
TWSSWB	Texas State Soil and Water Conservation Board
TxCDBG	Community Development Block Grant
TxDOT	Texas Department of Transportation
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WCID	Water Control and Improvement Districts
WRDA	Water Resources Development Acts
WSE	water surface elevation

ES

Executive Summary

ES.1 General Description of the Region

In 2019, the 86th Texas Legislature adopted changes to the Texas Water Code Section (§)16.061 that established the regional and state flood planning process. Regional flood plans (RFPs) for 15 flood planning regions across the state will be compiled in the 2024 state flood plan (SFP). The Texas Water Development Board (TWDB) is charged with overseeing the development of the regional and state flood plans. TWDB appointed a Regional Flood Planning Group (RFPG) for each region and the San Antonio River Authority is the sponsor for the SAFPR (Region 12). The members of the San Antonio RFPG for the first flood planning cycle are listed in Table ES-1.

Table ES-1. SAFPG Membership

Member Name	Interest Category	Organization
Voting Members		
Brian Yanta	Agricultural	Goliad County
David Wegmann	Counties	Bexar County
Doris Cooksey	Electric Generating Utilities	CPS Energy
Debbie Reid	Environmental	Greater Edwards Aquifer Alliance
Nefi Garza	Flood Districts	City of San Antonio / Tetra Tech
Cara Tackett	Industries	Pape-Dawson Engineers
Jeffrey Carrol	Municipalities	City of Boerne
Suzanne Scott	Nonprofit	Nature Conservancy
John Beasley	Public	U.S. Army Environmental Command
Derek Boese	River Authorities	San Antonio River Authority
Steve Gonzales	Small Business	Neel-Schaffer, Inc.
David Mauk	Water Districts	Bandera Co River Authority & Groundwater District
Steven Clouse	Water Utilities	San Antonio Water System
Non-Voting Members		
Marty Kelly		Texas Parks and Wildlife Department

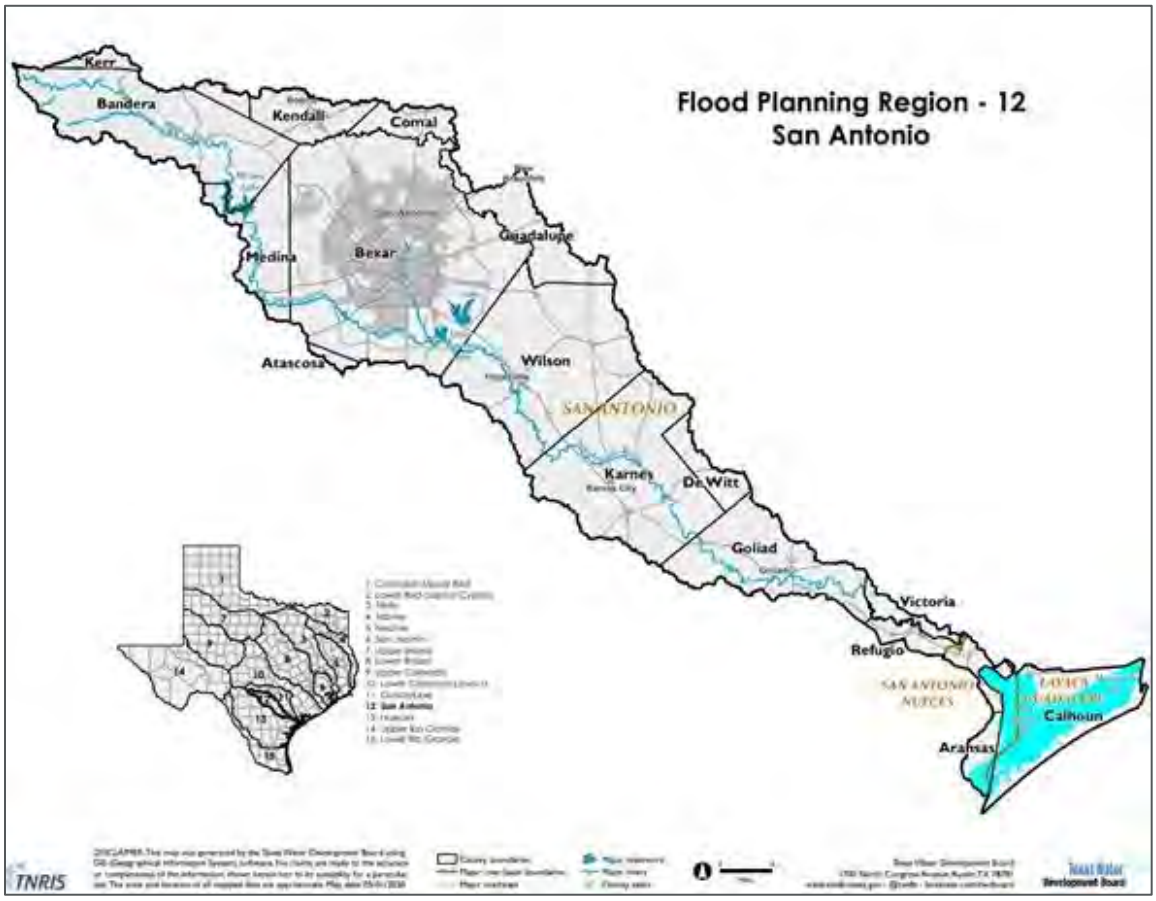
Member Name	Interest Category	Organization
Natalie Johnson		Texas Division of Emergency Management
Jami McCool		Texas Department of Agriculture
Jarod Bowen		TSSWCB
Kris Robles		General Land Office
Anita Machiavello		Texas Water Development Board
Joel Anderson		TCEQ

General Description

The San Antonio Flood Planning Region (SAFPR), Region 12, consists of parts of Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson Counties. The San Antonio River Basin (SARB) encompasses approximately 4,410 square miles (Figure ES-1). The SAFPR is bounded on the west and south by Texas Water Development Board (TWDB) Flood Planning Region (FPR) 13 (Nueces), on the north by TWDB FPR 11 (Guadalupe), and on the east by the Gulf of Mexico.

The planning area includes contains 110 entities including 49 cities, 16 counties, 4 river authorities, and 41 additional entities with flood-related authority. The total population in the SAFPR is about 2,212,988, which is majority within the San Antonio metropolitan area. Outside of the San Antonio area, the SAFPR is largely rural in nature, although significant growth is occurring in the portions of Comal, Guadalupe, Kendall and Wilson counties that lie within the planning region. The population of those four counties and Bexar County contain almost 97% of the total population of the region. Overall, the region is expected to grow by 40% between 2020 and 2050 to a population of about 3,095,520.

Figure ES-1. San Antonio (Region 12) Flood Planning Region



Existing Infrastructure Assessment

The San Antonio RFP collected information on natural features and constructed major infrastructure and added this information to a geographic information system (GIS) geodatabase. This infrastructure includes rivers, wetlands, sinkholes, dams, levees, many miles of storm drains and 2 large diameter flood diversion tunnels. The existing infrastructure was assessed as functional, non-functional, and deficient. 5 dams are considered non-functional, and 3 levee systems are considered deficient.

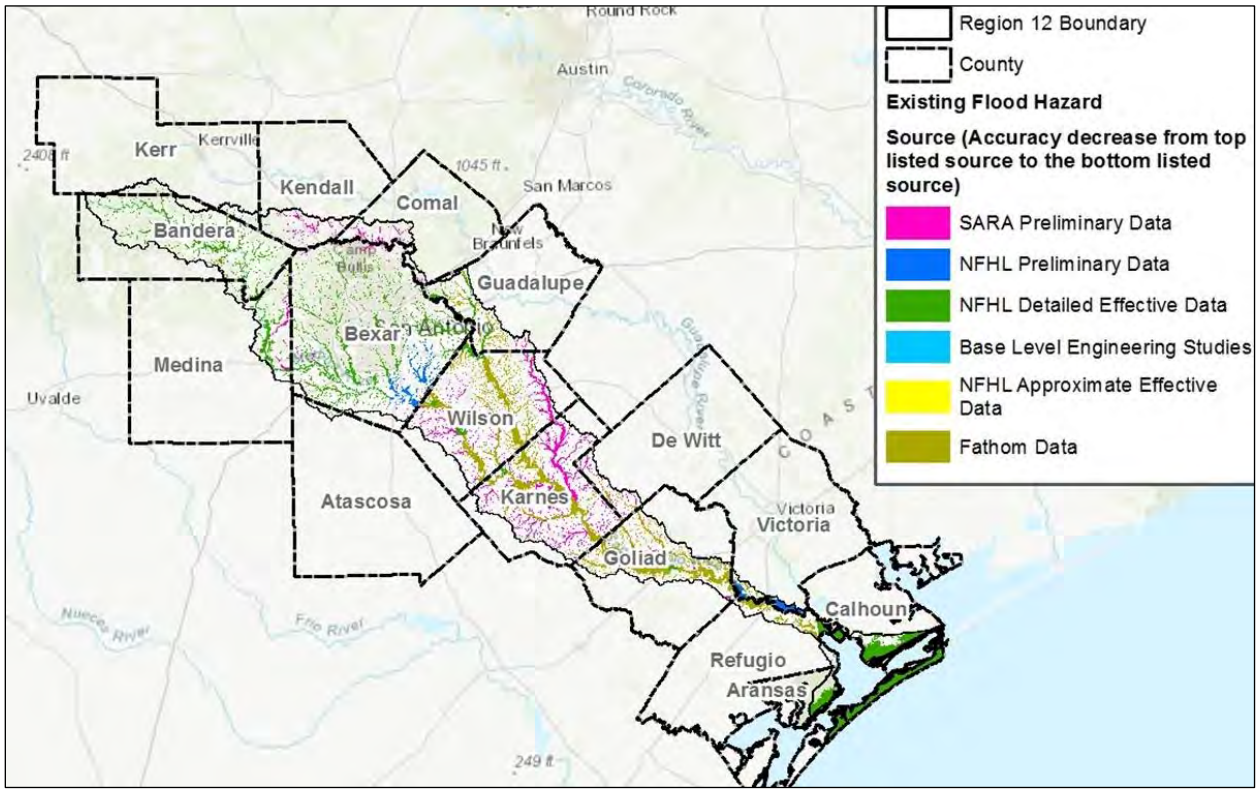
ES.2 Flood Risk Analysis

The flood plan determined the existing and future condition flood risk. The total flood risk is comprised of three components: hazard, exposure, and vulnerability. Hazard defines the location, magnitude, and frequency of flooding. Exposure defines who and what might be harmed. Vulnerability identifies vulnerable communities and critical facilities.

Inundation Boundary Models

The flood inundation boundaries are defined for the entire region using best available data, including detailed and approximate modeling and mapping data. Detailed models used for inundation mapping include National Flood Hazard Layer (NFHL) and SARA Preliminary Data. Part of the basin is based on approximate data which includes Base Level Engineering (BLE), NFHL approximate, and Fathom. BLE is estimated to be available for the entire basin by 2023 See for source of flood inundation boundaries used in the San Antonio RFP.

Figure ES-2. Source of Flood Modeling and Mapping Data



Future Condition Analysis

A future condition flood risk analysis was performed to approximate the flood hazard extents projected in 30 years' time, or the year 2050, based on a "no-action" scenario specified by the TWDB.

Inland Future Condition

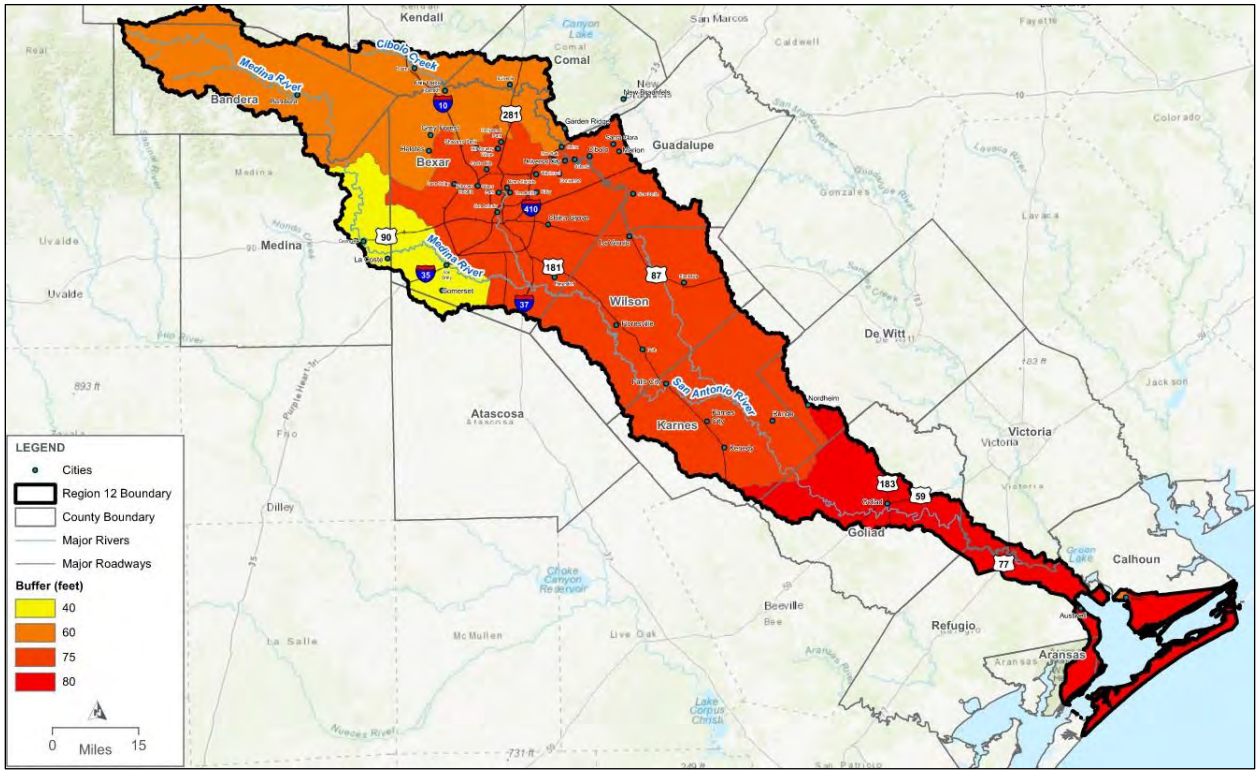
History has demonstrated that flood hazards tend to increase over time in populated areas due to projected increases in impervious cover, anticipated sedimentation in flood control structures, as well as other factors that result in increased or altered flood hazards. As a result, the future condition flood

hazard area was defined based on an expected increase in flooding extents and magnitude across the region. The existing 0.2% flood risk areas were used as the future 1% floodplains as outlined by the TWDB. Existing studied on climate change and their effects on flows and WSEL within the San Antonio River Basin were used to calculate the 0.2% future storm event risk area given as a buffer value. Horizontal floodplain buffers were calculated based on urbanization levels, location within the region, and general land slope. From the analysis, 4 buffers were applied to the SAFPR streams based spatial location within the region; Upper, Mid, Coastal, and Medina River.

Coastal Future Condition

Relative sea level rise is also considered a significant factor in the future condition flood risk along the coastline. Based on best available data from the National Oceanic and Atmospheric Administration's (NOAA) Global & Regional Sea Level Rise Scenarios for the United States (2022 update) a 1–2-ft relative sea level rise (SLR) was estimated, for the 2050 relative sea level rise condition. This 1-2 ft SLR matches closely with the future rise in riverine WSELs and therefore the riverine buffer in the coastal region of 160ft (80ft on each side) was used for the future mapping limits development.

Figure ES-3. Final Buffer Criteria



Exposure Flood Analyses

In existing conditions, 19,100 structures, 753.07 miles of roadway, 2,733 roadway crossings, and 79.75 square miles of agricultural land are at potential risk of flooding from the 1% annual chance storm event. In future conditions, the number of existing structures exposed the 1% annual chance flood inundation is expected to increase to 26,633 structures. However, this does not include the potential for construction of new structures built in the floodplain in areas with unregulated development in the floodplain.

From both existing and future analysis, several hot spots for flood exposure appear to be (1) the urban areas around the Cibolo and Medina Rivers due to the density of development and total population in those areas and (2) and the confluence of the San Antonio and Cibolo Rivers due to the magnitude of flood volume on each respective creek and similarity in watershed size. Additionally, flooded roadways and agricultural areas are found throughout the region, and the impacts due to the loss of function in these areas should not be understated. Flood exposure for existing conditions is shown in Figure ES-4.

Vulnerability Analysis

Social Vulnerability Index (SVI) values from the Centers for Diseases Control (CDC) were used to identify communities that may be less resilient and need more support before, during, or after disasters. SVI values were provided for all structures located in the region and an evaluation undertaken to determine where vulnerable structures are at flood risk in the basin. Additionally, the location of critical facilities at risk of flooding was also evaluated. Critical facilities include schools, hospitals, police stations, and fire stations. The analysis determined that 191 critical facilities are at risk of 1% annual chance storm event flood inundation. This increases to 220 critical facilities at risk in the future condition. Hot spots for structural flooding in vulnerable areas is shown in Figure ES-5. The potential effects from flooding could be higher in areas of high SVI value and critical infrastructure due to damage to the infrastructure and potential lack of services after the flooding event.

Figure ES-4. Existing Condition Exposure Heat Map

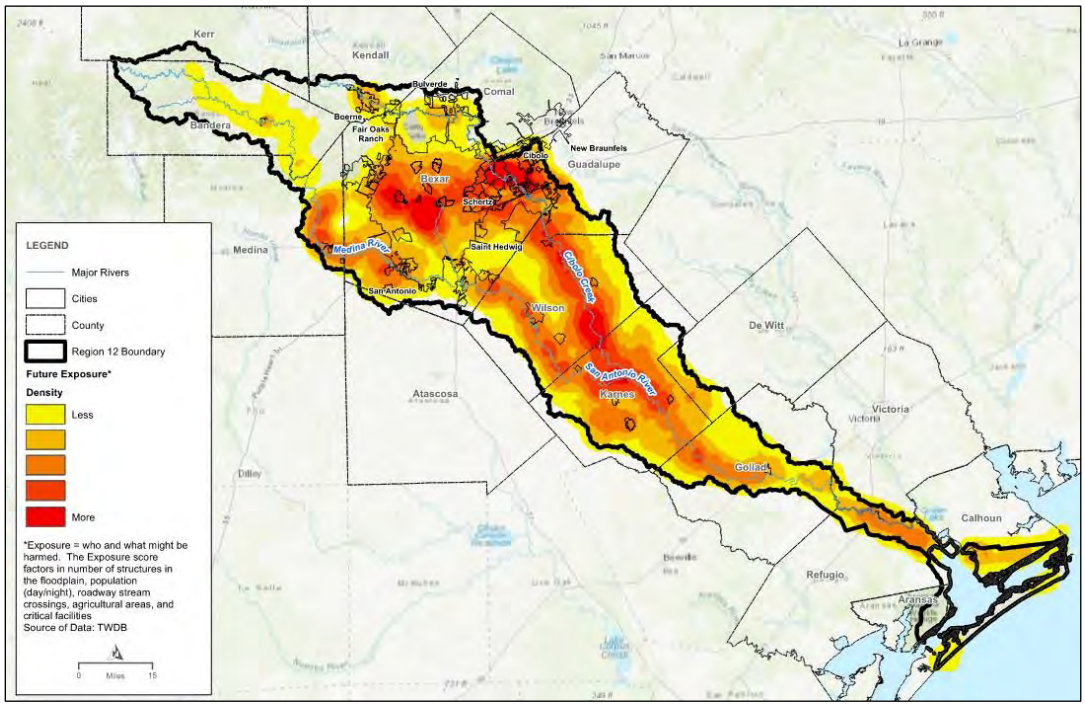
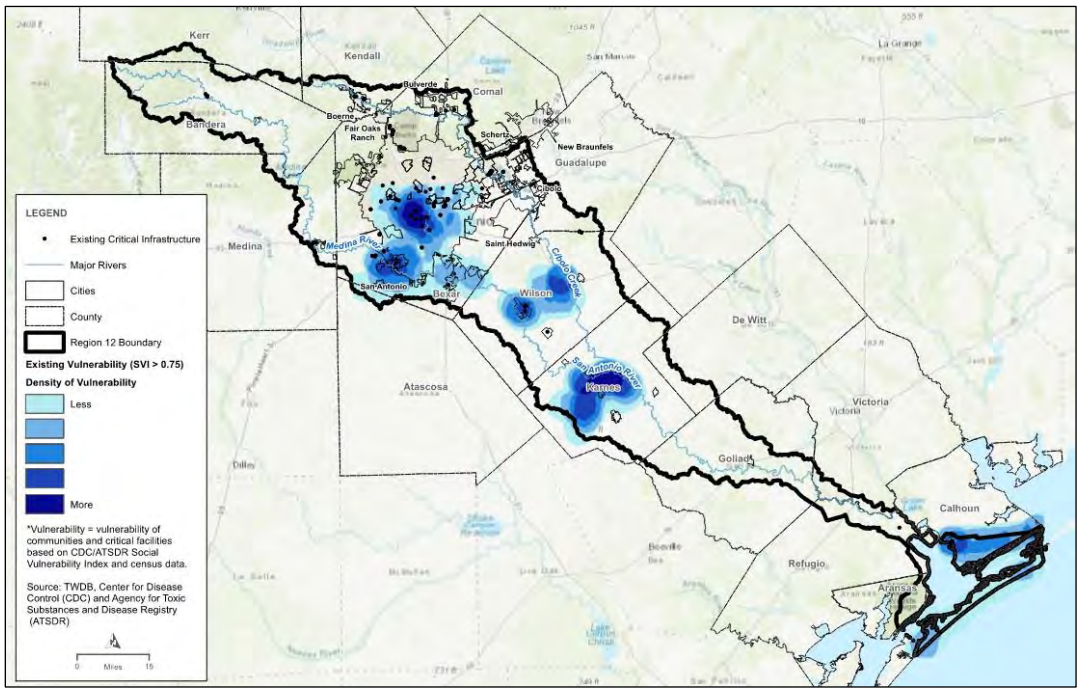


Figure ES-5. Existing Condition Vulnerability Heat Map



ES.3 Floodplain Management Practices and Flood Protection Goals

Evaluation and Recommendation on Floodplain Management Practices

One of the goals of the San Antonio RFP is to evaluate and make recommendations on forward-looking floodplain management, land use, and economic practices. These practices play a key role in preventing the creation of additional flood risk in the future.

Extent of Local Regulations and Development Codes

The level of floodplain management practices was identified as ‘strong’, ‘moderate’, ‘low’, or ‘none’ based on criteria provided by the TWDB. Out of the 110 entities, 6 entities are classified as having a ‘strong’ level, 27 entities are classified as having a ‘moderate’ level, and 30 entities are classified as having a ‘low’ level of floodplain management practices.

The level of floodplain management enforcement was identified as ‘high’, ‘moderate’, ‘low’, or ‘none’ based on criteria provided by the TWDB. The San Antonio region gathered 14 entity enforcement levels, out of those 14, 4 entities are classified as having a ‘high’ level, 8 entities are classified as having a ‘moderate’ level, and 1 entity is classified as having a ‘low’, and 1 did not have floodplain management enforcement.

Minimum Floodplain Management Standards

Minimum floodplain management regulations include compliance with Texas Water Code § 16.3145 and FEMA’s National Flood Insurance Program (NFIP) participation. Section 16.3145 requires the adoption of necessary ordinances or orders for a city or county to be eligible for participation in the NFIP. NFIP participation is a wide-spread practice in the San Antonio Basin with 97% cities and counties participating.

Higher Floodplain Management Standards

Higher floodplain management standards can include an assortment of practices to further reduce flood risk above and beyond minimal standards. The Texas Floodplain Management Association (TFMA) produced a guide for higher standards in 2018 that describes 32 higher standard practices that, if implemented, would reduce flood risks. According to the TFMA 2019 higher standard survey, of the 63 NFIP participating entities, a total of 32 entities have adopted higher standards.

Recommended Floodplain Practices

The San Antonio RFPG does not have the authority to enact or enforce floodplain management, land use, or other infrastructure design standards. Thus, the San Antonio RFPG aims to encourage implementation of recommended floodplain practices by local entities in the region with flood-related authority. The San Antonio RFPG recommends that entities that are not currently NFIP participants should adopt at least the minimum standards and take the necessary steps in order to become active NFIP participants. There are also higher standards outlined in the goals found in section 3.2.2. Region 12 recommends those as higher standards for entity floodplain management practices.

Floodplain Mitigation and Floodplain Management Goals

The RFP developed short- and long-term goals with the objective to protect against the loss of life and property. The short-term goals have a target date of 10 years or 2033 and the long-term goals a target date of 30 years or 2053. These goals identify specific and achievable flood mitigation and floodplain management goals that, when implemented, will demonstrate progress towards the overarching objective to project life and property. When determining the flood mitigation and floodplain management goals, the San Antonio RFPG established six overarching goal categories.

1. Education and Outreach
2. Flood Warning and Readiness
3. Flood Studies and Analysis
4. Flood Prevention
5. Non-Structural Flood Infrastructure Projects
6. Structural Flood Infrastructure Projects.

Once implemented, the specific goals detailed in this section will fulfill the TWDB's overarching goals of identifying and reducing the risk and impact to life and property and avoiding increasing or creating new flood risk by addressing future development within the areas known to have existing or future flood risk.

ES.4 Flood Mitigation Needs Analysis

The regional plan performed an assessment and identified flood mitigation needs. This analysis identified where the greatest flood risk knowledge gaps exist and where known flood risk and flood mitigation needs are located within

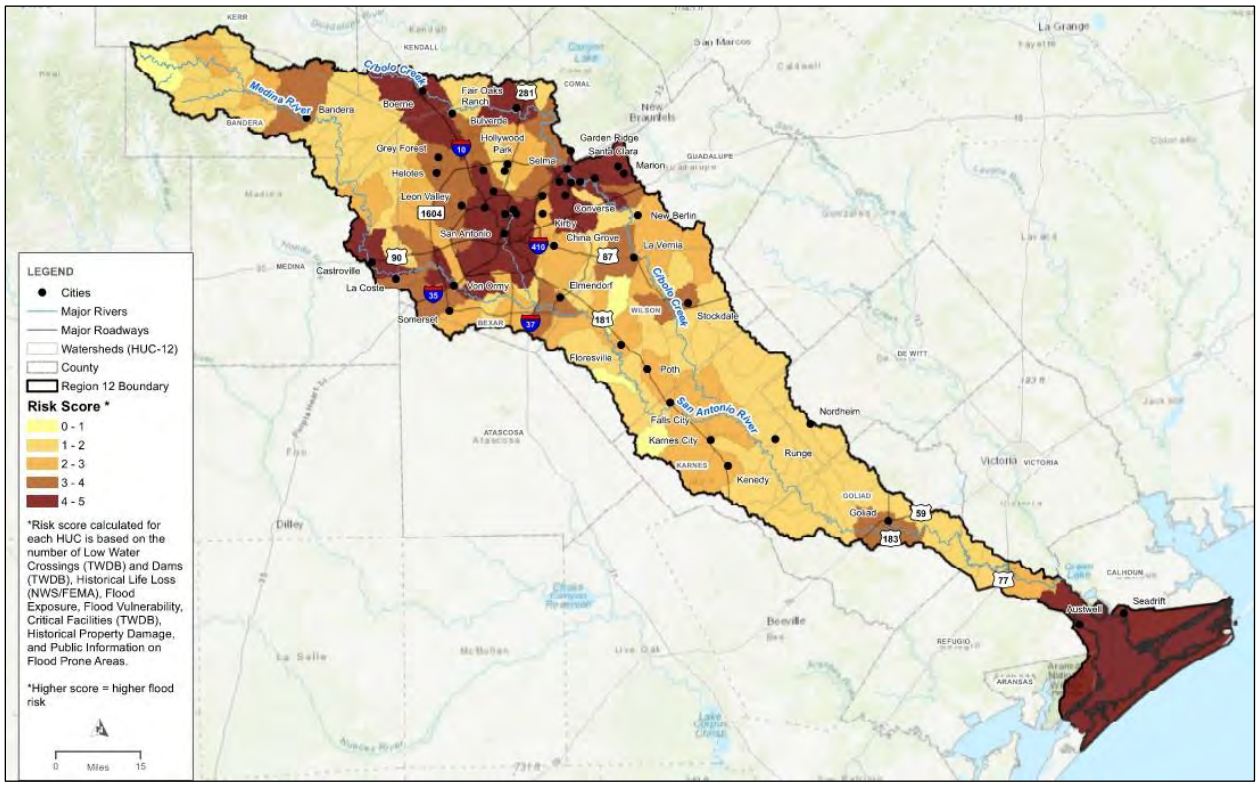
the SAFPR. This analysis resulted in information that guided the identification of flood mitigation actions.

Greatest Flood Risk and Flood Mitigation Needs

The areas of greatest known flood risk and flood mitigation needs in the SAN ANTONIO are defined as areas with elevated levels of risk to property and life. The level of risk is defined by looking at the location and magnitude of flooding from the 1 percent (100-year) and 0.2 percent (500-year) annual chance flood event (flood hazard), who and what may be harmed (flood exposure), and what communities and critical facilities may be vulnerable (flood vulnerability).

An analysis of known flood risk data was performed based on 180 hydrologic unit code (HUC)-12 individual watersheds. The flood risk data related to property damage and life loss risk was evaluated for each watershed in the basin. This included assigning weighting percentages to data on historical property damage, historical life loss, property damage in terms of exposure and vulnerability, and life loss potential at LWCs and downstream of hydraulically inadequate or deficient potential hazardous dams. As a result of this analysis, each watershed was assigned a score of 0 to 5 with no risk represented by a score of zero and the highest risk represented by a score of 5 (see Figure ES-6).

Figure ES-6. Overall Flood Risk per HUC 12 watershed



ES.5 Identification, Evaluation, and Recommendation of Flood Mitigation Actions

The regional flood planning efforts identified, evaluated, and recommended flood management actions, which include flood mitigation projects (FMPs), flood management evaluations (FMEs), and flood management strategies (FMSs). Flood management actions were identified to reduce the risk identified in the existing and future condition flood risk analyses, to address flood mitigation and floodplain management goals, and to address the greatest flood risk and flood mitigation needs.

An FME is a proposed flood study of a specific, flood-prone area that is needed to assess flood risk and/or determine whether there are potentially feasible FMSs or FMPs. An FMP is a proposed project, either structural or non-structural, that has non-zero capital costs or other non-recurring costs and, when implemented, will reduce flood risk and mitigate flood hazards to life or property. A FMS is a proposed plan to reduce flood risk or mitigate flood hazards to life or property and typically includes flood mitigation

education and outreach, buyout programs, and flood management regulations.

Identification of Flood Mitigation Actions

The San Antonio RFPG developed a proposed process to identify and select flood mitigation actions. To identify flood mitigation actions, a review of previous relevant flood studies was conducted, stakeholder outreach was conducted, and an evaluation performed to determine additional studies needed to address the greatest known flood risk, flood mitigation needs, and unmet floodplain mitigation and floodplain management goals. A list of 16 prior relevant studies were reviewed, which included many regional hazard mitigation action plans and other flood-related master plans.

Evaluation and Recommendation of Flood Mitigation Actions

The San Antonio RFPG created a Technical Subcommittee tasked with establishing a selection methodology, implementing the evaluation and selection process, and reporting their findings and recommendations back to the San Antonio RFPG for formal approval. The methodology included a screening of all potential flood mitigation actions based on the general process and any other additional considerations established by the Technical Subcommittee. On July 19, 2022, the San Antonio FPG voted to recommend FMEs, FMPs, and FMSs as presented.

Recommended Flood Management Projects, Evaluations and Strategies

A total of 29 potential FMPs were identified and evaluated by the RFPG. Of these, all were recommended, representing a combined total of $476,211,000 of flood mitigation infrastructure projects need across the region.

A total of 165 potential FMEs were identified and evaluated by the RFPG. Of these, all were recommended, representing a combined total of $587,700,000 of flood management evaluation need across the region. The recommended FMEs include 143 project planning/evaluation projects, 20 watershed planning projects and 2 flood resiliency projects.

A total of 20 potential FMSs were identified and evaluated by the RFPG. Of these, all were recommended, representing a combined total of $1,490,000 of flood management evaluation need across the region. The recommended FMSs include 14 education and outreach projects, 5 regulatory and guidance projects and 3 flood measurement and warning projects.

ES.6 Impact and Contribution of the Regional Flood Plan

Plans must include a regionwide assessment of the potential contributions and impacts that implementation of Plans can be expected to have on water supplies and the State Water Plan. As part of this analysis, each FMS and FMP was reviewed to determine whether there are potential impacts to existing water supplies or the availability of water supplies. Impacts include potential contributions to, as well as reductions in water supply and availability.

Impacts of Regional Flood Plan

Impacts are determined before and after RFP implementation of recommended flood mitigation actions relative to existing and future flood risk. The comparison of before and after RFP implementation estimates both how much the region's existing flood risk will be reduced through implementation of the plan as well as how much additional, future flood risk (that might otherwise arise if no changes were made to floodplain policies etc.) will be avoided through RFP implementation, including recommended changes/improvements to the region's floodplain management policies.

The evaluation estimated the implementation of recommended FMPs could benefit 43,500 exposed structures, 192,000 people, 912 square miles, 88 LWCs, and 249 critical facilities at risk in the future 100-year flood hazard.

Contributions to and Impacts on Water Supply Development and the State Water Plan

Plans must include a regionwide assessment of the potential contributions and impacts that implementation of Plans can be expected to have on water supplies and the State Water Plan. As part of this analysis, each FMS and FMP was reviewed to determine whether there are potential impacts to existing water supplies or the availability of water supplies. Impacts include potential contributions to, as well as reductions in water supply and availability.

A coordinated effort with representatives from multiple regional water planning groups occurred to identify water management strategies that could be impacted. Those regional water planning groups include Region J (Plateau), Region L (South Central Texas), and Region N (Coastal Bend). Currently no FMS or FMP has been proposed over that Edward Aquifer Contributing or Recharge Zone that was evaluated to have an impact on

water supply. It was however, determined that three FMPs were located over the Trinity Aquifer and have the potential to add to water supply availability. Quantifying the recharge benefit will require additional effort to be performed for submittal of final plan.

ES.7 Flood Response Information and Activities

Flood response information was gathered through stakeholder outreach to flood-related authorities in the San Antonio River Basin. Flood response activities, preparedness, response, and recovery measures were then summarized for the various entities in the basin. The plan also summarizes state and federal agency roles in flood response support and provides a description of various means by which data is collected and disseminated in a flood event. This information is provided to help others in the basin develop flood response and recovery programs. Note the San Antonio RFP only summarizes the nature and types of flood response preparations in the basin, including recovery, but does not perform analyses or other activities related to planning for disaster response or recovery.

Emergency Information

The National Weather Service, local news stations and radio stations are vital components in relaying real time information to residents of inclement weather and flooding. They can also alert residents to low water crossing closings, dam or levee breaches, and other potential dangers. They can also issue flood watches, warnings, and emergency notifications. Various entities in the SAFPR maintain websites to provide the public with real time information about flooded streets and places to avoid.

Alert Systems

Bexar County has implemented a new system known as High Water Alert Life Saving Technology (HALT) to warn drivers about too much water over the road, creating unsafe conditions. A sensor detects rising water depth, initiating flashing lights or a combination of gates and lights once a certain depth is reached. The county has installed more than 150 HALT systems in the community, monitoring road conditions 24 hours a day, 7 days a week. In addition to lights and gates, the county has set up an interactive website (BEXARflood.org) with information and a map displaying the status of all the County's low water crossings at any given time. The City of San Antonio has a similar system called SAFE ROUTE (https://gis.sanantonio.gov/OEM/SAFE/index.html) which monitors low water crossings and provides alternative routes to local drivers.

Rain and stream gages are useful for a variety of flood warning systems that cities, counties and region employ to keep citizens informed. San Antonio River Authority's Predictive Flood Model (PFM) is a continuous simulation software that ingests NexRAD weather radar rainfall estimates, gauged rainfall, gauged stream level, runs VFlo model hydrology and hydraulics to estimate stream flow, depth, velocity, maximum flood inundation, swift-water rescue risk, and produces short-term stream forecasts at selected warning points anywhere within the inundation grid. The recently expanded warning system covers all of Bexar County with stream-related products. The PFM also provides gauge-adjusted radar rainfall totals and forecasts for the entire San Antonio River basin. The PFM dynamic hydraulic models produce alerts and flood inundation maps every 15 minutes.

In collaboration with the USGS, Bandera County River Authority and Ground Water District (BCRAGD) developed a tool set in 2018 that provides a flood warning system for Bandera County. The tool consists of streamflow-gage monitoring network, a Hydrologic Engineering Center River Analysis System (HEC-RAS) that creates a well calibrated hydraulic model of the Medina River. It has the ability to generate flood inundation maps in the USGS FIM website and a Decision Support System (DSS). The hydraulic model of Medina River at and near Bandera was created using high resolution digital elevation data, aerial photographs, field surveys on structure and channel cross sections, and the stage-discharge rating curve that was established at the Bandera Station. This information was used to develop 29 flood-inundation maps showing potential inundation areas and depths for stages ranging from 10-38 feet. The river is continuously measured at all gages every 15 minutes and transmitted every hour to a satellite. This information is publicly accessible through the USGS Flood Inundation Mapping (FIM) Program.

Local Mitigation and Action Plans

To examine the state of its flood preparedness, the San Antonio RFPG obtained emergency management plans, hazard mitigation plans, and other regional and local flood planning studies from county and local jurisdictions. An emergency management plan is a course of action developed to mitigate the damage of potential events that could endanger an organization's ability to function. Such a plan should include measures that provide for the safety of personnel and, if possible, property and facilities.

The SAFPR has several plans and regulations in place that provide the framework that describes a community's capabilities in implementing mitigation and preparedness actions. These include HMAPs, emergency action plans (EAP), emergency management plans (EMP), floodplain

management plans, and watershed master plans. Table 7-4 summarizes existing HMAPs and EMPs adopted in the SAFPR. 13 Hazard Mitigation Plans and HMAP have been identified for the following areas: Aransas County, Bexar County, Calhoun County, Comal County, DeWitt County, Guadalupe County, Karnes & Wilson County, Kendall County, Kerr County, Medina County, Refugio County, Victoria County and the City of San Antonio.

As part of the TCEQ Dam Safety Program, owners of significant-hazard and high-hazard dams are required to submit an Emergency Action Plans (EAP) to the TCEQ. Dam EAPs document responsibilities during flood response and identifies the flood inundation area. Of the 162 dams in the SAFPR, 71 have EAPs.

The SAFPR's ability to prepare, respond, recover, and mitigate disaster events is determined by several factors. With a clear understanding of the plans that determine a community's capabilities, a recognition of the entities with whom coordination is key, and knowledge of the actions sustained to promote resiliency, the SAFPR will be better equipped to implement sound measures for flood mitigation and preparedness.

ES.8 Administrative, Regulatory, and Legislative Recommendations

The SAFPR has provided administrative, regulatory, legislative and regional flood planning process recommendations for inclusion in the 2023 Draft Plan. These recommendations were vetted through a subcommittee and presented and adopted by the planning group. 40 recommendations were provided within the categories of administration/regulatory (12), legislative (11) and Flood Planning Process (17).

The administrative, regulatory, legislative, and flood planning recommendations have been selected and proposed by the San Antonio RFPG to make floodplain management and flood mitigation planning and implementation throughout Texas more efficient and logical. From a legislative perspective, funding is one of the greatest challenges. Providing more state legislature backed funding will allow entities to minimize additional flood risks and protect life and property. The administrative recommendations have been proposed to aid entities in their floodplain and stormwater management practices. Many communities are hesitant to enact higher standards over the concern that future legislative acts will limit their ability to regulate. For future flood planning, recommendations were made to improve future SAFPR efforts. Clarifying and editing current requirements will improve the overall flood planning process and reduce future costs to taxpayers.

These recommendations will aid in fulfilling the SAFPR goals discussed in Chapter 3.

ES.9 Flood Infrastructure Financing Analysis

Chapter 9 is an analysis of the funding for flood related issues in the SAFPR. Communities in the region were surveyed to determine the needs, costs, and proposed methods of funding to address current flood related issues. This chapter also presents an overview of common sources of funding for flood mitigation, planning, projects, and other flood management efforts. The methodology, results of the financing survey, and comments regarding the state's role in financing are also included.

Local Funding

The communities in the SAFPR are impacted by flooding issues and have been proactively addressing many of these issues to the best of their funding ability. Flood studies and projects have been typically funded by individual communities as they apply for the available funding through the various state and federal programs and through their own financial resources via fees, taxes, and bonds. These efforts are intended to address local flooding issues in a smaller scale typically for smaller communities and in a larger scale typically for larger communities.

For example, smaller communities such as Castroville, La Vernia and Floresville have been diligently funding projects with their own funds and with as much state and federal funding that can be obtained. The City of San Antonio's Proposition B in May of 2022 was passed to apply $169,873,000 in bonds toward flood control and drainage projects. This was preceded in the City's 2017-2022 Bond Program by an investment that was approximately equal to that amount for flood control and drainage projects. In 2007 Bexar County embarked on a 10-year $500M Flood Control Program that constructed over 50 flood mitigation projects to alleviate some of the area's most pressing flood concerns. Wilson and Karnes Counties received a FEMA Hazard Mitigation Multi-Jurisdictional Assistance grant for planning to reduce long-term risk from natural hazards and disasters. SARA has provided funding for studies through grants and its own general fund investments for flood issues throughout the San Antonio River Basin, such as the 2019 U.S. Department of Homeland Security's FEMA Cooperative Technical Partnership (CTP) Program Cooperative Agreement grant for $1,365,400 for flood prevention, mitigation, and protection through mapping updates throughout the basin.

State Funding

Today, communities have a broader range of state funding sources and programs available due to new grant and loan programs that didn't exist as recently as five years ago. It is important to note that state financial assistance programs discussed herein are not directly available to homeowners and the general public. Local governments apply on behalf of their communities to receive and implement funding for flood projects in their jurisdiction.

The TWDB's Flood Infrastructure Fund (FIF) is a new funding program passed by the Texas Legislature and approved by Texas voters through a constitutional amendment in 2019. The program provides financial assistance in the form of low or no interest loans and grants (cost match varies) to eligible political subdivisions for flood control, flood mitigation, and drainage projects. FIF rules allow for a wide range of flood projects, including structural and nonstructural projects, planning studies, and preparedness efforts such as flood early warning systems. After the first State Flood Plan is adopted, only projects included in the most recently adopted state plan will be eligible for funding from the FIF. FMEs, FMSs, and FMPs recommended in this regional flood plan will be included in the overall state flood plan and will thus be eligible for this funding source.

Federal Funding

There are multiple avenues to receive federal funding through the various federal agencies including FEMA, U.S. Department of Housing and Urban Development (HUD), USACE, U.S. Environmental Protection Agency (EPA), U.S. Department of Agriculture (USDA), and special appropriations. Recent special appropriations of note include the 2021 American Rescue Plan Act (ARPA) and the 2021 Infrastructure Investment and Jobs Act (IIJA), also called the Bipartisan Infrastructure Law (BIL). ARPA delivered $350 billion directly to local, state, and tribal governments through the Coronavirus State and Local Fiscal Recovery Funds (SLFRF). And BIL authorized over $1 trillion for infrastructure spending across the U.S. and provides a significant infusion of resources over the next several years into existing federal financial assistance programs, including several of the flood funding programs discussed above.

Overall Need for Funding

A total of 28 entities in the SAFPR sponsored the FMEs, FMSs, and FMPs that are recommended by the planning group. These 28 sponsors were

contacted about funding needs to implement these projects, and to date 15 have responded, which represents a response rate of 54 percent.

The total cost for all of the FMP, FMS, and FME projects recommended in the Plan is $1,264,439,000. The total cost of projects from just the 15 sponsors that responded to the funding survey is $1,184,840,000. which equates to 94 percent of the total cost of all recommended projects. Of this $1,184,840,000 it is projected that $1,005,017,000 in state and federal grant funding is needed for implementation of these projects.

ES.10 Adoption of Plan and Public Participation

Public Participation

Public participation has aided every aspect of the San Antonio RFP development – from the identification of flood risks and management and mitigation project needs to the formation of legislative and policy recommendations specific to the SAFPR. The San Antonio RFPG provided opportunity for the public to participate in the regional flood planning process at RFPG meetings and public outreach events. San Antonio RFPG meeting agendas and other meeting materials were posted on the SAFPR website (https://www.region12texas.org/) prior to each meeting. The public was invited to speak during public comment periods during each meeting.

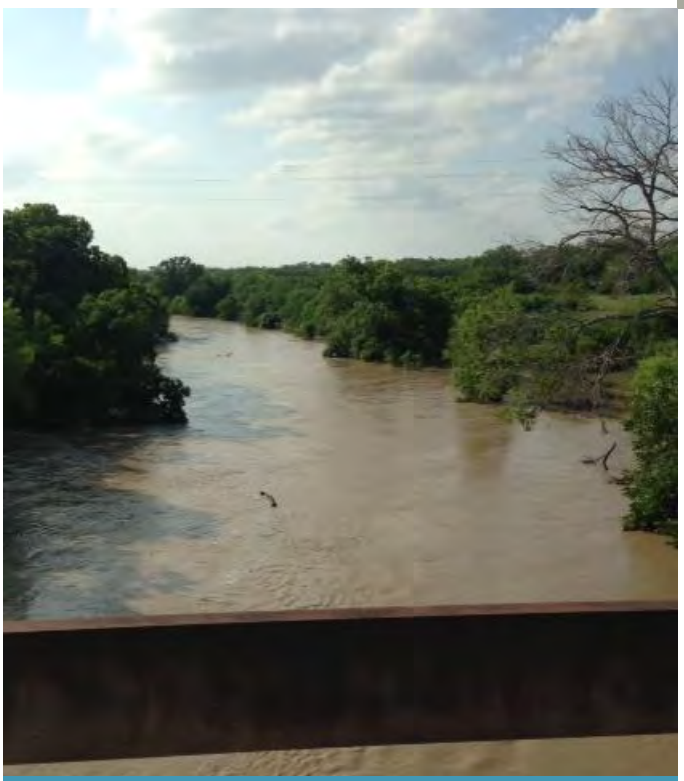
The San Antonio RFPG conducted 6 public meetings throughout the watershed in accordance with TWDB requirements and the approved bylaws. Public meeting summary reports can be found in Appendix C.

The public hearing to receive comments on the Draft 2023 San Antonio Regional Flood Plan will be held in September 2022, providing sufficient time to accept public comments according to statute to meet the January 10, 2023, deadline for submission of the adopted Final 2023 San Antonio RFP. Hard copies of the Draft 2023 San Antonio Regional Flood Plan will be provided as required and the Plan will be posted on the SAFPR website for public review and comment.

Adoption of Plan

On July 25, 2022, the San Antonio Regional Flood Planning Group (Region 12) approved and authorized the submittal of the Draft Regional Flood Plan and associated data to the Texas Water Development Board. The Draft Plan was developed in accordance with Texas Water Code and 31 TAC Chapters 361 and 362 and conforms with the 39 guiding principles. Region 12 also met

all requirements under the Texas Open Meetings Act and Public Information Act during the development of the draft plan.



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Planning Area Description

1 Planning Area Description

[31 TAC §361.30-32]

1.1 Background

In 2019, the 86th Texas Legislature passed Senate Bill 8, which established a regional and state flood planning process for 15 identified flood planning regions across the state (31 Texas Administrative Code (TAC) Chapters 361 and 362). Information from each of the fifteen 2023 Regional Flood Plans will be compiled in the 2024 State Flood Plan. The Texas Water Development Board (TWDB) oversees the development of each regional plan and compiles the state flood plan. The TWDB is also charged with providing funding for investments in flood science and mapping efforts to support development of the plans.

The investments and planning efforts represent an important step in Texas flood planning, because:

- Flood risks, impacts and mitigation costs have never been assessed at a statewide level,
- Flood risks pose a serious threat to lives and livelihoods across the state, and
- Much of the flood risk in Texas in unmapped or is based on out-of-date maps.

Regional Flood Plans (RFP) are required to be based on the best available science, data, models, and flood risk mapping. When complete, the plans will focus both on reducing existing risk to life and property and on enhancing floodplain management to avoid increasing flood risk in the future. The first RFPs must be submitted to the TWDB by January 10, 2023. The TWDB will then compile these regional plans into a single statewide flood plan and will present it to the Legislature in 2024. An updated version of the State Flood Plan (SFP) will be developed every five years thereafter.

The TWDB has appointed a Regional Flood Planning Group (RFPG) for each region and has provided them with funding to prepare their plans. The TWDB administers the regional flood planning process through a contract with the planning group's sponsor which is selected by the RFPG.

The SAFPR sponsor is the San Antonio River Authority (SARA). The Texas Legislature also allocated funding to be distributed by the TWDB for the procurement of technical assistance to develop the regional flood plans. HDR

Engineering, Inc. (HDR) was selected through a competitive process to assist the San Antonio RFPG in developing the 2023 San Antonio RFP (the Plan).

Stakeholders residing in and representing various interest categories were appointed for each region to provide representation and lead a bottom-up approach to developing the 2023 Plan. The San Antonio RFPG's responsibilities include directing the work of the technical consultant, soliciting and considering public input, identifying specific flood risks, and identifying and recommending flood management evaluations, strategies and projects to reduce risk in their regions. To ensure a diversity of perspectives are included, members represent a wide variety of stakeholders potentially affected by flooding. Interest categories include:

1. Public
2. Nonprofit (category added by the SARFPG)
3. Counties
4. Municipalities
5. Industries
6. Agriculture
7. Environmental
8. Small Business
9. Electric-generating utilities
10. River Authorities
11. Water Districts
12. Water Utilities
13. Flood Districts

The members of the San Antonio RFPG for the first flood planning cycle are listed in Table 1-1.

Table 1-1. San Antonio RFPG Members

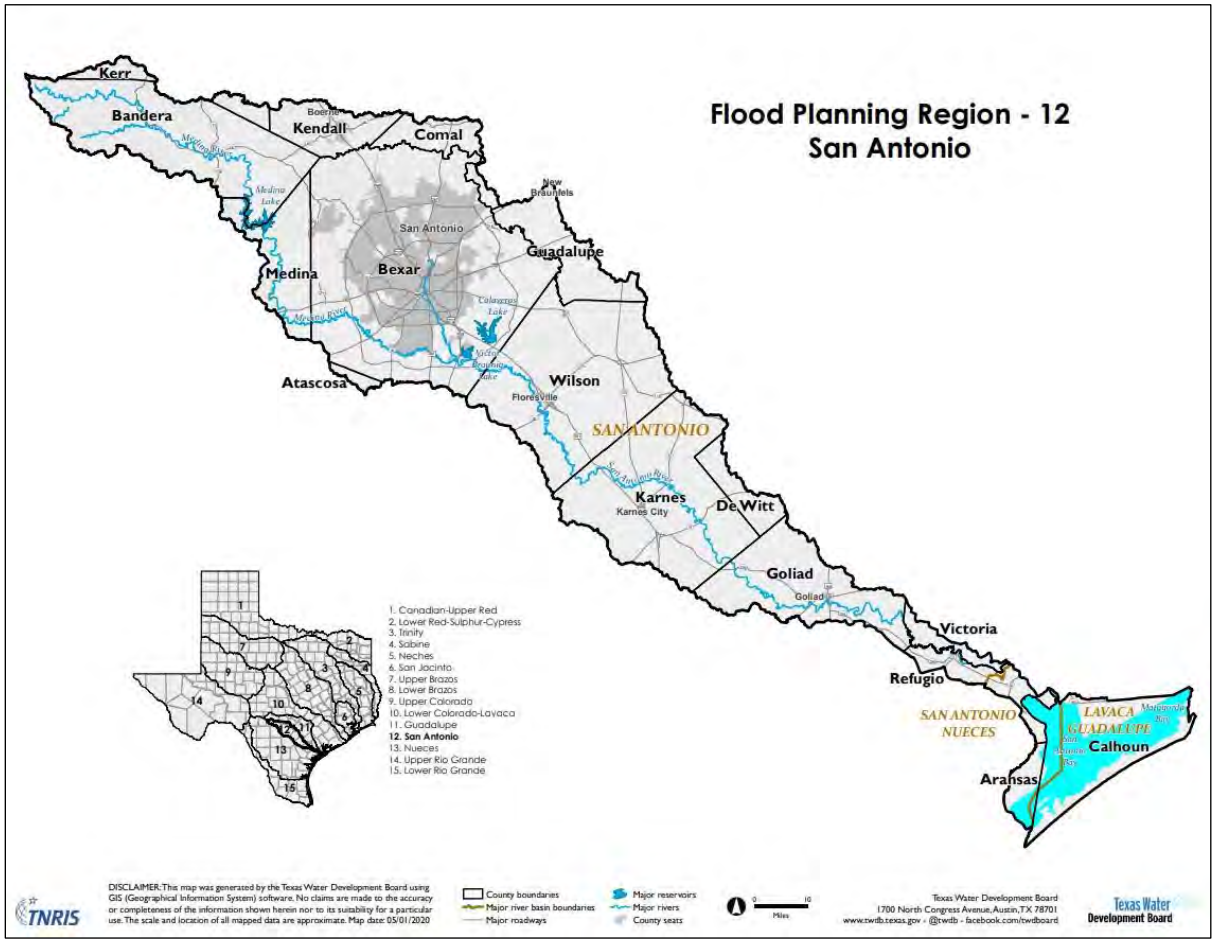
Member Name	Interest Category	Organization
Voting Members		
Brian Yanta	Agricultural	Goliad County
David Wegmann	Counties	Bexar County
Doris Cooksey	Electric Generating Utilities	CPS Energy

Member Name	Interest Category	Organization
Debbie Reid	Environmental	Greater Edwards Aquifer Alliance
Nefi Garza	Flood Districts	City of San Antonio / Tetra Tech
Cara Tackett	Industries	Pape-Dawson Engineers
Jeffrey Carrol	Municipalities	City of Boerne
Suzanne Scott	Nonprofit	Nature Conservancy
John Beasley	Public	U.S. Army Environmental Command
Derek Boese	River Authorities	San Antonio River Authority
Steve Gonzales	Small Business	Neel-Schaffer, Inc.
David Mauk	Water Districts	Bandera Co River Authority & Groundwater District
Steven Clouse	Water Utilities	San Antonio Water System
Non-Voting Members		
Marty Kelly		Texas Parks and Wildlife Department
Natalie Johnson		Texas Division of Emergency Management
Jami McCool		Texas Department of Agriculture
Jarod Bowen		Texas State Soil and Water Conservation Board
Kris Robles		General Land Office
Anita Machiavello		Texas Water Development Board
Joel Anderson		Texas Commission on Environmental Quality

The San Antonio Flood Planning Region (SAFPR), Region 12, consists of parts of Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson Counties. The San Antonio River Basin (SARB) encompasses approximately 4,410 square miles (Figure 1-1). The SAFPR is bounded on the west and south by Texas Water Development Board (TWDB) Flood Planning Region 13 (Nueces), on the north by TWDB Flood Planning Region 11 (Guadalupe),

and on the east by the Gulf of Mexico. In 2019, this region had a population of approximately 2,225,430.

Figure 1-1. San Antonio (Region 12) Flood Planning Region



1.2 Goal and Purpose of the 2023 San Antonio Regional Flood Plan

All regional flood plans are to be developed according to 39 guiding principles (see 31 TAC 362.3). The 2023 Plan will focus on identifying both existing and future condition flood risks within the San Antonio basin, evaluate flood hazard exposure to life and property, identify and evaluate potentially feasible flood management strategies and flood mitigation projects, and present recommended strategies and projects that minimize residual flood risk and provide effective and economical management of flood risk to people, properties, and communities, and associated environmental benefits amongst other information.

1.3 San Antonio Regional Flood Planning

The counties considered in the development of the SAFPR are listed in Table 1-2 below. Small portions of Atascosa (Region 13) County, Aransas (Region 13) County, Kerr (Region 11) County, Medina (Region 13) County, Aransas (Region 13) County, and Refugio (Region 13) County, Medina (Region 13) County, and Atascosa (Region 13) County are also located in the SAFPR, but they were not considered during the development of the San Antonio Regional Flood Plan since the vast majority of each of these counties are in other regions and they are unlikely to enact county-wide actions specific to the SAFPR. The Town of Tivoli is an unincorporated city that was considered but is not included in the 2023 Plan.

Table 1-2. Counties included in the SAFPR

Aransas County	Calhoun County	Guadalupe County	Medina County
Atascosa County	Comal County	Karnes County	Refugio County
Bandera County	DeWitt County	Kendall County	Victoria County
Bexar County	Goliad County	Kerr County	Wilson County

The municipalities considered in the development of the SARFP are listed in Table 1-3 below.

Table 1-3. Municipalities in the SAFPR

City of Alamo Heights	City of Falls City	City of La Coste	City of Santa Clara
City of Austwell	City of Floresville	City of Leon Valley	City of Schertz
City of Balcones Heights	City of Garden Ridge	City of Live Oak	City of Seadrift
City of Bandera	City of Goliad	City of Marion	City of Selma
City of Boerne	City of Grey Forest	City of New Berlin	City of Shavano Park
City of Bulverde	City of Helotes	City of New Braunfels	City of Somerset
City of Castle Hills	City of Hill Country Village	City of Nordheim	City of St. Hedwig
City of Castroville	City of Hollywood Park	City of Olmos Park	City of Stockdale
City of China Grove	City of Karnes City	City of Poth	City of Terrell Hills

City of Cibolo	City of Kenedy	City of Runge	City of Universal City
City of Converse	City of Kirby	City of San Antonio	City of Von Ormy
City of Elmendorf	City of La Vernia	City of Sandy Oaks	City of Windcrest
City of Fair Oaks Ranch			

Forty-nine other entities outside of the county and municipality categories were considered in the development of the 2023 Plan, and are listed in Table 1-4.

Table 1-4. Other Flood or Water-Related Entities in the SAFPR

Entity	Type
Bandera County River Authority	River Authority
Guadalupe-Blanco River Authority	River Authority
Nueces River Authority	River Authority
San Antonio River Authority	River Authority
Upper Guadalupe River Authority	River Authority
Alamo Area Council of Governments	Other
Bandera County FWSD 1	Other
Bexar-Medina-Atascosa Counties WCID 1	Other
Bexar County WCID 10	Other
Canyon Regional Water Authority	Other
Cibolo Canyon Conservation and Improvement District 1	Other
Cibolo Creek Municipal Authority	Other
Coastal Bend Council of Governments	Other
Comal County WCID 6	Other
Crosswinds at South Lake Special Improvement District	Other
East Central SUD	Other
Ecleto Creek Watershed District	Other
Escondido Watershed District	Other
Espada Development District	Other

Entity	Type
Falcon Point WCID 1	Other
Flying L PUD	Other
Golden Crescent Regional Planning Commission	Other
Green Valley SUD	Other
Hondo Creek Watershed Improvement District	Other
Johnson Ranch MUD	Other
Kendall County WCID 2	Other
Kendall County WCID 2A	Other
Kendall County WCID 3	Other
Kendall County WCID 4	Other
La Salle WCID 1-A	Other
La Salle WCID 1-B	Other
Lerin Hills MUD	Other
Medina County FWSD 1	Other
Medina County WCID 1	Other
Northeast Medina County WCID 1	Other
Port O'Connor MUD	Other
Refugio County Drainage District 1	Other
Refugio County Navigation District	Other
Refugio County WCID 1	Other
Refugio County WCID 2	Other
San Antonio MUD 1	Other
Victoria County Navigation District	Other
West Side Calhoun County Navigation District	Other
Westside 211 Special Improvement District	Other
Wilson County FWSD 1 of Wilson County Texas	Other

The SAFPR includes an area that drains to the San Antonio River and associated tributaries. The San Antonio River originates from springs fed by the Edwards Aquifer in central Bexar County. The Medina River starts at the

top of the river basin in Bandera County and joins the San Antonio River along with Cibolo, Leon, and Salado Creeks and numerous tributaries. The river confluences with the Guadalupe River before the combined rivers discharge into San Antonio Bay.

There are 14 groundwater conservation districts located within the SAFPR, which regulate and manage the use of groundwater resources potentially impacted by flooding.

The SAFPR includes five of the 12 ecoregions identified by Texas Parks and Wildlife Department (TPWD), including the Blackland Prairie, Edwards Plateau, Post Oak Savannah, Rolling Plains, and the Western Gulf Coast Prairies and Marshes, as shown in Figure 1-2[1].

The SAFPR is dominated by limestone, rocky clay, and sand-based, sandy-loam, highly alkaline soils, which restrict the species of trees that flourish here[1]. The surface of the Blackland Prairie portion of the SAFPR is dominated by limestone and heavy clay soils with an average rainfall of 32 inches. The Edwards Plateau mostly contains clay loam soil which turns into rocky clay or solid limestone beneath the surface with an average rainfall of 23 inches per year. The Post Oak Savannah is primarily clay loam to clay with an average rainfall of 35 inches, leading into the Rolling Plains, which has a high alkalinity soil and an average rainfall of 22 inches. Lastly, the Western Gulf Coastal Plain is the southeast portion of the SAFPR, containing sand-based soil with typically high salt content and an average rainfall of 23 inches per year.

Most precipitation comes from violent spring and early summer thunderstorms. These thunderstorms produce short, intense rainfall over very limited areas. These intermittent storms punctuate periods of drought. Average annual rainfall over the region varies between 22 and 32 inches of rain with rainfall increasing downstream in the lower basin.

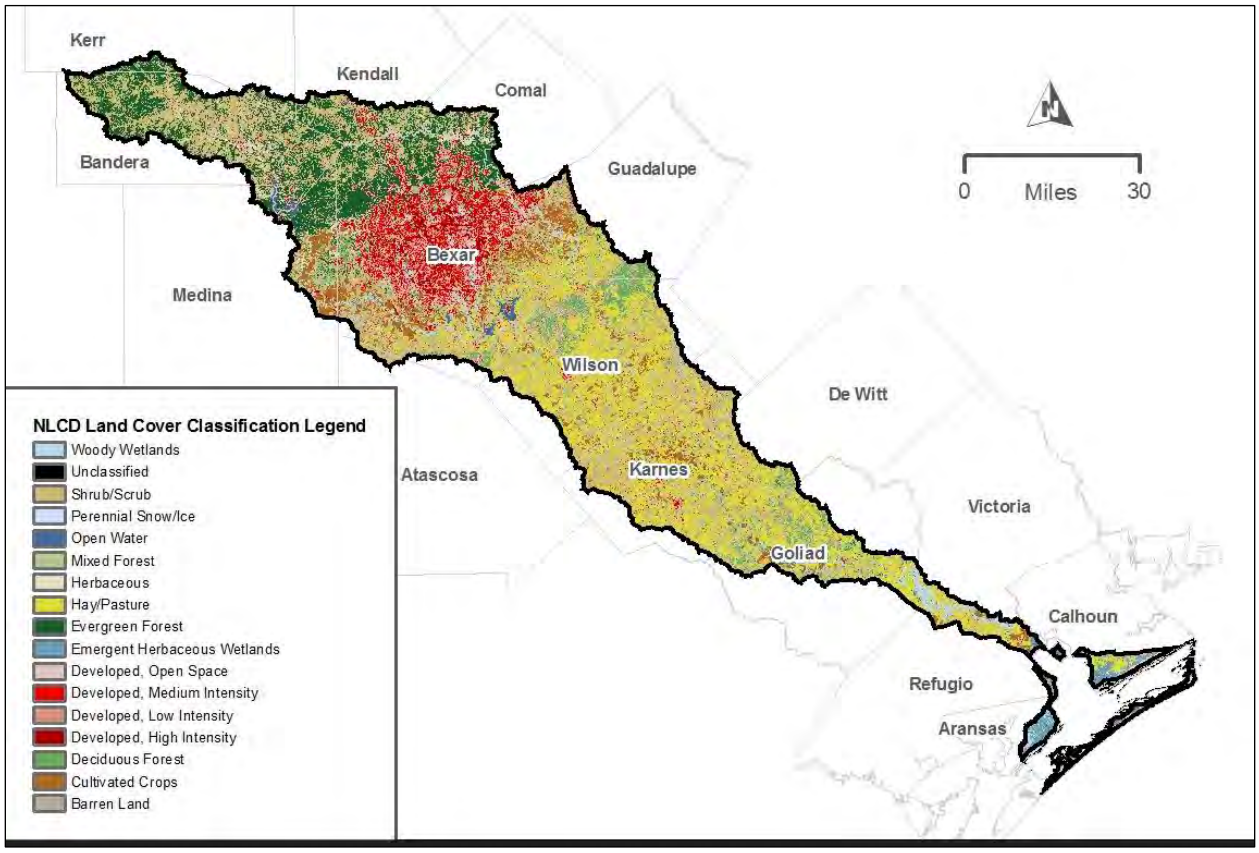
[1] Service, T. A. (2021). Texas Ecoregions. Retrieved from Trees of Texas: http://texastreeid.tamu.edu/content/texasEcoRegions/

Figure 1-2. Ecoregions in the SAFPR

The SAFPR is a productive agricultural region with most farming and ranching primarily southeast of San Antonio, with some ranching activity northwest of San Antonio. Although fewer individuals are exposed to flood hazards in rural areas, the impact of flooding on agriculture and ranching can be severe. Floods can delay planting and ruin crops, kill livestock, and damage barns or other structures, causing significant economic hardship to the farmers and ranchers.

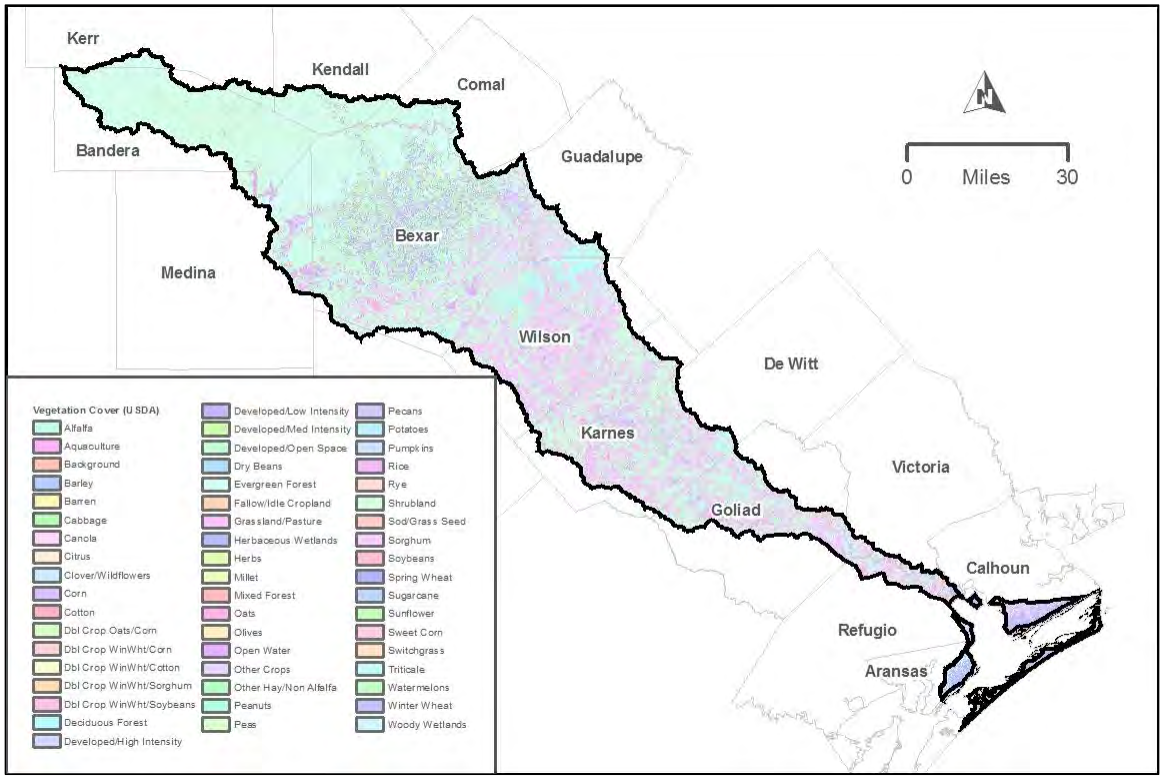
Ranchland and farmland are the predominant use of working lands across the SAFPR, as shown in Figure 1-3. Together ranchland and farmland account for 69.1% of the total land area with ranchland being 60.5% and farmland being 8.6%.

Figure 1-3. SAFPR Land Cover (NLCD)



As shown in Figure 1-4, the predominate vegetative cover types by land area are shrub/scrub (37.1%), hay/pasture (23.4%), cultivated crops (8.6%), evergreen forest, i.e. cedar breaks (7.0%), developed areas of varying development intensities (6.2%), and deciduous forest (4.4%). Emergent herbaceous wetlands, herbaceous, woody wetlands, mixed forest, open water, and barren land make up the remaining 13%.

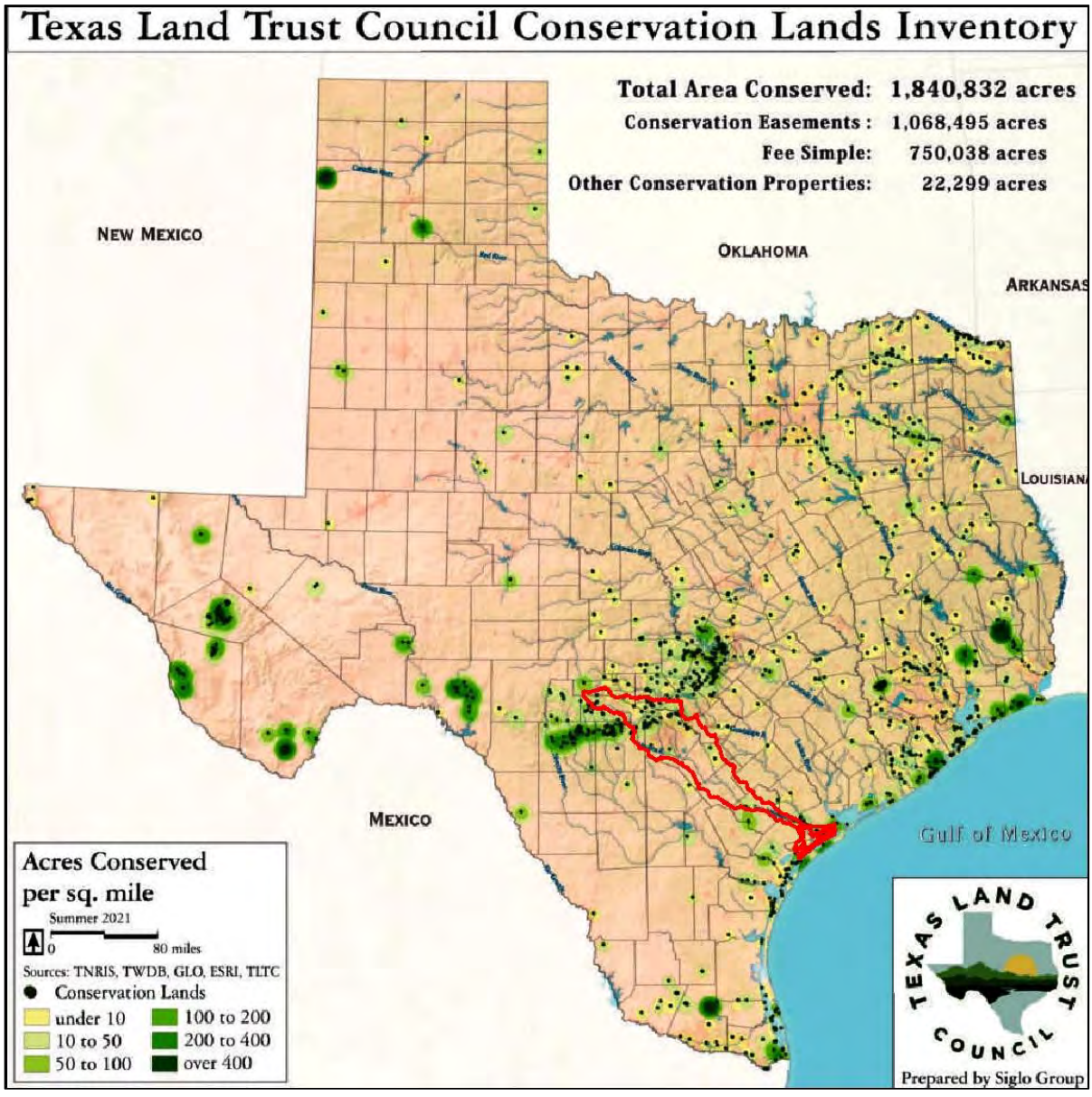
Figure 1-4. SAFPR Vegetation Cover (USDA)



1.4 Conservation Easements

The SAFPR contains conservation lands to enable landowners to protect natural resources for future generations while maintaining private ownership. Conservation lands in the SAFPR are predominately located in the Edwards Plateau region (Figure 1-5).

Figure 1-5. SAFPR Conservation Easements (TLTC)



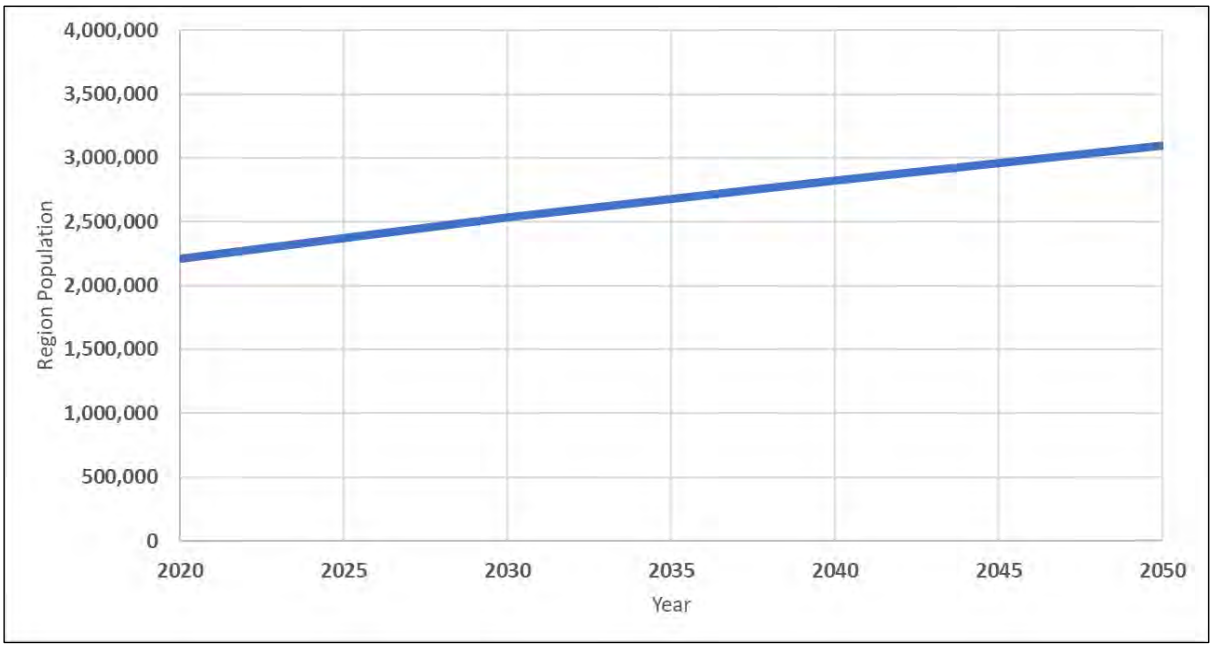
1.5 Socioeconomic Characteristics

Outside of the San Antonio metropolitan area, the SAFPR is largely rural in nature, although significant growth is occurring in the portions of Comal, Guadalupe, Kendall and Wilson counties that lie within the planning region.

The population of those four counties and Bexar County contain almost 97% of the total population of the region. The City of San Antonio and its surrounding suburbs contain roughly 81% of the region's population. The next largest group of cities in the region include Boerne, Cibolo, Converse, Schertz and Universal City. Many smaller cities are contained in the rural areas of the planning region.

Overall, the region is expected to grow by 40% between 2020 and 2050, from a population of 2,212,988 to about 3,095,520 (Figure 1-6). This significant amount of growth will lead to extensive expansion of development adding housing and businesses to support the growing population. As the region experiences population growth, more people will be exposed to flooding, with a greater possibility of being extreme, as permeable land surfaces are replaced with impermeable services associated with development.

Figure 1-6. SAFPR Population Projection



Nine counties are projected to grow by at least 20% between 2020 and 2050. Kendall County is the fastest growing county in the region with a projected growth of 106% over the next 30 years.

Table 1-5. Counties with highest projected growth, 2020-2050

County	2020 Population	2050 Population	% Growth
Kendall	25,519	52,659	106%
Guadalupe	90,434	166,790	84%
Wilson	53,265	88,957	67%

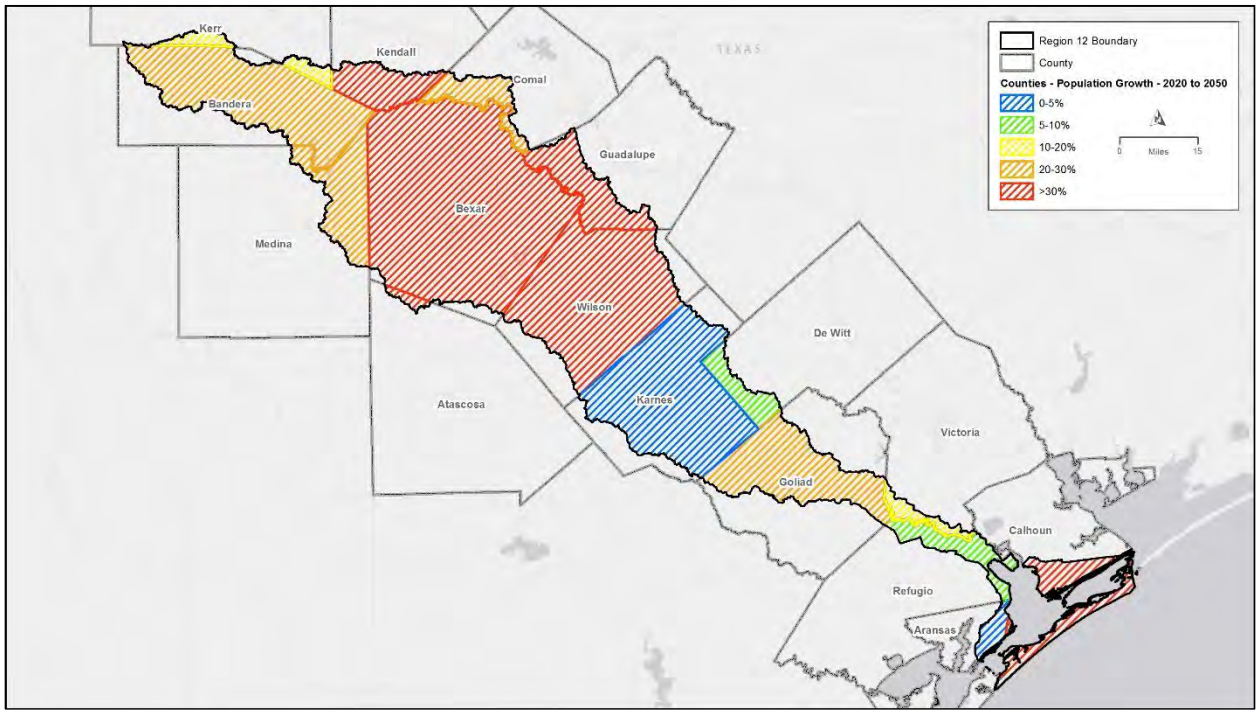
County	2020 Population	2050 Population	% Growth
Comal	17,239	27,737	60%
Atascosa	1,593	2,287	44%
Bexar	1,965,639	2,686,036	37%
Medina	12,618	16,232	29%
Bandera	23,755	30,173	27%
Goliad	4,745	5,937	25%

The cities with the highest projected growth as a percentage of 2020 population are Boerne, Elmendorf, Schertz, Cibolo, and Floresville (Table 1-6).

Table 1-6. Cities with highest projected growth, 2020-2050

County	2020 Population	2050 Population	% Growth
Boerne	17,732	28,903	96%
Elmendorf	2,160	4,001	85%
Schertz	39,245	71,017	81%
Cibolo	23,066	38,853	68%
Floresville	8,123	13,476	66%

Figure 1-7. SAFPR Population Growth, 2020-2050



The SAFPR area has an economic base centered on trades and services, manufacturing, mining, agricultural and livestock production. All sectors of the economy have experienced growth in recent years. Table 1-7 provides a county-by-county summary of economic activity in the key sectors most significantly affecting the economy of the SAFPR. A strong trades and services sector, including a thriving tourism industry in San Antonio, accounts for about 46 percent of regional economic activity. Fabricated metal products, industrial machinery, and food processing form the core of the manufacturing sector, which accounts for approximately 30 percent of regional economic activity. Oil and gas production dominate the mining sector of the economy and, together, represent about 22 percent of the reginal economic activity. Beef cattle, corn, and grain sorghum are the dominate agricultural enterprises. The agricultural sector, including both livestock and crops, accounts for about 1 percent of regional economic activity.

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Table 1-7. County Economic Activity in the SAFPR

County	Trades & Services Economic Activity ($Millions)	Manufacturing Economic Activity ($Millions)	Market Value of all Livestock ($Millions	Market Value of All Crops ($Million)	Value of Oil Production ($Millions)	Value of Gas Production ($Millions)	Total ($Millions)
Atascosa	464	0	54	21	1,327	94	1,960
Bexar	18,346	14,766	17	51	5	0	33,185
Comal	2,685	960	9	1	0	0	3,655
DeWitt	205	0	32	7	2,924	975	4,143
Goliad	41	0	13	5	13	30	102
Guadalupe	1,965	2,543	53	21	43	0	4,625
Karnes	151	0	18	11	6,409	1,265	7,854
Kendall	1,149	0	11	1	0	0	1,161
Medina	580	0	48	46	6	0	680
Refugio	80	0	11	25	139	35	290
Victoria	2,216	0	24	34	112	15	2,401
Wilson	250	122	56	13	80	2	523
Total	**28,132**	**18,391**	**346**	**236**	**11,058**	**2,416**	**60,579**

2017 Economic Census. US Department of Commerce
2017 Census of Agriculture, Volume 1 Geographic Area Series. “Table 1. County Summary Highlights: 2017”
Determined by using the number of barrels produced as reported to the Texas Railroad Commission times $61.40/barrel (average price for 2018)
Determined by using the cubic feet produced as reported to the Texas Railroad Commission times $3.67/cubic feet (average price for 2018)

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Trades and services is the leading economic activity in the region, largely centered around tourism in the San Antonio area. Other counties with large trades and services sectors include Comal, Guadalupe and Victoria Counties.

In 2017, manufacturing facilities contributed over $18 billion in sales in the region. The leading manufacturing counties in the region for which data are available are Bexar, Comal and Guadalupe. Significant economic activity associated with manufacturing also occurs in Atascosa, DeWitt, Goliad, Karnes, Kendall, Medina, and Victoria Counties, although data are withheld to avoid disclosures for individual producers.

This region has many sand and gravel quarries and is also rich in petroleum products, including oil and natural gas. Much of the stone quarried is used in the production of cement. The leading cement producing area in the region is Bexar County. Most of the stone, gravel, and sand mining activities are located in Bexar, Comal, and Victoria Counties. The regional also derives a significant portion of its mining income from oil and gas activities. All but Comal and Kendall have some economic activity derived from oil and gas. The leading oil and gas producing counties in the region are DeWitt, Karnes, and Atascosa.

Much of the cropland in the region is farmed using dryland techniques, with Medina and Atascosa counties being the areas with the most irrigated cropland. The leading agricultural producing counties in the region, by market value of product, are Bexar, Medina, Victoria, and Refugio. The major crops grown in the region include corn and grain sorghum, with wheat soybeans and cotton also being grown.

Major types of livestock produced in the area include cattle and calves, beef cattle, and sheep and lambs. The leading livestock producing counties in the region by market value are Wilson, Atascosa, Guadalupe, and Medina.

The median annual household income in the SAFPR ranges from $84,747 in Kendall County to $50,076 in Refugio County, a difference of $34,671. The average household median income of the region is $64,173, or slightly above the state average of $61,874. Approximately seven counties have a median household income value less than the state average. The region also contains several counties that have relatively high median household incomes with Comal, Guadalupe, Kendall, and Wilson Counties greater than $75,000. These four counties are also projected to have the greatest growth in the SAFPR.

Median household income levels can be affected by many factors, including education levels, opportunity of employment, and location. Overall, the higher median income in the region indicates that the average individual affected by

floods may be at a financial advantage compared to their state counterparts; however, it is important to remember that there are several counties with low median income values. Residents in these counties, may have a harder time recovering from a flood event.

1.6 Flood-prone Areas and Major Flood Risks

1.6.1 Flood-prone Areas

The 1.0% and 0.2% annual chance storm event inundation boundaries were compiled for all waterways with contributing drainage areas larger than one-tenth of a square mile (sq. mi.) for the entire region. This complete coverage was due in part to the availability of flood inundation boundaries for the entire basin, provided by Fathom to the TWDB for use in regional flood planning[2]. The most accurate inundation boundaries were applied when multiple inundation data sets were available.

A 'floodplain quilt' was obtained from TWDB, consisting of multiple layers of data from various sources available throughout the state that were 'quilted' together into a single flood hazard dataset. The 'floodplain quilt' does not typically include localized flooding or depict complex urban flooding problems. Additionally, new preliminary inundation boundaries were obtained from SARA, which is currently the only detailed flood data that uses the latest NOAA Atlas 14[3] rainfall. In addition, public identified flood-prone areas identified through public comments will be evaluated as the data becomes available.

The following list summarizes the various flood inundation data sets used in their order of most accurate to least accurate, with data sets including the base level engineering (BLE) data and above considered accurate.

- SARA Preliminary Data (Submitted to the Federal Emergency Management Agency (FEMA) for review)
- National Flood Hazard Layer (NFHL) Preliminary Data
- NFHL Detailed Effective Data
- Base Level Engineering Studies
- NFHL Approximate Effective Data
- Fathom Draft Data – October 29th, 2021

[2] https://www.fathom.global/product/flood-hazard-data-maps/

[3] https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html

- Public Comments

A portion of the SAFPR contains 'approximate' 1.0% annual chance flood inundation boundaries but no 0.2% annual chance storm event inundation boundaries (i.e. NFHL Approximate Study Areas). Thus, for these approximate areas, the Fathom 1.0% and 0.2% annual chance storm data were used to define flood hazard extents. In 2022, additional preliminary data will be provided by SARA and the entire San Antonio River Basin will have complete BLE coverage. Therefore, existing flood hazard mapping will be updated in its entirety to include Preliminary, Detailed Effective or BLE quality data.

Figure 1-8 thru Figure 1-11 below provides a region-wide depiction of the 1.0% annual chance flood event and 0.2% annual chance flood event inundation boundaries, and the source of flooding for each area, for use in the risk analysis. In addition, flood risks are described in further detail in Chapter 2.

1.6.2 Additional Flood-Prone Areas

Additional flood-prone areas were identified based on the location of hydrologic features, historic flooding, and/or local knowledge. Additional flood-prone areas were added for the following:

- Local knowledge (stakeholders / citizens)
- Database identifying ow water crossings (Texas Natural Resource Information System (TNRIS))
- U.S. Geological Survey (USGS) gages
- Historical flood data (National Weather Service (NWS), FEMA, TxDOT, and complaints reported through the City of San Antonio (CoSA) 311 system)

1.6.3 Local Knowledge

The SAFPR is divided into four subregions (Upper Basin, Upper Mid Basin, Lower Mid Basin, and Lower Basin) as shown in the Figure 1-8 thru Figure 1-11 to facilitate stakeholder and citizen engagement. The first round of in-person meetings introduced the regional flood planning process and to gather local knowledge of flood-prone areas, historical flooding, flood mitigation projects and needs. Additionally, an interactive on-line comment map was used to allow stakeholders and citizens the opportunity to identify flood-prone areas for consideration in the Plan. Points that were outside of the 1% and 0.2% chance storm event flood hazard area were delineated as possible flood-prone areas based on the descriptions included in the comments.

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Figure 1-8. SAFPR Flood-Prone Areas – Upper Basin

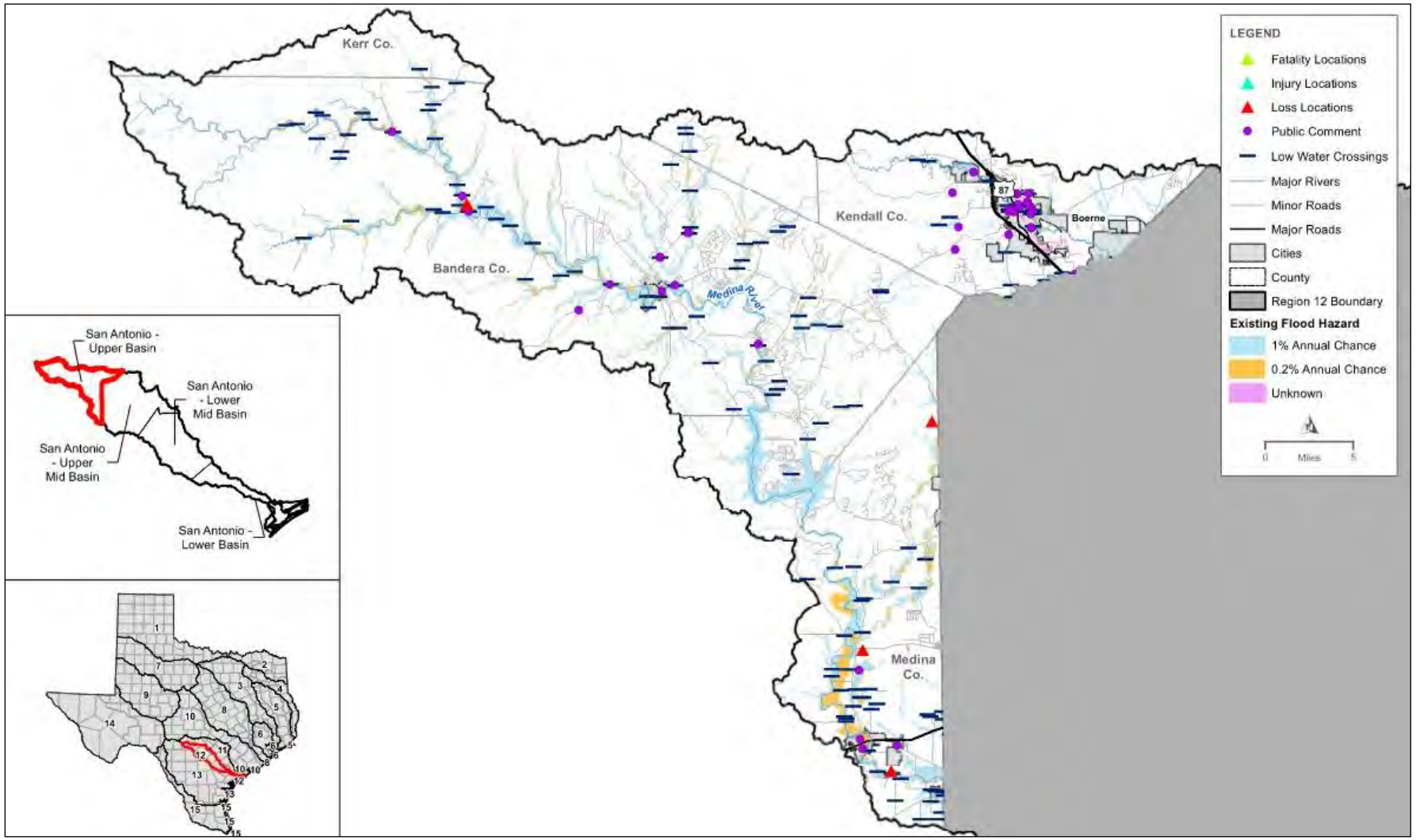


Figure 1-9. SAFPR Flood-Prone Areas – Upper Mid Basin

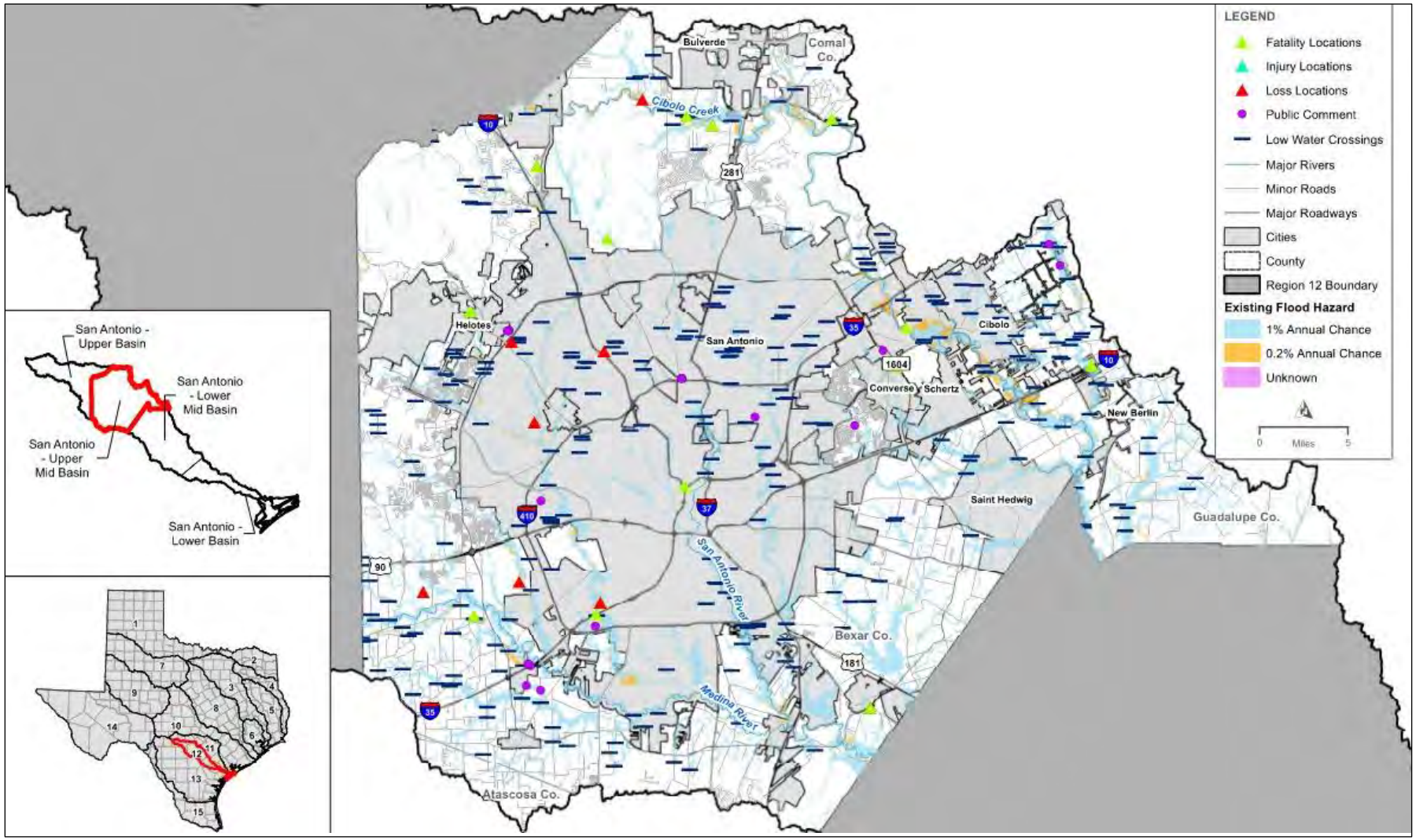


Figure 1-10. SAFPR Flood-Prone Areas – Lower Mid Basin

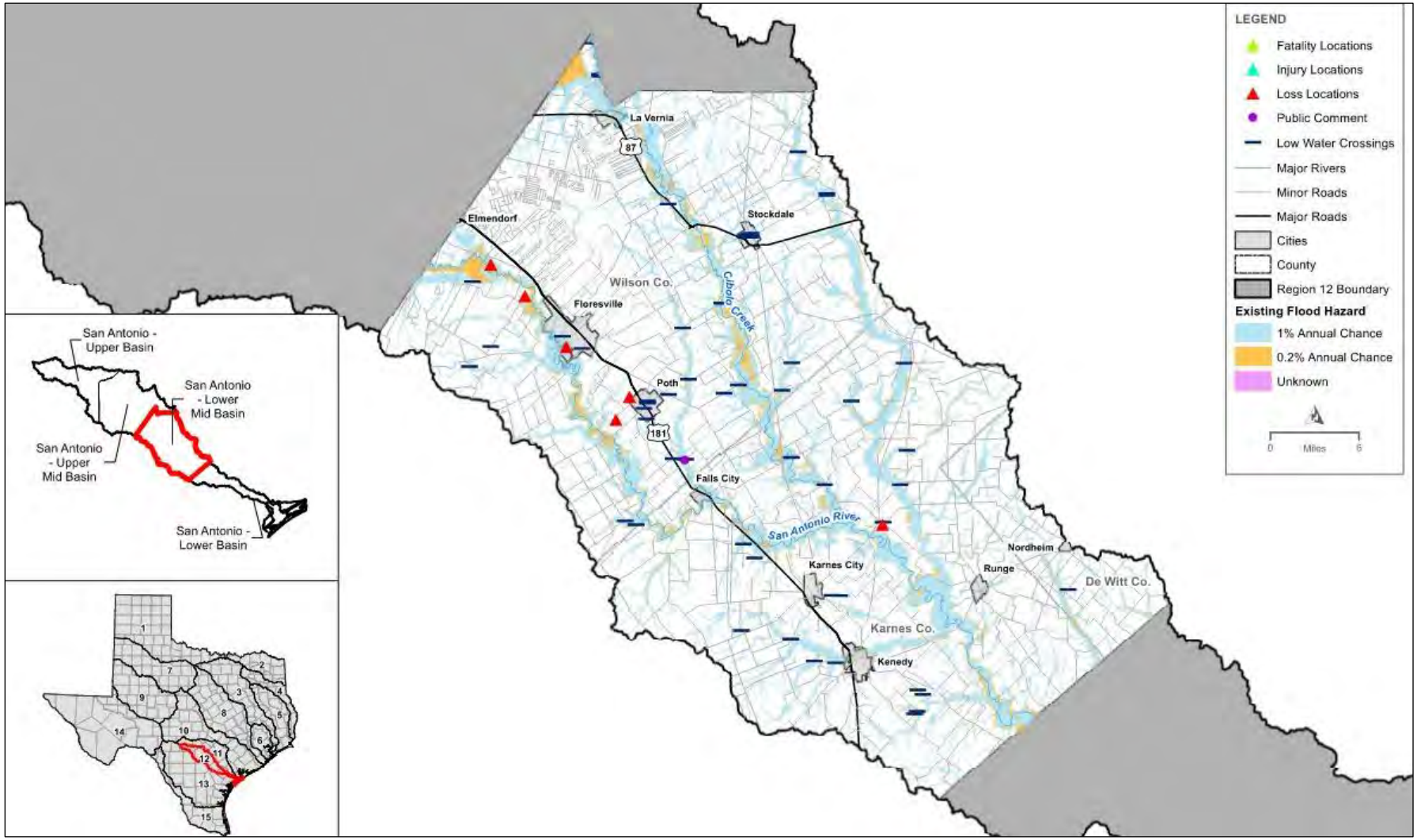
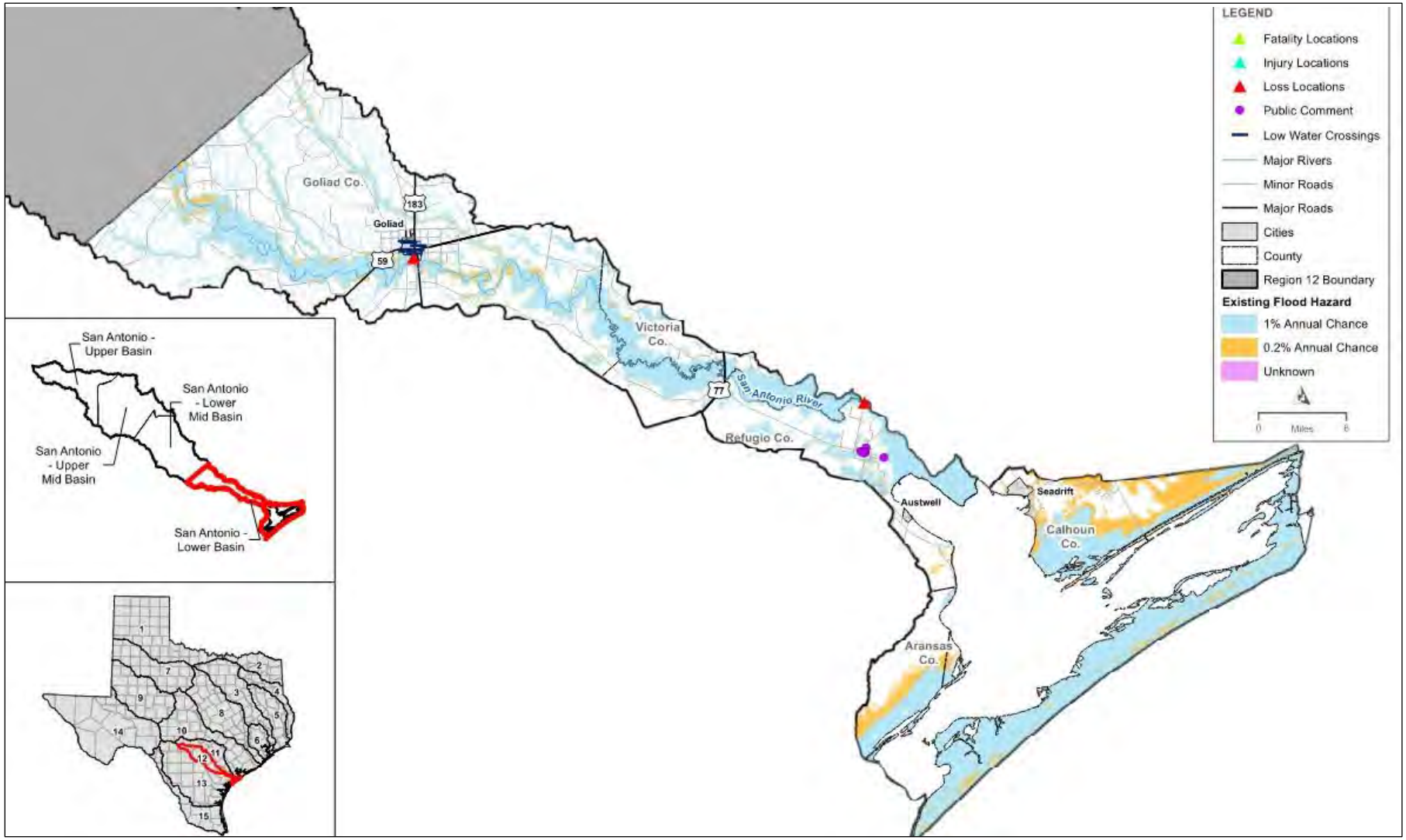


Figure 1-11. SAFPR Flood-Prone Areas – Lower Basin



1.6.4 Low-Water Crossings

Low-water crossings are considered potential flood-prone areas due to their inherent life loss risk during flood conditions. Low-water crossings are defined where a creek crosses a road that is low enough to be subject to frequent flooding during storm events or during a 50% annual chance (2-year) storm event.

A total of 498 low-water crossings have been identified in the SAFPR. These low-water crossings are from TNRIS and were last updated in March 2021. The TNRIS data includes locations monitored by the Bexar Flood Website[4], Bexar County Highwater Alert Lifesaving Technology (HALT)[5] and San Antonio Flood Emergency (SAFE) Route System[6] Community feedback was used to identify additional problematic low-water crossings not already included in the TNRIS data.

1.6.5 USGS Gage Data

USGS gage information was used to identify flood-prone areas and evaluate historical flood events. A few key locations were identified along the major rivers and tributaries within the basin. The gages in these locations were evaluated for crucial historic flood events which are summarized in Table 1-8 below.

1.7 Key Historical Flood Events

1.7.1 Historical Flooding

Past flood events provide insight on the location of flood-prone areas within the basin. Table 1-8 below provides a list and brief description of historical events within the basin.

[4] Bexar Flood Website https://www.bexarflood.org/#!/main/map

[5] Bexar County Highwater Alert Lifesaving Technology (HALT) https://www.bexar.org/2728/HALT-High-Water-Detection

[6] San Antonio Flood Emergency (SAFE) Route System https://gis.sanantonio.gov/OEM/SAFE/index.html

Table 1-8. List of Historic Floods

Flood Event	Description
2021 Coastal Flash Floods	Early summer 2021, a series of storms hit the Texas Mid Costal Counties causing flash flooding. Victoria and Karnes County USGS gages along the San Antonio River saw record discharge amounts. As a result of this flash flooding, the NWS reports one injury and one death in Victoria.
2017 Hurricane Harvey	Hurricane Harvey is one of the most expensive storms on record, costing an estimated $24 million dollars in damages to Region 12 counties.
2016 Floods	Texas was hit by a series of large storms in 2016. Historic USGS gage discharge rates were recorded in Karnes and Victoria counties along the San Antonio River. NWS reports two flash flood related casualties recorded this year within the region.
2015 Memorial Day Flood	May 2015, a slow-moving storm swept Oklahoma and Texas causing flash flooding throughout the region. Bandera and Victoria County USGS gages along the Medina and San Antonio River recorded historic discharge rates. As a result of this flash flooding, the NWS reports one death in Bexar County and one in Medina County.
2015 October Flood	In October of 2015, a tornado and a large storm ravaged Central Texas. Wilson County USGS gage on the Cibolo Creek saw record discharge amounts. As a result of this flash flooding, the NWS reports one death in Bexar and one in Comal counties.
2013 May Floods	May 2013 brought flash floods that affected the whole region. Historic discharge rates were recorded along the San Antonio River in Bexar and Karnes County. These flash floods resulted in 3 reported casualties by the NWS in Bexar and Guadalupe counties.

Flood Event	Description
2010 June Floods	Flash floods hit Central Texas in June 2010, making it one of the more costly events the region has endured. An estimated $20 million dollars in damages were reported for Bexar, Comal, and Guadalupe counties. As a result, the NWS reports one death in Comal County.
Water Year 2007	A 6-month period where there was nearly continuous flooding in Texas from March to September. In August, Tropical Storm Erin hit the regions coastal counties. 2007 was one of the costliest years ever recorded for flood damage. Just in Region 12, there was $20 million in damages reported by the NWS. June through August NWS reports historic USGS gage discharge rates for the San Antonio River and Cibolo Creeks in Bexar and Wilson County. NWS reports that Region 12 had 10 fatalities within this 6-month span.
2005 Hurricane Rita	Hurricane Rita was the most intense hurricane to pass through the Gulf of Mexico and caused severe coastal flooding and. According to the Alamo Area Council of Governments Regional Mitigation Action Plan, it caused severe coastal flooding and lead to emergency declarations in Atascosa, Bandera, Bexar, Comal, Guadalupe, Karnes, Kerr, Medina, and Wilson counties.
2004 November Flash Flood	November 2004, the region was hit by a costly flash flood that resulted in 2 deaths in Bexar County and set historic peak discharge rates at the USGS gage on Salado Creek in Bexar County.
2002 Flash Floods	July 2002 Flash Floods hit the region. Historic USGS discharge rates were recorded all across the region; Medina River in Bandera County, Salado Creek in Bexar County, and San Antonio River in Karnes and Goliad counties. As a result of these floods the NWS reports 5 deaths from Bexar and Kendall counties. Later that year extreme flash flooding in November resulted in 18 injuries in Bexar County.

Flood Event	Description
2001 Floods	August 2001, Atascosa, Bexar, Comal, Guadalupe, Karnes, Kerr, and Wilson Counties encountered sever flash flooding. Water was reported 6 inches over the 500-year floodplain mark along SH123 in Wilson County. Floods caused an estimated $2,000,000 in damages.
1998 October Flood	South central Texas experienced record-breaking rainfall in October 1998, making it the costliest flood event for the region. NWS reports $446 million in damages across the region. NWS reports 11 casualties in Bexar County and 4,040 injuries total for the region, most of them being in Bexar, Comal, Guadalupe, and De Witt counties. Historic USGS gage discharge rates were recorded throughout the region, from Medina River in Bandera County all the way down to the coast on the San Antonio River in Goliad. Per the San Antonio River Authority, the completion of the San Antonio River Flood Tunnels in January 1998 significantly reduced the impacts of these flash floods in San Antonio.
1997June Flash Flood	Heavy rainfall in June 1997 caused flash flooding in South Central Texas. As a result, the NWS reports 4 casualties and 115 injuries across Bexar, Medina, Bandera, Guadalupe, Comal, and Kendall counties. Historic USGS gage discharge rates were recorded along the Medina River in Bandera and Bexar County. This is one of the more costly events for the region, the NWS reports $29 million in damages resulting this event.
1990 July Flood	July 1990 was known as the "wettest" July in San Antonio. One of the largest USGS gage discharge rates was recorded for San Antonio River in Bexar County.
1987 June Flood	The upper counties were hit by a storm in June 1987, setting historic USGS gage discharge rates for the Medina River in Bandera and Bexar County.

Flood Event	Description
1978 Hurricane Amelia	Hurricane Amelia hit Texas and stalled over the region's upper counties. This storm devastated Bandera County and surrounding areas. Due to this event, the USGS gage on the Media River in Bandera County recorded the highest discharge rate and water level ever recorded for the region, at 281,000 cfs and 50 ft.
1967 Hurricane Beulah	Hurricane Beulah hit Texas in September. The storm caused Goliad County to record the highest flow discharge of 138,000 cfs, the second highest recorded discharge in the FPR.
1946 San Antonio Flood	A September flood hit Bexar and Karnes counties. This event set a historic USGS discharge rate along the San Antonio River in Karnes County. As a result, the San Antonio River Authority reports 4 casualties in San Antonio.
1921 San Antonio Flood	On September 9, 1921, a tropical depression stalled just north of San Antonio and within hours flooded the creek networks in San Antonio. Due to this event, the San Antonio River Authority reports a total of $3.7 million in damages and more than 51 casualties in San Antonio. This flood sparked construction of the Olmos Dam.
1913 October Flood	A record rainfall of over 7 inches in 24-hours caused major flooding along the San Antonio River. The City of San Antonio reports flooding along San Pedro and Alazan creeks. Historic USGS gage levels were recorded in Goliad and Karnes Counties.

1.7.2 National Weather Service Flood Data

The NWS has documented fatalities, injuries, and property damage as the result of past flood events since 1996.

Data summarizing property damage, fatalities, and injuries are shown in Figure 1-12, Figure 1-13, and Figure 1-14.

A summary of flood damage data gathered from the NWS can be seen in Table 1-9 and Table 1-10 reports flood damage in dollars, injuries, and

fatalities by year. Table 1-10 uses the same base data as Table 1-9 but is summarized based on counties. To generate Table 1-9 and Table 1-10, data were collected from the NWS and filtered to highlight damage only generated by rain, storm, and flood.

Figure 1-12. Property Damage from Flooding, From 1996 to 2021 (NWS)

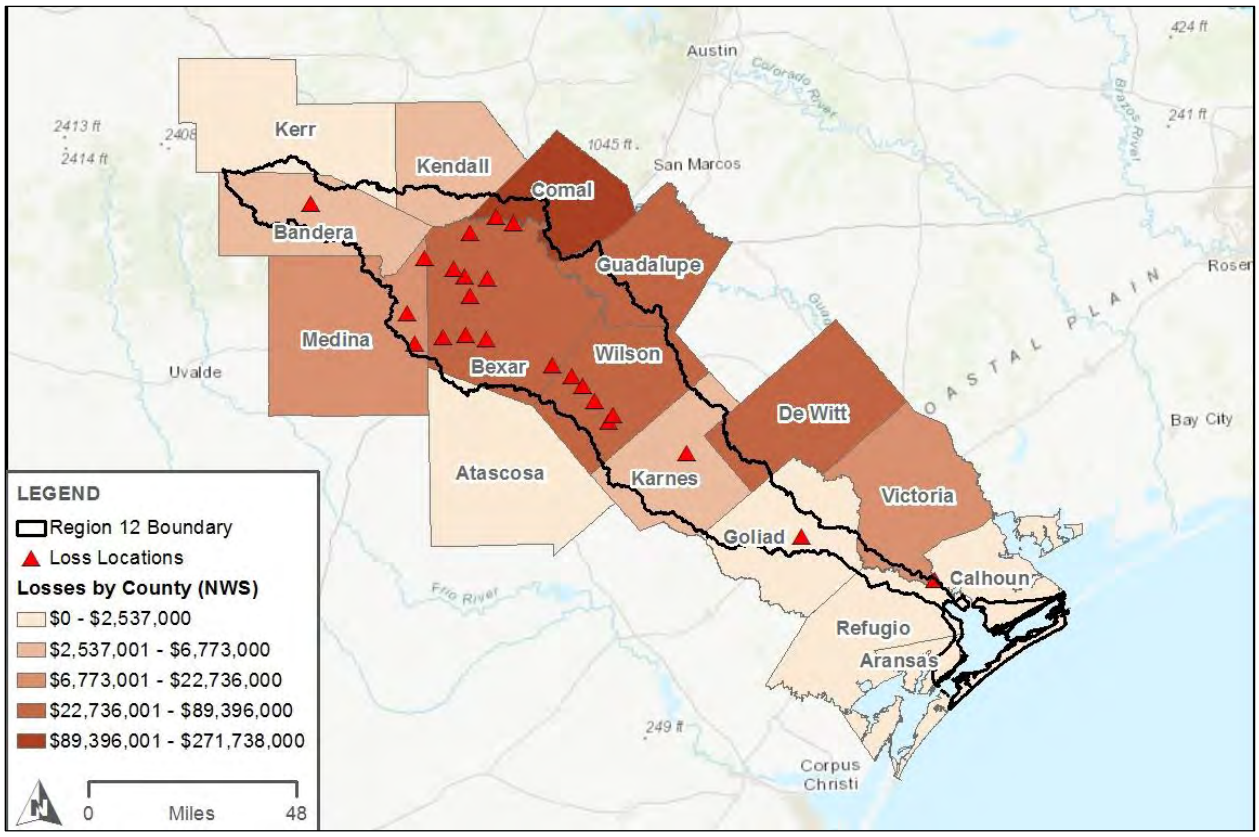


Figure 1-13. Fatalities from Flooding, From 1996 to 2021 (NWS)

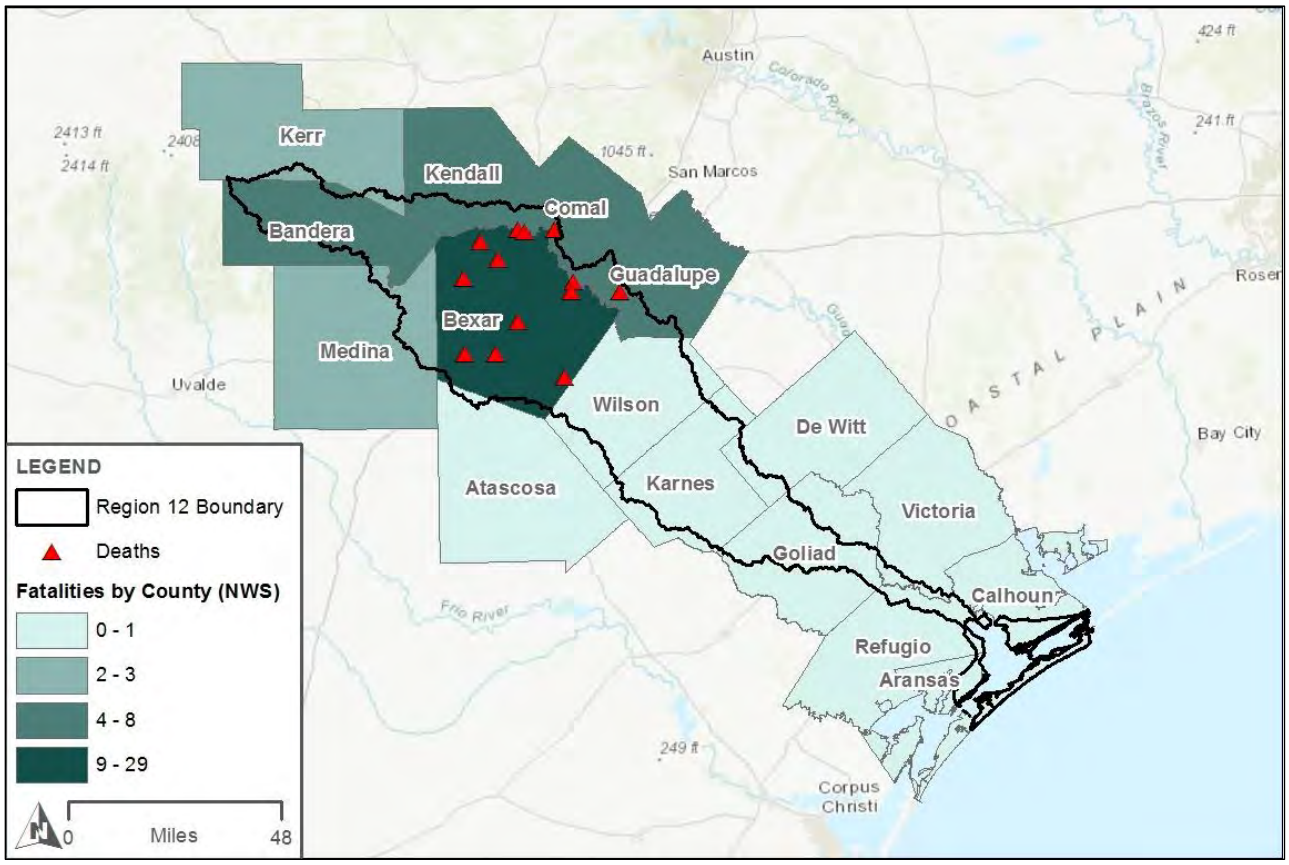


Figure 1-14. Injuries from Flooding, From 1996 to 2021 (NWS)

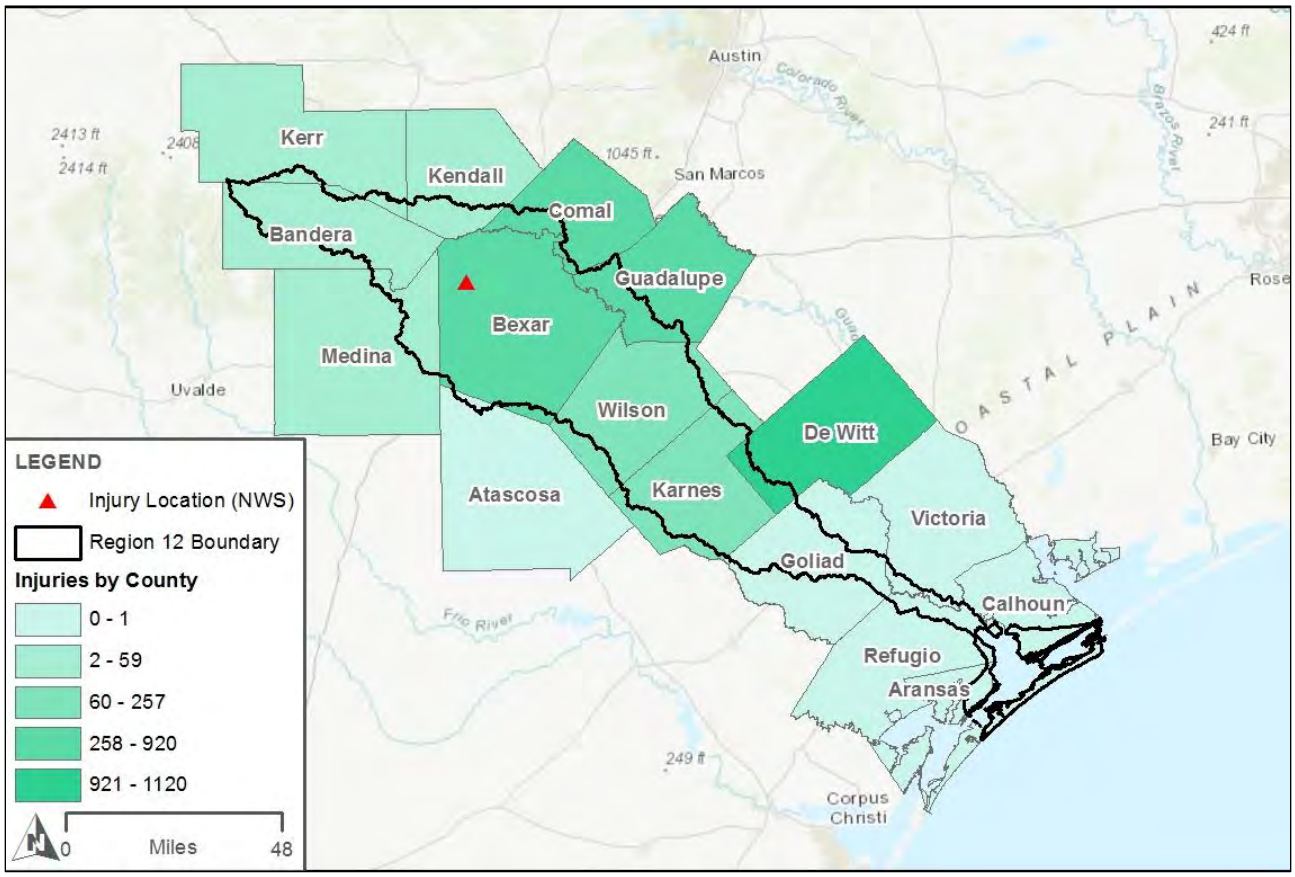


Table 1-9. Losses associated with Flooding in SAFPR by year From 1996 to 2021 (National Weather Service)

Flood Year	Damages	Injuries	Fatalities
1996	$76,000	2	1
1997	$32,173,000	115	6
1998	$452,054,000	4,063	17
1999	$446,000	0	0
2000	$1,208,000	8	1
2001	$4,969,000	63	1
2002	$2,300,000	22	5
2003	$528,000	0	0
2004	$1,572,000	1	4
2005	$0	0	0
2006	$2,000,000	0	0

2007	$21,920,000	1	10
2008	$20,000	0	0
2009	$0	0	0
2010	$20,900,000	0	4
2011	$0	0	0
2012	$110,000	0	0
2013	$100,000	0	4
2014	$200,000	0	0
2015	$155,000	0	4
2016	$250,000	0	2
2017	$24,000,000	0	1
2018	$50,000	0	0
2019	$5,000	0	0
2020	$1,455,000	0	0
2021 [1]	$690,000	1	1
Total	***$567,181,000***	***4,276***	***61***

[1] Data as of December 2021.

Table 1-10. Losses associated with Flooding From 1996 to 2021 by County (National Weather Service)

Counties	Percentage of County Area in Region 12	Damages	Injuries	Fatalities
Aransas	13%	$2,537,000	0	0
Atascosa	1%	$1,267,000	0	0
Bandera	66%	$7,783,000	26	5
Bexar	97%	$44,390,000	852	29
Calhoun	27%	$1,110,000	0	0
Comal	17%	$272,468,000	920	6
De Witt	9%	$43,265,000	1,120	0
Goliad	39%	$25,000	0	1
Guadalupe	24%	$52,083,000	829	8
Karnes	80%	$4,584,000	170	0

Counties	Percentage of County Area in Region 12	Damages	Injuries	Fatalities
Kendall	19%	$6,846,000	20	6
Kerr	5%	$1,253,000	22	3
Medina	15%	$17,148,000	59	2
Refugio	13%	$0	0	0
Victoria	5%	$22,736,000	1	1
Wilson	82%	$89,686,000	257	0
Total		***$567,181,000***	***4,276***	***61***

1.7.3 FEMA Flood Damage Data

FEMA data on disaster funding for flood damages was obtained from 1996 to June 2021. Data is shown in the following Figure 1-15 below.

Table 1-11 includes flood related damages by county. Unlike the gross damage data in Table 1-9 and Table 1-10, data in Table 1-11 is summarized from various federal programs. FEMA funding of four federal programs is summarized by county: Public Assistance Funded Project Summaries, Individuals and Households Program – Valid Registrations, Individual Assistance Housing Registrants – Large Disasters, and Housing Assistance Program.

Figure 1-15. FEMA Flood Assistance to Owners and Renters for Flood Damages, From 1996 to 2021

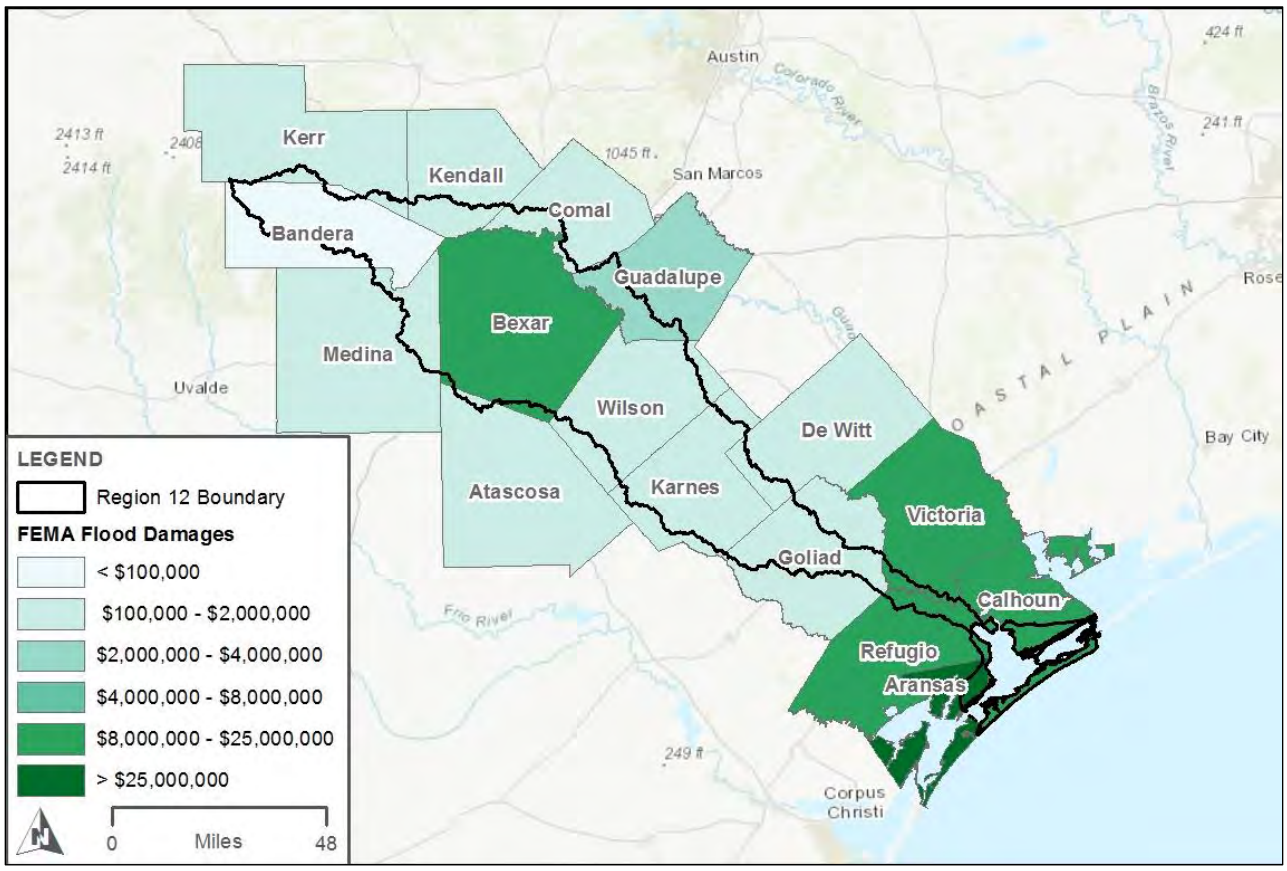


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Table 1-11. FEMA Funding for Flood Related Damages by Program (1996 – June 2021)

Counties	Percentage of County Area in SAFPR	Public Assistance Funded Project Summaries	Individuals and Households Program - Valid Registrations		Individual Assistance Housing Registrants - Large Disasters	Housing Assistance Program
		Federal Share Obligated	Flood Damage Amount	Repair Amount	Real Property Damage Amount Observed by FEMA	Owners and Renters Combined Amount
Aransas	13%	$75,463,478	$7,328,541	$12,488,979	$55,009,113	$50,412,810
Atascosa	1%	$1,663,563	$94,935	$280,715	$226,154	$875,027
Bandera	66%	$2,080,777	$0	$0	$79,676	$97,212
Bexar	97%	$50,005,333	$2,045,533	$1,317,967	$4,605,858	$19,501,737
Calhoun	27%	$23,004,779	$588,398	$3,278,010	$3,723,571	$9,217,394
Comal	17%	$6,525,770	$585,521	$172,868	$549,725	$1,539,102
De Witt	9%	$4,320,705	$484,243	$435,925	$1,137,800	$1,499,327
Goliad	39%	$625,031	$22,554	$636,172	$577,051	$1,554,971
Guadalupe	24%	$5,118,692	$741,266	$402,861	$325,694	$2,089,239
Karnes	80%	$754,616	$4,580	$530,048	$372,964	$1,128,253
Kendall	19%	$712,625	$118,970	$29,522	$160,589	$264,451
Kerr	5%	$1,224,307	$0	$0	$140,710	$228,894
Medina	15%	$2,679,089	$1,421,149	$843,199	$208,545	$1,484,783
Refugio	13%	$28,969,743	$195,479	$2,816,461	$6,029,616	$8,192,161

Counties	Percentage of County Area in SAFPR	Public Assistance Funded Project Summaries	Individuals and Households Program - Valid Registrations		Individual Assistance Housing Registrants - Large Disasters	Housing Assistance Program
		Federal Share Obligated	Flood Damage Amount	Repair Amount	Real Property Damage Amount Observed by FEMA	Owners and Renters Combined Amount
Victoria	5%	$34,618,575	$2,070,202	$6,387,900	$9,538,865	$22,614,208
Wilson	82%	$2,081,921	$0	$18,564	$218,166	$360,002
Totals	**-**	***$239,849,004***	***$15,701,370***	***$29,639,191***	***$82,904,099***	***$121,059,571***

1.8 Political Subdivisions with Flood-Related Authority

A list of existing political subdivisions within the SAFPR that have flood-related authority is provided in Table 6 in Appendix A. The list contains 110 entities including 49 cities, 16 counties, 4 river authorities, and additional entities with flood-related authority. The TWDB provided a list of the National Flood Insurance Program (NFIP) participants in the region; a total of 63 entities were identified including 16 counties and 47 cities. All entities participating in the NFIP have floodplain management regulations and have adopted minimum regulations pursuant to Texas Water Code requirements. Out of the 63 entities identified, a total of 32 entities have adopted higher standards according to the Texas Floodplain Management Association 2016 Higher Standards Survey. Further evaluation of these entities and their floodplain management practices is discussed in detail in Chapter 3.

1.9 Flood Risk Local Regulation and Development Codes

Using policies and regulations to reduce the exposure of people and properties to flood risk are forms of non-structural flood control. By encouraging or requiring communities to avoid developing in flood-prone areas altogether, or to take precautions such as increasing building elevations, preserving overflow areas through buffering and avoiding sensitive natural areas such as wetlands, communities can reduce the likelihood and extent of damages to existing and new development. Local regulations and development codes pertaining to flooding include:

- **Floodplain Ordinances** – Floodplain ordinances regulate development, and the impact new development has on a community's floodplain. Community regulations are typically based on FEMA provided flood hazard information but can be based on other local sources of data as well. Participation in the NFIP requires a community to have adopted a floodplain ordinance with minimum requirements established by FEMA.
- **Building Standards** – Building standards may include considerations for structures located within a floodplain, including minimum finish floor elevations and flood proofing requirements. NFIP requirements also set standards for property owners seeking to renovate structures in a floodplain including those that experience repetitive or severe flood losses.
- **Drainage Design Standards** – Adopted drainage design standards set the minimum requirements for stormwater management that must be met prior to the approval of construction plans. Drainage criteria in the region are typically adopted by municipalities but are also used by counties.

- **Zoning and Land Use Policies** – Planning and zoning ordinances regulate acceptable types of land uses within a community to promote appropriate development, safety, and general welfare. Some communities use zoning and land use ordinances to establish open space requirements, conservation easements, and minimum setbacks from creeks and wetlands to preserve floodplain function and promote sustainable and resilient development.
- **Local and Regional Flood Plans** – Local and regional flood plans analyze a community's flood risk and present how that entity will improve its resiliency. Drainage master plans describe a community's physical and institutional planning environment and establish interjurisdictional roles and responsibilities when many drainage entities are present. Capital Improvement Plans (CIP) identify capital project alternatives for an entity, provide economic analysis for alternatives, and often rank alternatives based on feasibility. The City of San Antonio has completed drainage master plans to develop a drainage CIP organizing future projects.

Local regulations and development codes, as well as their prevalence in the SAFPR, are discussed in detail in Chapter 3.

1.10 Agricultural and Natural Resources Impacted by Flooding

1.10.1 Farming

Flooding or excess precipitation can cause delays in, and reduction of, crop harvest and can erode sediment and nutrients resulting in partial or sometimes complete crop loss. The impact that flooding has on farming depends on factors including crop type, stage of the growing or harvesting season when the flood event occurs, and the magnitude of flooding. The numerous crop types grown in the SAFPR have varying resiliency to excess precipitation and prolonged ground inundation. Permanent crops, such as trees, tend to be more resilient to excess precipitation and ground inundation than row crops, such as corn or cotton. In the SAFPR, row crops comprise most of the farming production. Heavy rain before planting can delay planting or prevent planting for the season. In addition, flooding damages can occur after crops such as cotton or hay have been harvested but not bailed or processed.

1.10.2 Ranching

Ranching activities in the region are also impacted by flooding. Livestock can be swept away, drowned, or injured by flash floods. After a flood, livestock

can be particularly susceptible to certain types of parasites and diseases. Excessive rain may cause an increase in vectors, including flies and mosquitos, and cases of foot rot, which is a foot disease of cattle, sheep and goats[7]. Flood events can cause delays in building back livestock herds. Flood damages to livestock silage can reduce livestock head counts.

1.10.3 Natural Resources

The SAFPR contains numerous natural resources that can be impacted by flood events, such as wildlife. As with livestock, wildlife can be injured or killed by flash floods. Severe flood conditions can degrade stream health and impact ecosystems in the region.

However, in some ways, flooding can be a benefit for fields, wetlands, and riparian areas if limited in depth, duration, and velocity. However, typically in this region where flash floods are common, flooding causes erosion of sediment and nutrients, which can cause nutrient overgrowth and algal blooms in water bodies and nutrient deficiencies in agricultural lands.

1.11 Existing Local and Regional Flood Plans

A list of previous flood studies considered by the SARFPG to be relevant to the development of the San Antonio RFP is provided in the Table below.

[7] https://www.mla.com.au/research-and-development/dealing-with-natural-disasters/flood-recovery/. Accessed on March 18, 2022.

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Table 1-12. Previous Local and Regional Flood Plans

Previous and Relevant Flood Study	Description	Jurisdictions Covered	Counties	Year
Base Level Engineering	BLE is an efficient modeling and mapping approach that aims to provide technically credible flood hazard data at various geographic scales such as community, county, watershed, and/or state level. These data are meant to complement the current effective FIRM data, but not replace it.	All jurisdictions within the SAFPR	Bandera, Bexar, Karnes, Kendall, Kerr, Goliad, Refugio, Wilson, Medina, Victoria, DeWitt, Atascosa, Aransas, Guadalupe, Calhoun, Comal	Ongoing
City of Boerne Drainage Master Plan	The City of Boerne updated their drainage masterplan and updated development Code Changes. Results identified structures and roadways at risk to flooding during frequent storm events. Total project costs included over $60.5 million and remove approximately 67% of structures from the 100 year floodplain and provide 100-year level of service to eight (8) roadways and increased mobility for several others.	City of Boerne	Kendall	2021

Previous and Relevant Flood Study	Description	Jurisdictions Covered	Counties	Year
Upper Cibolo Risk MAP Study	Floodplain physical map revisions based on updated hydrologic and hydraulic analysis within the SAFPR in the Upper Cibolo watershed. The results are being incorporated into the draft National Flood Hazard Layer (NHFL).	City of Bulverde, City of Boerne, City of Fair Oaks Ranch, City of San Antonio, Bandera County, Bexar County, Comal County, Kendall County	Bandera, Bexar, Comal, Kendall	2021
Lower San Antonio Risk MAP Study	Floodplain physical map revisions based on updated hydrologic and hydraulic analysis within the SAFPR in the Upper Cibolo watershed. The results are being incorporated into the draft National Flood Hazard Layer (NHFL).	City of Floresville, City of Kenedy, City of Runge, City of Northeim, City of Goliad, City of Falls City, City of Karnes, City of Poth, City of San Antonio, Bexar County, Dewitt County, Wilson County, Karnes County, Goliad County	Bexar, Guadalupe, DeWitt, Wilson, Karnes, Goliad	2021
San Geronimo Risk MAP Study	Floodplain physical map revisions based on updated hydrologic and hydraulic analysis within the SAFPR in the San Geronimo watershed. The results are being incorporated into the draft National Flood Hazard Layer (NHFL).	City of San Antonio, Bandera County, Bexar County, Medina County	Bandera, Bexar, Medina	2021

Previous and Relevant Flood Study	Description	Jurisdictions Covered	Counties	Year
Coastal Resiliency Master Plan	Developed by the Texas General Land Office (GLO), the 2019 Texas Coastal Resiliency Master Plan is the second installment of a statewide plan to protect and promote a vibrant and resilient Texas coast that supports and sustains a strong economy and healthy environment for all who live, work, play or otherwise benefit from the natural resources and infrastructure along the Texas coast.	All jurisdictions within the Texas Coastal Counties	Aransas, Refugio	2020
Aransas County Multi-Jurisdictional Floodplain Management Plan	The focus of the mitigation action plan is to reduce future losses within Aransas County by identifying mitigation strategies based on a detailed hazard risk analysis, including both an assessment of 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 Aransas County.	Aransas County	Aransas	2020

Previous and Relevant Flood Study	Description	Jurisdictions Covered	Counties	Year
Calaveras Risk MAP Study	Floodplain physical map revisions based on updated hydrologic and hydraulic analysis within the San Antonio River Basin in the Calaveras watershed. The results have been incorporated into the preliminary National Flood Hazard Layer (NHFL). FEMA's Flood Datasets are available through the Map Service Center [8]. Flood risk data can be viewed on the SARA Risk MAP Viewer[9] .	City of China Grove, City of Elmendorf, City of San Antonio, Bexar County, Wilson County	Bexar, Wilson	2019
Bandera County River Authority and Groundwater District Flood Plan	The Bandera County River Authority and Groundwater District (BCRAGD) Flood Plan defines lines of communication, personnel assignments, safety, special flood conditions and post-flood operations for Bandera County.	All jurisdictions within the BCRAGD	Bandera	2019

[8] https://msc.fema.gov/portal/advanceSearch

[9] https://www.arcgis.com/apps/webappviewer/index.html?id=0b13614f13124257bfe589a459ba84fe

Previous and Relevant Flood Study	Description	Jurisdictions Covered	Counties	Year
Development of Flood Warning Tool Set for Medina River, Bandera County (TWDB Final Report: Contract No. 1600012035)	The study area encompassed a 23-mile reach of the Medina River from the confluence of Winans Creek to English Crossing Road above Medina Lake. The USGS developed a Hydrologic Engineering Center River Analysis System (HEC-RAS) model, which applied data from existing streamflow-gaging stations and installed two additional 'stage only' streamflow gaging stations along the headwaters of the North and West Prongs of the Medina River. A flood atlas, consisting of a library of flood-inundation maps for a range of streamflow conditions, was developed and included on the USGS Flood Inundation Mapping Program (FIMP) Website[10]. . The Flood Inundation Maps (FIMS) depict estimates of the areal extent and depth of flooding corresponding to selected water levels (stages) at the USGS streamflow-gaging station 08178880 Medina River at Bandera, Texas.	All jurisdictions within BCRAGD	Bandera	2019

Previous and Relevant Flood Study	Description	Jurisdictions Covered	Counties	Year
Aransas County Texas Multi-Jurisdictional Hazard Mitigation Action Plan	Plan covering two counties, 8 cities, and 2 school districts. The purpose of the Plan is to minimize or eliminate long-term risks to human life and property from known hazards and to break the cycle of high cost disaster response and recovery within the planning area.	Aransas County	Aransas	2019
Medina Risk MAP Study	Floodplain physical map revisions based on updated hydrologic and hydraulic analysis within the San Antonio River Basin in the Medina River watershed. The results have been incorporated into the effective National Flood Hazard Layer (NHFL). FEMA's Flood Datasets are available through the Map Service Center[11]https://msc.fema.gov/portal/advanceSearch. Flood risk data can be viewed on the SARA Risk MAP Viewer[12] .	City of Bandera, City of Castroville, Kerr County, Bandera County, Medina County	Bandera, Kendall, Kerr, Medina	2018

[10] https://www.usgs.gov/mission-areas/water-resources/science/flood-inundation-mapping-fim-program

[11] Center https://msc.fema.gov/portal/advanceSearch

[12] https://www.arcgis.com/apps/webappviewer/index.html?id=0b13614f13124257bfe589a459ba84fe

Previous and Relevant Flood Study	Description	Jurisdictions Covered	Counties	Year
Hazard Identification, Risk Assessment and Consequence Analysis	The Hazard Identification Risk Assessment (HIRA) is the first step in evaluating natural and technological hazards that exist. It serves as a basis for the development plans, public education programs, responder training and exercises. It also lays foundation to begin mitigation efforts to minimize these identified potential threats.	Bexar County, City of San Antonio	Bexar	2017
City of San Antonio Local Drainage Master Plan	In 2016, SARA teamed with the CoSA to develop a Drainage Master Plan of previously documented potential projects within the city limits, in order to identify candidates for the 2017 bond program.	City of San Antonio	Bexar	2016

Previous and Relevant Flood Study	Description	Jurisdictions Covered	Counties	Year
Bexar Risk MAP Study – Ft Sam Trib, Airport Trib, and UNT 1 to Martinez A	Floodplain physical map revisions based on updated hydrologic and hydraulic analysis within the San Antonio River Basin in the Medina River watershed. The results have been incorporated into the effective National Flood Hazard Layer (NHFL). FEMA's Flood Datasets are available through the Map Service Center[13]. . Flood risk data can be viewed on the SARA Risk MAP Viewer[14]. .	City of San Antonio, City of Terrell Hills, Bexar County	Bexar	2015
City of San Antonio Hazard Mitigation Plan (HMP)	The goal of the 2021 City of San Antonio Hazard Mitigation Plan (HMP) is to minimize or eliminate the long-term risk to human life and property from known hazards by identifying and implementing cost-effective mitigation actions.[15]	City of San Antonio	Bexar	2021

[13] https://msc.fema.gov/portal/advanceSearch

[14] https://www.arcgis.com/apps/webappviewer/index.html?id=0b13614f13124257bfe589a459ba84fe

[15] https://www.saoemprepare.com/Plans/HMAP

Previous and Relevant Flood Study	Description	Jurisdictions Covered	Counties	Year
Bexar County Hazard Mitigation Plan	The focus of the Plan is to identify activities to mitigate hazards classified as “high” or “moderate” risk, as determined through a detailed hazard risk assessment conducted for Bexar County and the participating jurisdictions.[16]	Bexar County, the City of Alamo Heights, the City of Balcones Heights, the City of Castle Hills, the City of China Grove, the City of Converse, the City of Elmendorf, the City of Fair Oaks Ranch, the City of Grey Forest, the City of Helotes, the City of Hill Country Village, the Town of Hollywood Park, the City of Kirby, the City of Leone Valley, the City of Live Oak, the City of Olmos Park, the City of Saint Hedwig, the City of Sandy Oaks, the City of Schertz, the City of Shavano Park, the City of Somerset, the City of Terrell Hills, the City of Universal City, the City of Von Ormy, and the City of Windcrest	Bexar	2017

16 https://cms3.revize.com/revize/leonvalleynew/government/community_development/floodplain_management/docs/Ordinance%20No.%202017-58.pdf

Previous and Relevant Flood Study	Description	Jurisdictions Covered	Counties	Year
Holistic Watershed Masterplans	SARA has worked with partner agencies since 2009 to complete Watershed Master Plans for the Upper San Antonio River, Leon Creek, Salado Creek, Medina River, Lower San Antonio River, and Cibolo Creek watersheds. The Master Plans have two primary objectives: Identify needs and opportunities related to flood risk, water quality issues, low impact development, stream restoration, nature-based park planning, mitigation banking, and conservation easements. Develop and assess proposed projects to address the identified needs and preserve identified opportunities. The Watershed Master Plan Viewer[17] displays data produced in the various Master Plan reports, as well as other useful reference data. It is intended to be used as a visualization tool to assist the public, stakeholders, and decision-makers in understanding both watershed issues and potential solutions.	All jurisdictions within Bexar, Karnes, Wilson, and Goliad Counties	Bexar, Goliad, Karnes, Wilson	2009- 2015

Previous and Relevant Flood Study	Description	Jurisdictions Covered	Counties	Year
Bexar, Wilson, Karnes, and Goliad County-Wide 2010 FIS Studies	The FEMA NFHL data was digitized and updated with new terrain, survey, hydrologic, and hydraulic data. FEMA's Flood Datasets are available through the Map Service Center[18].	All jurisdictions within Bexar, Wilson, Karnes, and Goliad Counties	Bexar, Wilson, Karnes, Goliad	2010
City Master Plans	City Master Plans for the Cities of Boerne, Fair Oaks, Castroville, LaCoste, La Vernia, Floresville	City of Boerne, Fair Oaks, Castroville, LaCoste, La Vernia	Kendall, Bexar, Medina, Wilson	2020, 2021, 2022

[17]https://sara-tx.maps.arcgis.com/apps/webappviewer/index.html?id=1cc5aae56ef145b69aab7dc1b6e52597

[18] https://msc.fema.gov/portal/advanceSearch

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1.12 Assessment of Existing Infrastructure

Background knowledge of the SAFPR's existing natural and structural flood infrastructure provides context in identifying strategies and flood planning recommendations throughout the planning process. This section details the natural flood mitigation features and major flood infrastructure in the SAFPR. Applicable natural features and infrastructure are summarized in Table 1-13.

Table 1-13. Natural Features and Constructed Major Flood Infrastructure

Flood Infrastructure	Source / Description	Condition
Natural Features[19]		
Rivers, Tributaries, and functioning floodplains	National Hydrography Dataset (NHD)	Functional
Functioning Floodplains	Floodplains from TWDB compiled 'flood quilt'	Functional
Wetlands	National Wetland Inventory	Functional
Sinkholes	NHD	Functional
Alluvial Fans	None Identified	n/a
Playa Lakes	None Identified	n/a
Constructed Major Infrastructure		
Levees	U.S. Army Core of Engineers	Deficient
Stormwater Tunnels	City of San Antonio	Functional
Flood Tunnel	City of San Antonio	Functional
Stormwater Canals	None Identified	n/a
Dams that Provide Flood Protection	Texas Commission on Environmental Quality (TCEQ), National Resources Conservation Service (NRCS), and San Antonio River Authority (SARA)	Functional / Non-Functional / Unknown

[19] 31 TAC §361.31 states that regional flood plans include a general description of the location, condition, and functionality of natural features and constructed major infrastructure within the FPR. Several of these do not exist within the SAFPR, including vegetated dunes; sea barriers, walls and revetments; and tidal barriers and gates

Flood Infrastructure	Source / Description	Condition
Detention and Retention Ponds	Numerous sources, including TCEQ and individual municipalities and counties	Unknown
Storm Drain Systems	Individual municipalities and counties	Unknown
Nature Based Solutions	City of San Antonio	Functional

Existing flood infrastructure in the SAFPR consists of both natural features and constructed features, which are owned and managed by numerous entities, including both governmental entities and individual property owners. Flood infrastructure may include non-structural measures such as natural area preservation, buyout of repetitive flood loss properties, or flood warning systems, and includes major public infrastructure like flood control dams. The TWDB Flood Data Hub[20] provides data to assist with identifying flood management infrastructure. The SAFPR's geodatabase was populated with available information from the TWDB and other state and federal sources. The multiple data sources were reviewed and amended to include one data point per location if duplication occurred across datasets.

1.12.1 Natural Features

Urbanization and overuse of rangeland can reduce the permeability of soil making land less efficient at detaining stormwater and infiltration rainfall into the soil profile. In more urbanized areas, drainage infrastructure is designed to collect and concentrate stormwater, which can increase the velocity and intensity of runoff leading to higher and faster flood flow peaks, stream degradation and reduce stormwater quality.

As land fragmentation in some areas of the SAFPR increases due to urbanization, oil and gas development, and other factors, focused land management efforts will be necessary to continue to receive the flood control benefits provided by open land. The U.S. Army Corps of Engineers' (USACE) program Engineering with Nature[21] aims to bring natural and engineered processes together to deliver more efficient and sustainable projects. In the SAFPR, local, state, and federal governments manage local, state, and regional parks and lands, and wildlife management areas that form part of the region's natural infrastructure.

[20] https://www.twdb.texas.gov/flood/planning/data.asp, Accessed March 18, 2022.

[21] https://ewn.erdc.dren.mil/, Accessed March 21, 2022.

When left in their natural state, open lands are typically efficient at managing rainfall. Rainfall is slowed by vegetation, which allows rainfall an opportunity to infiltrate into the soil. Rangeland performs this function effectively. However, rainfall on cropland may pool and runoff comparatively more quickly. Well-designed parklands in more urban areas can attain nearly the same rate of capture and detention of stormwater as lands in undeveloped areas. For engineered natural features to achieve flood mitigation effectively, they are often designed to form part of an interconnected network of open space containing predominantly natural areas, which is known as low impact development[22] or green infrastructure. These practices can be defined as replicating natural processes to capture stormwater runoff where even small changes in developed areas can lessen downstream flooding.

Rivers, Tributaries and Functioning Floodplains

Streams and rivers and their associated floodplains have the natural flood storage capacity to contribute significantly to overall flood control and management. The natural hydrologic features operate as a single integrated natural system. When this system is disrupted, effects can cascade through the watershed, increasing flood risk. Floodplain maintenance in an undeveloped state provides rivers and streams the ability to store the maximum volume of floodwater and reduce flood peak volumes. Preservation of a natural integrated system of waterways and floodplains serves a valuable function in urban areas, as well.

With a length of approximately 240 miles, the San Antonio River is a tributary of the Guadalupe River and the mainstream within the SAFPR. The San Antonio River's watershed drains an area of about 4,194 square miles. It flows generally southeast through Bexar, Wilson, Karnes, Goliad and Refugio counties before emptying into the Guadalupe River right before the combined rivers discharge into the San Antonio Bay. Other significant rivers and streams within the SAFPR include the Medina River, Cibolo Creek, and Salado Creek.

The SAFPR's lakes, reservoirs, parks, and preserves serve as important components of the ecosystem as they encompass a wide variety of plants, animals and physical features that are imperative for the continued ecological health of the region. These water bodies and natural areas retain water during flood events. These types of natural flood infrastructure are generally located in or close to floodplain areas throughout the basin with higher concentrations of them being located along or close to the major rivers and tributaries.

[22] https://lowimpactdevelopment.org/, Accessed March 21, 2022.

Karst Features

Recharge-related sinkhole flooding and discharge-related flooding are associated with karst topography. Rapid urban development on karst usually increases the mass on the land surface, which increases the chance of collapse through sinkholes. Even if there are no sinkholes visible in a karst region, continuing karstic development under urban areas can affect building foundations. In addition, impervious paved surfaces in urban areas can block infiltration, altering native groundwater flow paths. In some situations, karst features can rapidly infiltrate surface flood waters and provide flood reduction capabilities. Water quality control measures and flood management should occur simultaneously to prevent groundwater contamination.

1.12.2 Constructed Flood Infrastructure

Major constructed flood infrastructure ranges from dams and levees to municipal drainage systems, which consist of constructed channels and storm drain systems. It also includes nature-based solutions.

Reservoirs

Impounded water features such as reservoirs serve many purposes including flood risk reduction, recreation, and water supply for municipal, industrial, irrigation, and fire protection purposes. Three major reservoirs (greater than 5,000 acre-feet storage capacity) are located in the SAFPR, as shown in Table 1-14.

Table 1-14. Major reservoirs in the SAFPR

Reservoir	Location
Calaveras Lake	Bexar County, 20 miles southeast of downtown San Antonio
Medina Lake	Medina and Bandera County, approx. 12 miles southeast of the City of Bandera
Victor Braunig Lake	Bexar County, 17 miles south of downtown San Antonio

Dams

Additional dams on smaller tributaries exist across the SAFPR and were identified from several sources, including the Texas State Soil and Water Conservation Board (TWSSWB), the Texas Commission on Environmental Quality (TCEQ), and the USACE. Several dams were designed and constructed by the Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS), and although not available in the readily

available documentation, the function of these dams often was for flood control. However, these smaller dams still provide large amounts of detention, for example the dams along the San Antonio River provide more storage than the Olmos Dam. All identified dams have been included as part of the SAFPR's infrastructure inventory and are also listed below in Table 1-15.

Table 1-15. State Regulated Dams in the SAFPR

Dam Name		
Alamo Angus Ranch Lake Dam	Escondido Creek WS SCS Site 3 Dam	Or Mitchell Lake 1 Dam
Armstrong Lake Dam	Escondido Creek WS SCS Site 4 Dam	Purple Sage Ranch Lake
Army Residence Community Dam	Escondido Creek WS SCS Site 5 Dam	Riley Lake Dam
Baker Lake Dam	Escondido Creek WS SCS Site 6 Dam	Rock Cliff Dam
Ballasetal Lake Dam	Escondido Creek WS SCS Site 7 Dam	Salado Creek WS NRCS Site 15r Dam
Blue Wing Lake Dam	Escondido Creek WS SCS Site 8 Dam	Salado Creek WS SCS Site 1 Dam
Boerne Public Park Dam	Escondido Creek WS SCS Site 9 Dam	Salado Creek WS SCS Site 10 Dam
Brooklyn Street Lock And Dam	Garrison Ranch Lake Dam	Salado Creek WS SCS Site 11 Dam
Calaveras Creek Dam	Grothaus Lake Dam	Salado Creek WS SCS Site 12 Dam
Calaveras Creek WS SCS Site 10 Dam	H And K Lake Dam	Salado Creek WS SCS Site 13a Dam
Calaveras Creek WS SCS Site 3 Dam	Harmark Lake Dam	Salado Creek WS SCS Site 13b Dam
Calaveras Creek WS SCS Site 5 Dam	Heimsath Cemetery Lake Dam	Salado Creek WS SCS Site 2 Dam
Calaveras Creek WS SCS Site 6 Dam	Hidden Springs Dam	Salado Creek WS SCS Site 4 Dam
Calaveras Creek WS SCS Site 7 Dam	Hondo Creek WS SCS Site 1 Dam	Salado Creek WS SCS Site 5 Dam
Calaveras Creek WS SCS Site 8 Dam	Hondo Creek WS SCS Site 2 Dam	Salado Creek WS SCS Site 6 Dam

Dam Name		
Calaveras Creek WS SCS Site 9 Dam	Hondo Creek WS SCS Site 3 Dam	Salado Creek WS SCS Site 7 Dam
Canvasback Lake Dam	Jc Webb Dam	Salado Creek WS SCS Site 8 Dam
Cassin Lake Dam	Kilroy Lake Dam	Salado Creek WS SCS Site 9 Dam
Circle Dot Dam	Kirby Lake Dam	San Geronimo Creek Recharge Dam
Color Spot Nurseries Dam	Lions Park Lake Dam	Scott Lake Dam
Connally Lake No 1 Dam	Love Creek Dam	Singing Hills Unit 1 Detention Dam
Connally Lake No 2 Dam	Luckey Lake Dam	Tx No Name No 19 Dam
Crea Brothers Lake Dam	Martinez Creek WS SCS Site 1 Dam	Tx No Name No 6 Dam
Denman Park Dam	Martinez Creek WS SCS Site 2 Dam	Upper Cibolo Creek WS SCS Site 1 Dam
Ecleto Creek WS NRCS Site 3 Dam	Martinez Creek WS SCS Site 3 Dam	Upper Cibolo Creek WS SCS Site 2 Dam
Ecleto Creek WS NRCS Site 9a Dam	Martinez Creek WS SCS Site 4 Dam	Upper Cibolo Creek WS SCS Site 3 Dam
Ecleto Creek WS SCS Site 10 Dam	Martinez Creek WS SCS Site 5 Dam	Upper Cibolo Creek WS SCS Site 4 Dam
Ecleto Creek WS SCS Site 4 Dam	Martinez Creek WS SCS Site 6a Dam	Victor Braunig Dam
Ecleto Creek WS SCS Site 6 Dam	Medina Diversion Lake Dam	Walton Lake Dam
Elmendorf Lake Dam	Medina Lake Dam	Water Turkey Lake Dam
Escondido Creek WS SCS Site 1 Dam	Mitchell Lake Dam	White Lake Dam
Escondido Creek WS SCS Site 10 Dam	Montague Lake Dam	White Lake Dam
Escondido Creek WS SCS Site 11 Dam	Mosher Big Lake Dam	White Ranch Lake Dam

Dam Name		
Escondido Creek WS SCS Site 12 Dam	New Espada Lake Dam	Wildlake Dam
Escondido Creek WS SCS Site 13 Dam	Okeefe Dam	Woodlawn Lake Dam
Escondido Creek WS SCS Site 2 Dam	Olmos Dam	

Weirs

Weirs are low-lying blockades, similar to dams, however instead of stopping water significantly, the structures configuration is used to slow down or alter the water flow for various purposes. Weir structures constructed for flood control purposes were identified throughout the SAFPR.

Levees

Levees are man-made embankments that artificially contain flood flows to a restricted floodplain. More than one million Texans and $127 billion dollars' worth of property are protected by levees, including 51 USACE levee systems. There are 8 levees located in the SAFPR, three of which are part of the Guadalupe River levee system, four are a part of the Refugio County levee system, and one is located in Victoria and Calhoun Counties.

Stormwater Management Systems

Stormwater management systems serve to manage both the quantity and quality of the water that drains into natural waterways. The TCEQ regulates the discharge of municipal separate storm sewer systems (MS4) through the two sets of permits administered under the Texas Pollutant Discharge Elimination System (TPDES), known as Phase I (large and medium) or Phase II (small) MS4 permits. To be subject to MS4 permit requirements, a municipality must own and operate storm drainage infrastructure. Phase I MS4 requirements apply to incorporated cities that have populations exceeding 100,000 as of the 1990 census. Phase II MS4 requirements apply to all smaller "urbanized" areas as defined by the Bureau of the Census using either the 2000 or 2010 Census as containing 50,000 persons or more. In the SAFPR, San Antonio is under Phase I MS4 permit requirements, while some communities in Karnes and Wilson counties are subject to the Phase II MS4 permit requirements. Other communities that are part of the MS4 program are listed below in Table below.

(Table of all MS4 communities in SAFPR when made available)

Flood Tunnels

Flood tunnels are used to convey large quantities of flood water through an underground tunnel to reduce flood risk. These tunnels are typically used in densely populated areas where the existing stormwater system is close to full capacity. In the SAFPR there are currently two flood tunnels protecting the downtown area of the City of San Antonio. These tunnels run beneath the city along the San Pedro Creek and San Antonio River.

Nature-Based Solutions

As previously mentioned, nature-based solutions include preserving the natural ecosystem, but in more developed urban areas where preservation is no longer possible reconstruction and restoration can be used. One prime example of this is the Mission Reach, an eight-mile stretch of the San Antonio River turned into a riparian woodland ecosystem.

1.12.3 Assessment of Condition and Functionality of Existing Infrastructure

The general location, description, level of service, functionality, deficiency, and owning/operating entities for each identified natural flood mitigation features and constructed major flood infrastructure are summarized in Table 1-13 and the GIS geodatabase. Additional information for significant or deficient/non-functioned features or infrastructure are detailed in subsequent sections as necessary.

The TWDB defines infrastructure functionality as follows;

- Functional infrastructure is defined as serving its intended design level of service.
- Non-functional infrastructure is defined as not providing its intended or design level of service.
- Deficient is defined as infrastructure or natural features in poor structural or non-structural condition and needs replacement, restoration, or rehabilitation.

Non-Functional or Deficient

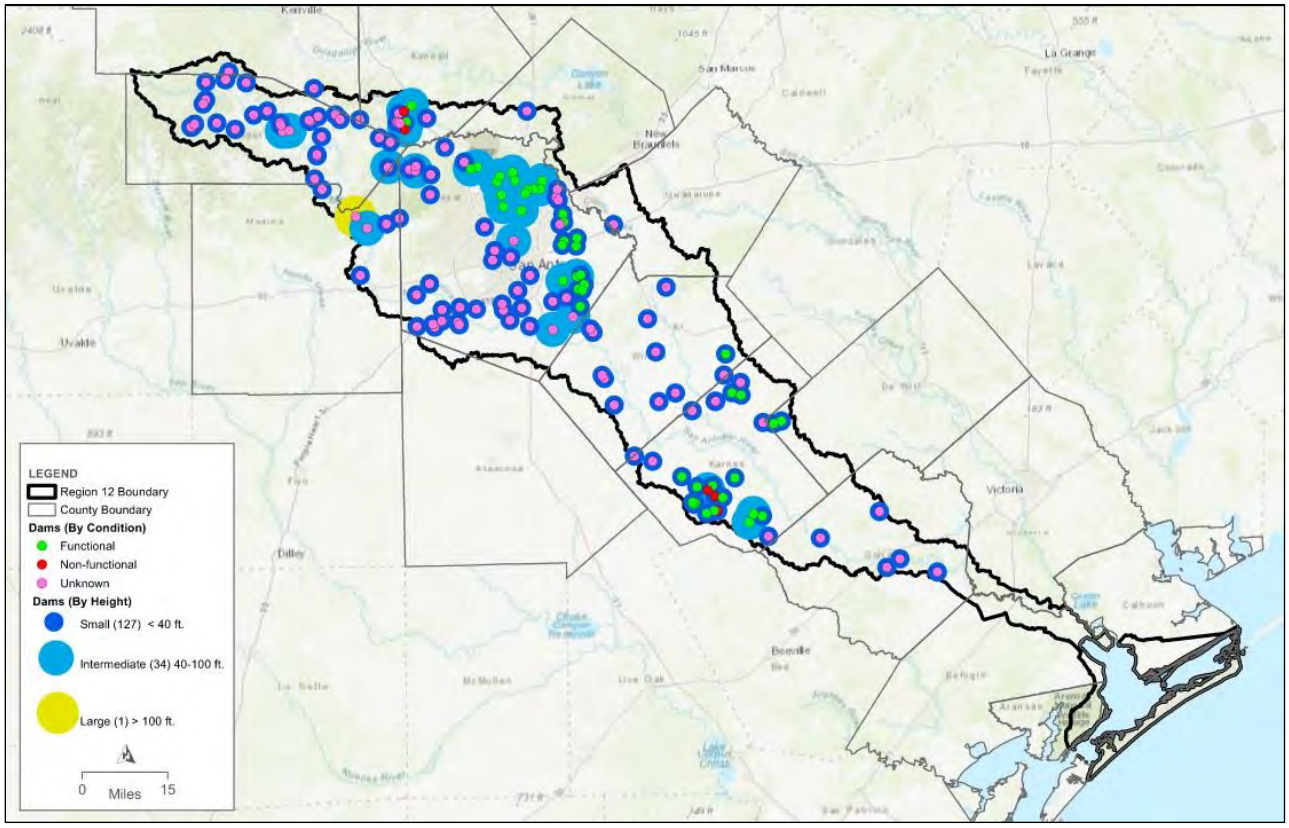
Information compiled and responses provided to stakeholder outreach has been limited to date. Two explanations for non-functional and deficient infrastructure include lack of funding for a stormwater utility and higher design standards adopted since the construction of existing stormwater drainage systems. Many municipalities lack a dedicated funding source for stormwater projects, operations, and maintenance; however, Texas state law provides a

mechanism for municipalities to establish a dedicated revenue source for drainage through the implementation of a stormwater utility fee.

Dam Safety Assessment

In 2019, the Association of State Dam Safety Officials (ASDSO) estimated the cost to rehabilitate all non-federal dams in Texas at around $5 billion. The Texas State Soil & Water Conservation Board (TSSWCB) estimates about $2.1 billion is needed to repair or rehabilitate dams included in the Small Watershed Programs. A dam is classified as high hazard if its failure could cause significant loss of life, serious damage to structures, or disruption to important public utilities or transportation facilities. A dam's hazard classification is not an assessment of condition. The TCEQ maintains condition data for non-federal dams as part of the Texas Dam Safety Program, however, information about the condition of many dams is not publicly available. Of the 7,200 non-federal dams in Texas, more than 3,200 are exempt from dam safety requirements, representing almost half of non-federal dams. Out of the 162 dams located in the SAFPR, there are 5 that do not meet the TCEQ requirements; Escondido Creek WS SCS Site 1, 2, 4 and Upper Cibolo Creek WS SCS Site 2, 4.

Figure 1-16. Dams Located in the SAFPR



1.12.4 Proposed or Ongoing Flood Mitigation Projects

Table 3 in and the attached GIS database in include a general description of the location, source of funding, and anticipated benefits of proposed or ongoing flood mitigation projects in the SAFPR including:

- New structural flood mitigation projects currently under construction,
- Non-structural flood mitigation projects currently being implemented, and
- Structural and non-structural flood mitigation projects with dedicated funding to construct and the expected year of completion.

The data for this section are derived from two primary sources: the SAFPR's existing Hazard Mitigation Plans and a stakeholder survey. Gaps and limitations exist within the data. Overall, it only represents a small number of the communities within the basin and few data were provided on individual projects. Additional information for proposed or ongoing flood mitigation projects are detailed in subsequent sections as necessary.

Structural Projects under Construction

The cities of San Antonio, Schertz, and Cibolo have developed recent drainage master plans with lists of drainage capital improvement projects, some of which have been constructed and others that are still awaiting funding. Responses from other communities regarding projects under construction were insufficient to provide additional details regarding these projects. Chapter 4 provides a more detailed assessment of current and potential projects.

1.12.5 Implementation of Nonstructural Flood Mitigation Projects

Information obtained from stakeholder outreach has been limited to date. The top goal cited by respondents has been implementation of protective standards and policies, followed by identification and communication of flood risk, restoring failing infrastructure, and implementation of flood warnings and responses. Chapter 3 includes further information regarding the region's goals and practices, and Chapter 4 describes implementation of nonstructural flood mitigation projects.

2

Flood Risk Analysis

2 Flood Risk Analysis

The objective of this task was to perform a comprehensive flood risk analysis for the SAFPR. Flood risks were assessed for the 1% annual chance storm events and 0.2% annual chance storm events. The analysis was performed for existing conditions of the region, as well as a future condition scenario that considers changes in flood hazards over the 30-year planning horizon. The overall flood risk analysis is comprised of three separate but related evaluations, including:

1. Flood Hazard Analyses –characterize location, magnitude, and frequency of flooding;
2. Flood Exposure Analyses –identify who and what might be harmed within the region; and
3. Vulnerability Analyses –identify vulnerabilities of communities and critical facilities.

The following sections describe the process undertaken to determine and quantify flood hazards in the region and present the results of the evaluation, including a summary of the types and magnitude of flooding and the communities most susceptible to its harmful effects. TWDB-required Tables 3 and 5 summarize the quantitative results of this analysis by county within the region and are included as Appendix A.

2.1 Existing Condition Flood Risk Analysis

2.1.1 Existing Condition Flood Hazard Analysis

The purpose of the existing condition flood hazard analysis was to identify and compile a comprehensive outlook of existing flood hazards in the region. To date, no full-coverage evaluation of flood risk has ever taken place in the SAFPR or in the State of Texas. It should be noted that extensive mapping has occurred in the region, and only two tributaries around the City of Boerne were identified as having insufficient mapping data.

The output of the flood hazard analysis is a map of flood hazard areas that are subject to several types of flooding during the 1% and 0.2% annual chance storm events. This effort is not regulatory in nature, and the results of this evaluation do not have an impact on NFIP insurance requirements or premiums. Rather, this exercise is intended to gather a single, comprehensive set of best available information on actual flood risk in the region to help

communities understand their current risks and better prepare in the event of a flood.

Types of Flood Hazards in the Region

To plan for a flood, it is important to understand the types of flooding an area faces. Each type of flooding is different in how it occurs, how it is forecast, and the damages it can cause. This evaluation considered several different types of flooding in identifying the flood hazard areas.

Riverine Flooding: Riverine flooding is caused by bank overtopping when the flow capacity of rivers is exceeded. Rising water generally originates from high-intensity rainfall creating soil saturation and large volumes of runoff to the receiving waters, either locally and/or in upstream watershed areas.

Pluvial Flooding: Pluvial floods can occur when the inflow of stormwater exceeds the capacity of drainage natural and manmade drainage systems, causing flooding of streets, property, and nearby structures. One of the common misconceptions about flooding is that you must be located near a body of water to be at risk. Yet pluvial, or surface floods are not caused by swelling rivers. Pluvial flooding as defined in this plan normally occurs in urban environments. Pluvial flooding also includes flash floods, where high velocity surface waters sweep through low-lying areas.

Coastal Flooding: Coastal flooding occurs when normally dry, low-lying land is flooded by seawater.

Playa Flooding: Playa flooding occurs when playas overtop and flood surrounding areas.

Possible Flood Prone Areas:

This analysis also considers potentially flood-prone areas that the San Antonio RFPG identifies outside of previously mapped flood hazard areas. They can be identified through the location of hydrologic features, historic flooding, and/or local knowledge. Since the cause and recurrence of flooding in these areas is uncertain, separate flood hazard areas have been developed and are listed with “unknown” flood frequency in this analysis.

The region is subject to the danger of swift-moving flood waters in riverine areas due to the steepness of the land and narrow channels. This causes fast moving deep flood waters that cause costly destruction to communities and infrastructure in low-lying areas. Pluvial flooding, or urban flooding, is also a source of significant flooding exposure, particularly in the cities of San Antonio, Boerne, Bandera, and Karnes City.

Additionally, possible flood prone areas were identified through multiple sources of data. The first was through identification of the region's low water crossings compared to known flood hazard areas. Those areas which had low-lying roads intersecting waterways would be considered low water crossings. There were 498 low water crossings defined in the SAFPR. Low-water crossing points outside of the 1% and 0.2% annual chance storm event flood hazard area were delineated as possible flood prone areas, since their status as low water crossings indicates that there is likely flood risk at these locations, even if it is not mapped.

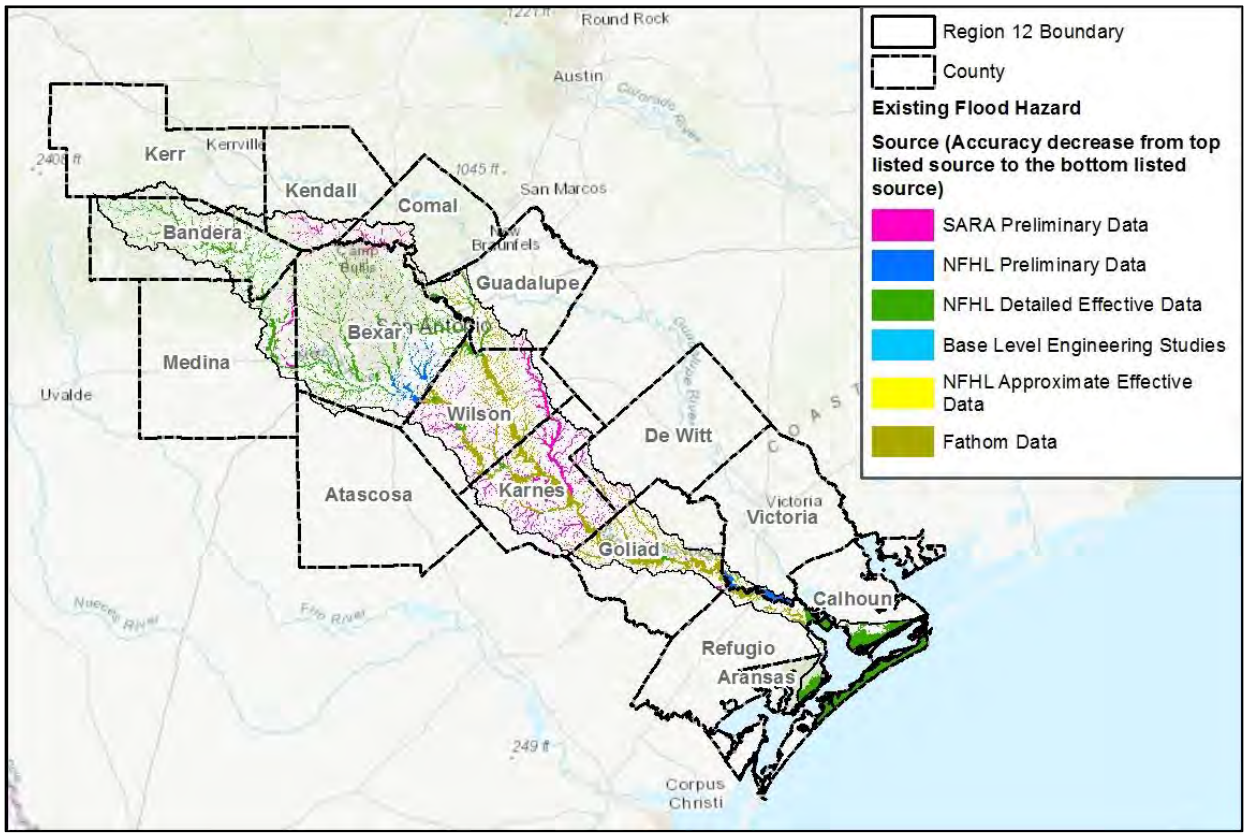
The second source of data was comments on an ArcGIS Online web map where the public could report areas of flooding. This web-based map was shared on the San Antonio RFPG website, as well as emailed to community officials in the region. Points that were outside of the 1% and 0.2% annual chance storm event flood hazard area were delineated as possible flood-prone areas based on the description included in the comment.

The third source of data was the historical flood data for the SAFPR that was gathered through a variety of local and national entities. United States Geological Survey (USGS) gage information was used to identify flood prone areas and evaluate historical flood events based on flow surges. Other historical flood data was pulled from National Weather Service, FEMA, TxDOT, publications on historical flood events, and City of San Antonio 311 complaints. These sources provided areas of concern, project areas, and past flood data. This data was used to map out previous and updated flood risk areas, as well as determine the damage cost from major past storm flooding events.

Existing Hydrologic & Hydraulic Model Availability

The development of the flood hazard areas relied on floodplain modeling and mapping information from existing sources from all the counties in the SAFPR, rather than the development of new flood hazard information. Hydrologic and hydraulic models used for the purposes of defining flood risk boundaries are available for the entire region, as summarized in Figure 2-1 below.

Figure 2-1. Existing Flood Model Data



Best Available Data Determination

To assist RFPGs with the flood hazard analysis, the TWDB prepared a statewide, GIS dataset that is comprised of the most recent flood hazard data in Texas, referred to as the "floodplain quilt." The floodplain quilt "quilts" together data from several sources, including SARA Preliminary Data, FEMA National Flood Hazard Layer (NFHL) information developed from detailed and approximate flood studies, and FEMA Base Level Engineering (BLE) data.

The 1% and 0.2% annual chance storm event flood risk boundaries were defined for all waterways with contributing drainage areas larger than one-tenth square mile for the entire basin. This complete coverage was due in part to the availability of 'Fathom' flood risk boundaries for the entire basin. Where multiple data sets were available, the most accurate risk boundaries were applied. The 'floodplain quilt' was obtained from TWDB. The 'floodplain quilt' does not typically include localized flooding or complex urban flooding problems. Additionally, new preliminary inundation boundaries were obtained from SARA, which is currently the only detailed flood data that uses the latest National Oceanic and Atmospheric Administration (NOAA) Atlas 14 rainfall. In addition, flood prone areas identified through public comments will be

evaluated as the data becomes available. As of July 8, 2022 there has been 65 comments received.

The following list summarizes the various flood inundation data sets used in their order of accuracy from most accurate to least accurate, with data sets including the BLE data and above considered accurate.

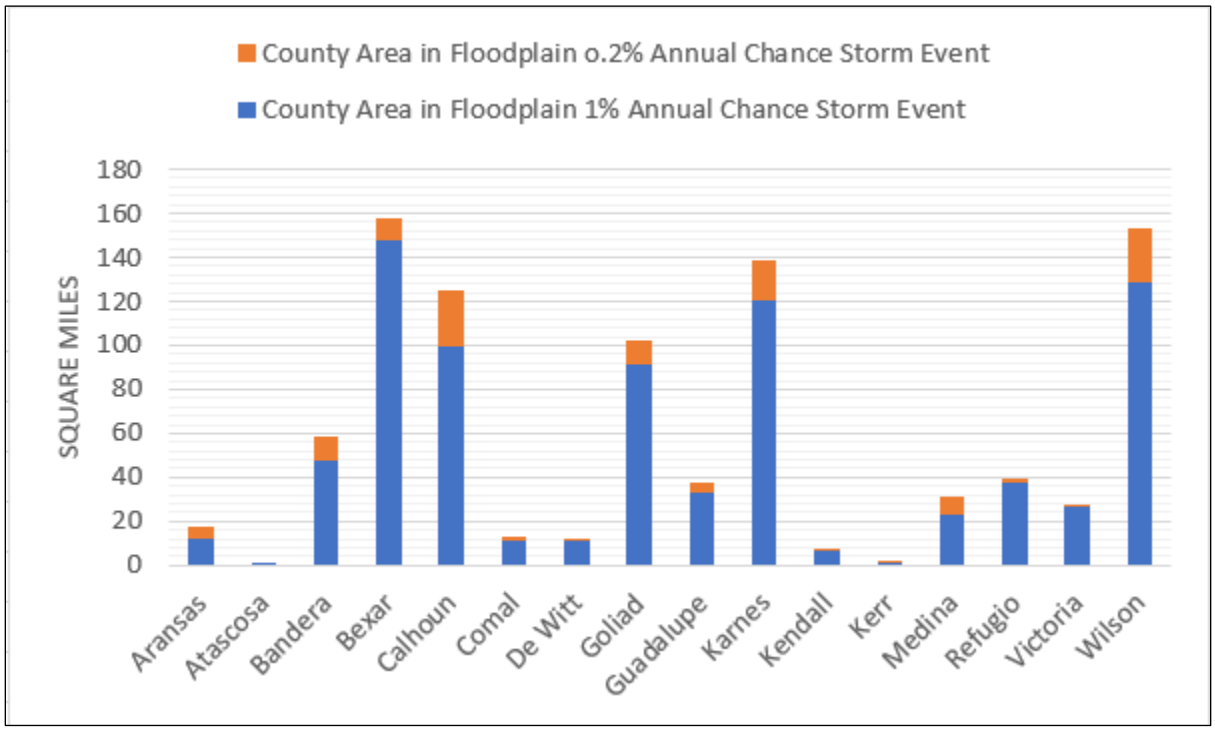
1. SARA Preliminary Data (Submitted to FEMA for review)
2. NFHL Preliminary Data
3. NFHL Detailed Effective Data
4. Base Level Engineering Studies
5. NFHL Approximate Study Areas
6. Fathom Draft Data – October 29th, 2021
7. Public Comments

A portion of the Regional Flood Planning Area contains 'approximate' 1.0% annual chance storm event flood inundation boundaries but no 0.2% annual chance storm event flood inundation boundaries (i.e. NFHL Approximate Study Areas). Thus, for these approximate areas, the Fathom 1.0% and 0.2% annual chance storm event data was used to define flood hazard extents. By the end of 2022, additional preliminary data will be provided by SARA and the entire San Antonio River basin will have complete BLE coverage. Therefore, existing flood hazard mapping will be updated in its entirety to include Preliminary, Detailed Effective or BLE quality data.

Identified Existing Flood Hazard Areas

Figure 2-2 shows the flood hazard area under existing conditions. Refer to Figure 1-8 to 1-11 in Chapter 1 for additional reference. These floodplains cover over 925 square miles, or 18% of the land area of SAFPR. Of the mapped flood hazard area, 800 square miles are inundated during the 1% annual chance storm event, and an additional 125 square miles are inundated during the 0.2% annual chance storm event. Figure 2-2 presents the total flood hazard area by county. Overall, the counties of Bexar, Wilson, and Karnes have the highest total flood hazard area, with over 400 square miles of flood hazard in these counties alone.

Figure 2-2. Existing Area Located in Floodplain



2.2 Existing Conditions Data Gaps

As previously described, the majority of SAFPR has extensive mapping coverage. However, there were two identified tributaries around the City of Boerne that are not mapped. Besides those two, no other mapping gaps were present. This information is presented visually in Map 5 in Appendix A.

2.2.1 Existing Condition Flood Exposure Analysis

Once the existing condition flood hazard areas were defined by given model data, the existing condition flood exposure analysis was performed to identify the people and property at risk. This analysis was completed using an automated GIS process that intersected various data sources with the flood hazard area boundaries to create the various flood exposure feature classes for the different feature types. The analysis considered exposure of different types of existing development within the flood hazard area, including:

1. Buildings: including residential and non-residential structures, those structures identified as critical facilities, and the associated population at risk. The population at risk evaluated both the day and night population estimates for each structure, with the higher of the two values being used to estimate the population in the flood hazard area.
2. Roadways: including estimated number of road crossings and total roadway length inundated by flooding. Those road crossings identified as

low water crossings were specifically identified, as these crossings are generally overtopped by floodwaters more frequently.

3. Agricultural Areas: including the total area of farming and ranching lands within the flood hazard area.

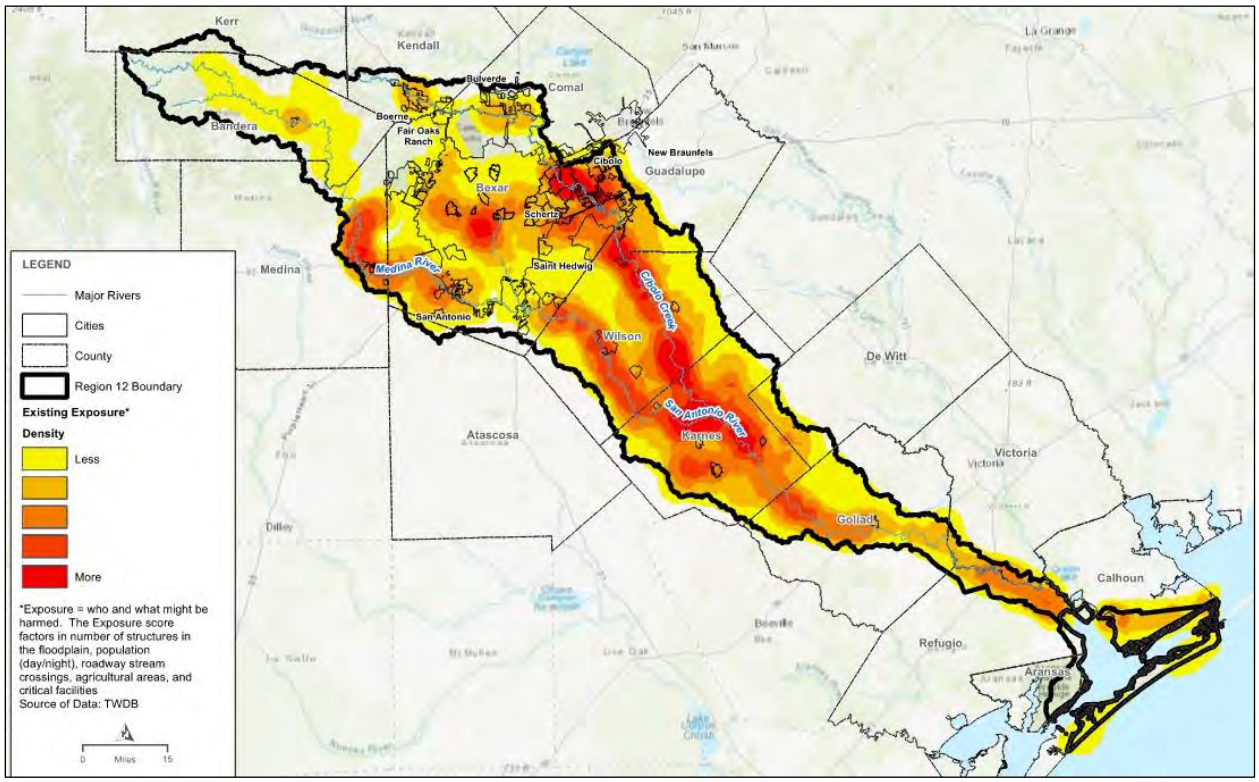
Flood Exposure Due to Existing Levees or Dams

The analysis also required the consideration of population and property located in areas where existing levees or dams do not meet FEMA accreditation as inundated by flooding without those structures in place. Of the four levee systems, three are identified as not meeting FEMA accreditations and one is unknown. However, it is assumed that the current floodplain limits properly reflect the flood protection benefits of these structures.

Existing Flood Exposure Summary

The following sections describe the results of the existing flood exposure analysis with a summary in Table 2-1 below. From this analysis several hot spots for flood exposure appear to be (1) the urban areas around the Cibolo and Medina Rivers due to the density of development and total population in those areas and (2) and the confluence of the San Antonio and Cibolo Rivers due to the magnitude of flood volume on each respective creek and similarity in watershed size. Additionally, flooded roadways and agricultural areas are found throughout the region, and the impacts due to the loss of function in these areas should not be understated. A heat map was produced to illustrate the flood exposure in the SAFPR as shown in the Figure 2-3 below.

Figure 2-3. Existing Condition Exposure Heat Map



Residential Properties

The number of residential structures within the floodplain for the SAFPR are relatively higher than surrounding regions due to the SAFPR being highly urbanized with dense residential areas. There are 13,684 residential structures in the 1% annual chance storm event floodplain and an additional 5,519 residential structures contained within the 0.2% annual chance storm event floodplain. This large number can be attributed to the region containing the heavily populated San Antonio area, containing 10,204 residential structures in the 1% and 0.2% annual chance storm event floodplain. The number of residential properties in the existing flood hazard area by county is summarized in Table 2-1.

Non-Residential Properties

Non-residential properties are properties, public and private, that are not used as permanent residential dwellings. Non-residential properties within the flood hazard area follow a similar exposure pattern as residential structures. Out of the 16 counties that have area in the SAFPR, 15 counties have non-residential structures in the floodplain. There are 7,430 total non-residential structures in the floodplain. The number of non-residential structures by county in the existing flood hazard area is summarized in Table 2-1.

Public Infrastructure

Public infrastructure is a broad term that includes roads; public water collection, treatment, and distribution facilities; gas and electrical facilities; and other public utilities. These facilities often perform essential functions that require enhanced levels of flood protection so that they may continue to function and provide services during and after a flood event. As a result, a concentrated effort to identify “critical facilities” was performed in the flood exposure analyses. Examples of critical facilities include hospitals, fire stations, police stations, power generation facilities, and schools. Table 2-1 below shows critical infrastructure located within the SAFPR in relation to the 1% and 0.2% annual chance storm events.

Roadway impacts are also evaluated through the length of roadway in floodplain and the amount of roadway crossings effected as summarized in Table 2-1. Flooded roadways pose a substantial risk to motorists, as over half of all flood-related drownings occur when vehicles are driven into hazardous flood waters. Functioning roadways serve a critical function during flood events, providing access to first responders and clear routes to safety in the case of an evacuation.

Other impacts to public infrastructure are not specifically quantified in this analysis, due to the lack of publicly available data for most of these infrastructure types. However, some general impacts and expected loss of function for these infrastructure types are outlined in the Expected Loss of Function Section.

MAJOR INDUSTRIAL AND POWER GENERATION FACILITIES

There are 87 buildings in the 1% and 0.2% annual chance storm event existing flood hazard that are marked as industrial facilities, none are classified as critical. Within the flood hazard area, there are 14 facilities associated with power generation. All 14 power generation facilities are marked as critical.

CRITICAL FACILITIES

There are 220 critical facilities total within the existing flood hazard area, 78% of which are in Bexar, Comal and Guadalupe Counties. The two most common types of facilities within the flood hazard area are schools and Department of Defense (DOD) Military Facilities. Total critical facilities by county are summarized.

ROADWAY CROSSINGS

There are large amounts of urbanized areas in the SAFPR leading to 2,903 crossings being in the flood risk area. There is a vast network of rivers and tributaries, meaning several major river crossings are found along these transportation corridors.

ROADWAY SEGMENTS

Bandera, Bexar, Guadalupe, Karnes, and Wilson all have over 60 miles of road segment in the existing flood hazard area. Every county has over 1 mile of road segment that is in the flood hazard area totaling 967 miles in the SAFPR. Most of the roadway segments affected are in Bexar County due to the San Antonio Metropolitan area.

AGRICULTURAL AREAS

The county with the most agricultural areas within the floodplain is Karnes County, with a little over 22 square miles out of the total 98 square miles. Bexar, Goliad, and Wilson Counties have over 10 square miles of agricultural area as well. All the remaining counties have much smaller amounts of agricultural areas within the floodplain (most less than 1 square mile).

To evaluate the value of land exposed, average values for agricultural land in Texas were identified using the from the 2020 United States Department of Agriculture (USDA) Land Values Summary. This summary included an average value of $1,980/ac for non-irrigated cropland and $1,680/ac for pasture. Within the entire region, there are 2,326 square miles of cropland and 6,324 square miles of ranchland. From these values, a weighted average cost for agricultural land was identified as $1,760/ac. Within the entire flood hazard area, there is about 5.5 million acres, or $9.7 billion of crops and pasture exposed.

Table 2-1. Summary of Structures in the Existing Flood Hazard Areas

County	Area in Floodplain (square Miles)	Number of Structures in Floodplain	Residential Structures in Floodplain	Pop. (daytime)	Pop. (nighttime)	Pop.	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (square miles)	Critical Facilities (#)
1% Annual Chance Storm Event										
Aransas	12.217	0	0	0	0	0	0	7.477	0.016	0
Atascosa	0.962	57	51	32	95	95	14	2.205	0.045	0
Bandera	47.944	938	567	788	1027	1463	225	61.398	1.105	1
Bexar	148.206	11261	8309	52003	31084	73524	1261	353.048	10.087	95
Calhoun	99.621	929	688	310	640	728	11	14.475	1.002	2
Comal	10.877	363	269	817	426	1113	63	15.022	0.503	34
De Witt	10.927	22	6	3	8	9	52	6.976	0.483	0
Goliad	91.113	177	62	102	204	216	117	30.113	12.497	0
Guadalupe	33.497	2239	1768	8128	5336	11783	153	65.287	4.876	42
Karnes	120.558	336	161	195	422	524	284	58.800	22.649	0
Kendall	6.970	628	398	1812	1650	2904	56	12.465	0.067	5
Kerr	1.267	20	8	6	17	17	7	1.053	0.034	0
Medina	23.166	478	299	401	550	778	79	20.457	5.024	1
Refugio	37.193	163	67	101	166	184	10	10.128	2.712	1
Victoria	26.582	30	11	9	19	22	9	5.101	1.858	1
Wilson	129.100	1459	1020	1449	1823	2797	392	89.064	16.790	9

County	Area in Floodplain (square Miles)	Number of Structures in Floodplain	Residential Structures in Floodplain	Pop. (daytime)	Pop. (nighttime)	Pop.	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (square miles)	Critical Facilities (#)
TOTAL	800.20	19100	13684	66156	43467	96157	2733	753.07	79.75	191
0.2% Annual Chance Storm Event										
Aransas	5.574	0	0	0	0	0	0	5.592	0.017	0
Atascosa	0.000	0	0	0	0	0	0	0.000	0.000	0
Bandera	10.705	663	290	551	637	967	20	20.348	0.179	4
Bexar	9.328	2347	1895	7839	5583	11781	25	44.710	1.762	8
Calhoun	25.328	604	457	338	316	572	13	18.604	0.785	2
Comal	2.121	286	238	665	323	897	6	4.639	0.097	0
De Witt	1.556	25	8	3	9	9	5	1.412	0.077	0
Goliad	11.125	110	33	56	130	138	5	8.297	1.297	0
Guadalupe	4.080	1570	1355	8080	5882	12298	8	20.323	0.765	3
Karnes	17.822	227	94	123	172	237	50	27.294	3.222	0
Kendall	0.826	333	208	2510	707	2967	0	4.626	0.027	5
Kerr	0.348	14	2	0	6	6	0	0.239	0.006	0
Medina	8.525	751	553	1603	1104	2338	3	20.828	4.217	5
Refugio	1.894	16	2	8	22	23	1	2.096	0.444	0
Victoria	0.998	7	3	1	2	2	0	0.557	0.048	0
Wilson	24.111	580	381	370	799	960	34	34.763	5.197	2

County	Area in Floodplain (square Miles)	Number of Structures in Floodplain	Residential Structures in Floodplain	Pop. (daytime)	Pop. (nighttime)	Pop.	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (square miles)	Critical Facilities (#)
TOTAL	124.34	7533	5519	22147	15692	33195	170	214.33	18.14	29
Combined 1% and 0.2% Flood Risk Total	**924.54**	**26633**	**19203**	**88303**	**59159**	**129352**	**2903**	**967**	**98**	**220**

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Expected Loss of Function

The impacts of flooding on lives and livelihoods are often felt not just during a flood event but long afterwards. As communities assess damages after a flood, several different types of impacts must be evaluated. Historical flood impacts, including dollar values of damages and known injuries and losses of life are quantified in Chapter 1. This section presents a qualitative assessment of the types of flood impacts and the expected losses of function in both the public and private sectors.

Inundated Structures

Structural flooding can be devastating to property owners and communities as a whole. Structural flooding can cause water damage to the building as well as the contents inside. Often, this leads to costs due to families being displaced from their homes. Businesses may also lose inventory that is damaged during a flood and may not be able to operate while repairs are being made. In extreme cases, the flood damages can be so severe that the structure and contents constitute a total loss. These impacts are lessened at lower flood elevations, which is why it's important to consider depth when evaluating flood impacts on structures.

Health and Human Services

Health impacts from flooding can be both direct and indirect. The World Health Organization states that two-thirds of flood-related deaths worldwide are due to drowning, but other impacts can also have negative implications for human health[23]. Direct effects of flooding include heart attacks, drowning from travelling through flood waters, injuries from flood conditions, and disease. Indirect impacts include damage to health care infrastructure, water shortages and contamination, disruption of food supplies, population displacement, and disruption of livelihoods. Hospital preparedness is important during flooding. Natural disasters can cause both damage to existing infrastructure and increase the number of patients who need assistance[23].

Water Supply and Wastewater Treatment

Water treatment plants can be particularly at-risk during flooding events, as many are located next to rivers or other water sources. Failure of water supply systems results in both direct costs (repairing pipes, contamination of

[23] World Health Organization, 2014, Report Title: Flood and Health: Fact sheets for health professionals

the network) and indirect costs (service disruptions impacting people outside of flood waters)[24]. The indirect impacts can reach up to three times as many people as were directly flooded[24].

There are also several impacts from flooding on wastewater systems. For houses using septic tanks, sewage can be carried back into the house through piping in some flood events, which will cause physical damage and could introduce disease-causing bacteria and viruses (Heger & Anderson, 2018). This is particularly a concern in rural areas that often do not have a community wastewater collection system. Flooding can also damage the wastewater system, and if untreated wastewater is released, there can be environmental and water-quality damage (Heger & Anderson, 2018). Wastewater treatment plants can be impacted by flooding through loss of power, damage to the plant, and personnel being unable to safely reach the plant (Nielsen, 2018). If systems are damaged in a flood, people can be left without adequate wastewater management systems until they can be repaired. A local example of negative flooding impact on the water supply is the Bandera and La Vernia Wastewater Treatment Plant that are currently in the 1% annual chance floodplain and create issues for residents when shut down due to flooding.

Utilities and Energy Generation

Damage to power lines and electricity distribution equipment from floating debris and inundation are some of the direct impacts of flooding on utilities and energy. Due to road impacts, maintenance and repair can also be delayed. Electricity disruptions have impacts on other aspects of energy production as well, as oil and gas pipeline disruptions are often due to power outages after severe weather events ((U.S. Environmental Protection Agency, n.d.).

Transportation and Emergency Services

Flooding can cause immediate impacts to transportation systems by causing delays or disruptions due to inundated and damaged infrastructure (Rebally, Valeo, He, & Saidi, 2021). On a greater scale, these conditions impact the economics of the region. Due to roads being unsafe for travel, closed, or submerged, connectivity is reduced, deviated, or cancelled for people, goods, and services (Rebally, Valeo, He, & Saidi, 2021). For these reasons, flood impacts on transportation infrastructure have consequences throughout the region, in both flooded and dry areas.

[24] Arrighi, Tarani, Vicario, & Castelli, 2017, Journal Name: Natrual Hazards and Earth System Sciences, Journal Title: Flood impacts on water distribution network

Flooding has a negative impact on emergency services. Due to inaccessible roads and increased traffic congestions, it can take a longer time to get to people in need (Loughborough University, 2020). Within England, researchers found that 84% of the population can be reached with 7-minutes for emergency situations, however, in a 30-year flood scenario, it drops to 70%, and in a 100-year event, it drops even lower to 61% (Loughborough University, 2020). A local example is the US 281 being closed due to Olmos Dam backing up water during 2013 and 1998 flood.

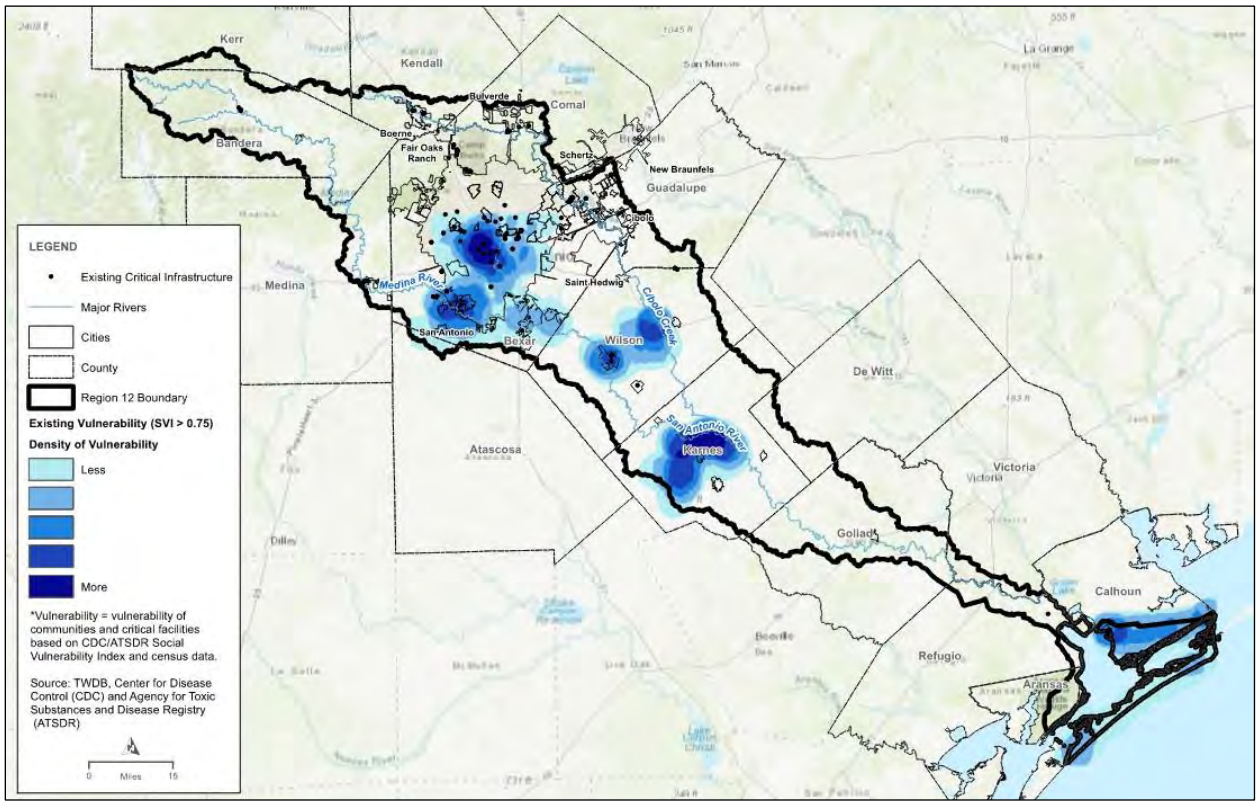
2.2.2 Existing Conditions Vulnerability Analysis

After completing the flood exposure analysis, the populations and structures exposed to flooding within the identified flood hazard area were analyzed to determine their vulnerability to flooding. Vulnerability was assessed using the SVI scale. Several factors are evaluated to determine an area's Social Vulnerability, which measures a person's or group's "capacity to anticipate, cope with, resist and recover from the impacts of a natural hazard," based on their relative vulnerability. The Social Vulnerability Index (SVI) is a standard system developed by the Centers for Disease Control for assigning a Social Vulnerability score at a census-tract basis. SVI is provided as a decimal value from 0.00 to 1.00; the higher the SVI, the more assistance a community is likely to need. Knowledge of a community's SVI allows planners to better prepare for emergency events ranging from disease outbreaks, hurricanes, and exposure to dangerous chemicals. A score of 0.75 or greater indicates that a community is highly vulnerable to impacts from a natural disaster.

TWDB provided a building dataset that included SVI values for each building. SVI was also assigned to the other exposure features (low water crossings, critical infrastructure, etc.) based on the average SVI of the surrounding census tract. Based on the exposure features in the existing condition flood hazard area, an average SVI of the exposed area was computed for each county. Using these results, vulnerable portions of the region were identified.

The results of the analysis are summarized in Figure 2-4. The potential effects from flooding could be higher in areas of high SVI value and critical infrastructure due to damage to the infrastructure and potential lack of services after the flooding event.

Figure 2-4. Existing Condition Vulnerability Heat Map



2.3 Future Condition Flood Risk Analysis

In addition to quantifying the current flood risk, it is helpful to consider the change in flood risk over the course of the planning horizon to help communities plan ahead for new or increased risks. With this concept in mind, a future condition flood risk analysis was performed for the SAFPR.

The future condition flood risk analysis included two components: projected increases in flood hazard and additional exposure/vulnerability. The first step was to define a future flood hazard area boundary to identify areas of existing development that, while not currently at risk of flooding during the 1% or 0.2% annual chance storm events, may be at risk of flooding during these events in the future. The second step was to identify areas that face an increase in future flood risk due to new development or redevelopment that may occur in these areas. The methods employed to evaluate future risk and the results of the analysis are explored in the following sections.

2.3.1 Future Condition Flood Hazard Analysis

History has demonstrated that flood hazards tend to increase over time in populated areas due to projected increases in impervious cover, anticipated sedimentation in flood control structures, as well as other factors that result in

increased or altered flood hazards. As a result, the future condition flood hazard area was defined based on an expected increase in flooding extents and magnitude across the region.

Several methods have been provided by the TWDB to determine the future flood hazard layer. The first step of this task is to identify areas within the region where future condition hydrologic and hydraulic model results and maps already exist. Currently in the San Antonio FPR, there are detailed FEMA studies that include a future 1% annual chance floodplain. However, they were developed using future landuse shapefiles created by Bexar County and the City of San Antonio. This process differs from the method proposed by the TWDB and does not consider climatic changes. Therefore, one of the following four methods must be used to identify the future flood risk across the region:

1. Increase water surface elevation based on projected percent population increase (as a proxy for land development)
2. Utilize the existing 0.2% annual chance floodplain as a proxy for the future 1% annual chance storm event
3. A combination of methods 1 and 2 or a RFPG-proposed method
4. Request TWDB for a Desktop Analysis

Region 12 employed Method 2 and 3, described further in this section.

Future Conditions Based on “No Action” Scenario

It must be noted that these estimated changes in flood hazard extents are meant to represent the “30-year, no action” scenario for the purpose of evaluating the potential magnitude for future flood risk. This information will in no way be used for floodplain mapping for regulatory purposes, such as local (municipal) floodplain management and development regulation, or in any way by Federal Emergency Management Agency (FEMA) or the National Flood Insurance Program (NFIP). This is simply a planning level analysis for the purpose of supporting the regional flood planning process.

Methods for Developing the Future Flood Hazard Layer

Future flood conditions represent projected conditions 30 years into the future or year 2050 and can be influenced by several factors, such as:

- Precipitation climate change
- Rising sea levels
- Population growth and associated development increases (impervious cover)

- Natural stream migration changes to existing waterways
- Implementation of constructed drainage infrastructure

The existing 0.2% flood risk areas were used as a proxy for the future 1% flood risk areas in areas where future 1% flood risk areas did not exist, per Method 2 in TWDB's guidance. Method 3, a San Antonio RFPG method, was used to calculate the 0.2% future storm event risk area given as a buffer value. For the 0.2% annual chance future conditions floodplain, HDR utilized the 2018 *San Antonio River Basin Future Precipitation Study,* developed by SARA, which estimates the 0.2% annual chance storm event rainfall total will increase 3.8 inches in 20 years and 5.1 inches in 40 years. As part of separate effort with SARA, HDR utilized the precipitation study information along with draft hydrology models for the major watersheds currently being developed by SARA as part of a county wide floodplain remapping effort within the SARB to estimate peak discharges. This analysis showed the average increase in the 0.2% annual chance storm event peak flows throughout the basin were between 30% and 40% for the 20- and 40-year future projections, respectively. From this data, HDR estimated a 35% increase in 0.2% annual chance storm event peak flows for a 30-year future event. With this estimated flow increase, HDR evaluated the horizontal increase in 0.2% annual chance floodplain top-widths using selected HEC-RAS models in various locations throughout the watershed. Below is a more detailed explanation of how the future flood hazard conditions were calculated.

Hydraulic Model Updates

The system hydraulic models were updated by increasing the 0.2% annual peak flows by 35%, as established above. However, due to variations in model versions, boundary conditions, and level of detail, some specific modifications were made to execute the hydraulic models.

All selected stream effective hydraulic models except Salado Creek and Upper San Antonio River, downloaded from SARA's digital data & modeling repository (D2MR), were provided in their original HEC-RAS format (v3.1.2 and v4.0). At the time of this analysis, SARA provided draft hydraulic models for the Salado Creek and Upper San Antonio River systems developed as part of SARA county wide floodplain remapping effort which were provided in HEC-RAS v5.0.7. For the purpose of this exercise, all models were executed in HEC-RAS v4.1 or later which allow for Defined Results Tables with "Left and Right Station" results, as needed for the top-width assessment. A comparison between the HEC-RAS v3.1.2/v4.0 versus v4.1 existing 0.2% annual chance storm event results showed less than 0.01% difference in

peak water surface elevations (WSE); therefore, the version change posed no impact to hydraulic results.

Hydraulic models with boundary conditions defined as known WSE were left unchanged for this analysis based on a sensitivity analysis performed on Ojo De Aqua at the Lower San Antonio River confluence in Karnes County. the Ojo De Aqua hydraulic model was simulated assuming an unchanged known WSE boundary condition and updated boundary condition based on future 0.2% annual chance peak flows along Lower San Antonio River to evaluate potential changes due to boundary condition assumptions. Based on results, there was less than 0.01% change in WSE on the first 2-3 cross sections. Therefore, it was determined leaving the boundary conditions as is had no effect on this comparison objective of this exercise.

Due to the type of available study, some models only had the 1% annual chance storm event present and not the 0.2% annual chance storm event needed for the assessment. Seguin Branch LOMR was one of the models that didn’t have the 0.2% annual chance storm event, so this flow was pulled from the HEC-HMS hydrology model downloaded from SARA D2MR. However, it's presumed that this HEC-HMS model is not the same model that was used to establish the HEC-RAS models 1% annual chance storm event peak flows. The HEC-HMS 1% annual chance storm event peak flows were within 4% of the HEC-RAS peak flows, 8,541 cfs vs 8,860 cfs, so the 0.2% annual chance storm event peak flow data from HEC-HMS was used to determine the top-width difference. Following the completion of this process where 0.2% results were lacking, it was determined a more efficient method would be needed to complete the exercise within the project time constraints. In comparing surrounding hydraulic models with both 1% and 0.2% annual chance storm event peak flows, a conversion multiplier was established to determine the existing 0.2% annual chance peak flow from the 1% annual chance peak flows when not available. A summary of the hydraulic models, 1% to 0.2% annual chance multipliers, and reasoning are included in Table 2-2.

Table 2-2. RAS Models Using Multipliers

RAS Model	0.2% Flows Increase Criteria	Reason
Cibolo Wilson Co	43%	• Upstream (US): Lower Cibolo RAS average 43% • Downstream (DS): SAR Lower Karnes average 43%
Cibolo Karnes Co	43%	
Ecleto	66%	• Smaller reaches like Marcelinas and Seguin are higher average than larger reaches; Cibolo and SAR. • Ecleto similar geo-location to Marcelinas, similar. • SAR Lower Goliad higher average than US SAR Lower Karnes. Therefore assume Manahuilla and Cabeza increase from Ecleto to DS.
Manahuilla	67%	
Cabeza	68%	

Hydraulic models were run with the above considerations and modifications and the existing and future 0.2% annual chance storm event peak WSE results were compared.

Hydraulic Model Assessment

As explained above, there were some variations in the hydraulic model updates but the same assessment of the peak WSE was implemented for all modeled streams.

Existing and future 0.2% annual chance storm event results were compared based on top-width and WSE differences. Averages for both were calculated for each modeled stream. To develop a refined average, outlier data was not considered to avoid skewing results. Outlier data consisted of top-width differences greater than 500 ft, WSE differences greater than 5ft, and any result where the WSE was not contained within the cross section.

Each hydraulic model was categorized based on urbanization levels, location within the region, and general land slope to develop geo-spatial watershed relationships. Some of the longer reaches with varying categories were split for this assessment. Urbanization levels were defined as *Urban* if most of the reach passed through cities, or *Rural* if the reach was primarily passing through undeveloped/agriculture land. Location was divided by *Upper* – North of San Antonio and North San Antonio; *Mid* – Mid San Antonio to Edge of Bexar County; *Lower* – Wilson and Karnes Counties; and *Costal*: DeWitt and Goliad Counties. Slopes were generalized into ranges less than 0.1%, 0.1%-0.2%, 0.2%-0.5%, and greater than 0.5%. Averages from each of the categories can be found in Table 2-3 below.

Table 2-3. Assessment Categories and Results for the Existing and Future 0.2% Annual Chance Comparison

Assessment Category	Category Type	Total Top-Width Difference (ft)	One Side Top-Width Difference (ft)	WSE Difference (ft)
Urbanization	Urban	119	59	2
	Rural	152	76	2
Location	Upper	118	59	2
	Mid	156	78	2
	Lower	140	70	2
	Coastal	154	77	2
Slope	x ≥ 0.005	90	45	2
	0.002 ≤ x < 0.005	148	74	2
	0.001 ≤ x < 0.002	147	74	2
	x < 0.001	169	85	3
Medina		67	33	4
Average:		**139**	**70**	**2**

The average increases in top-width would be applied to the existing 0.2% annual chance floodplain as a horizontal buffer to develop the future 0.2% annual chance floodplain.

Results

Using the results developed from the top-width exercise, a buffer criteria was established based on stream spatial location within the region to develop the future 0.2% annual chance floodplain. Final criteria areas were refined to the following boundaries:

- Upper: North of North Loop 1604 from Culebra Road to I35
- Mid: South of North Loop 1604 to south of Karnes County
- Coastal: South of Karnes County to the Gulf of Mexico
- Medina: Reaches and tributaries not evaluated in the assessment

Based on initial results of Medina tributaries evaluated in the top-width assessment, result differences were noted to be significantly lower top-width

results and higher WSE differences compared to all other reaches. This can be attributed to the steep terrain and channel bank slopes. Therefore, a separate buffer criterion for established for the Medina watershed.

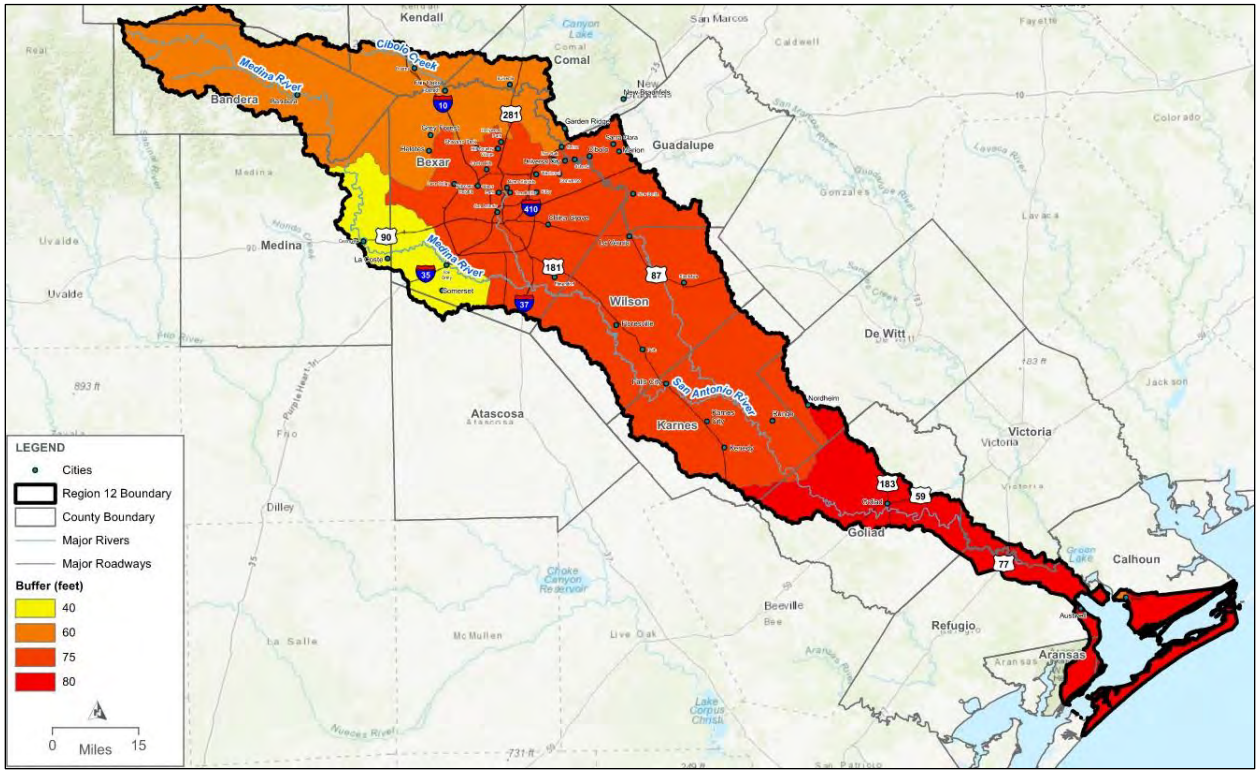
The final criteria set is as follows in Table 2-4 and Figure 2-5. The buffer is the top-width increase that should be applied to each side of the existing 0.2% annual chance storm event floodplain to develop the future 0.2% annual chance storm event floodplain.

Table 2-4. Final Criteria for the 0.2% Future Floodplain Buffer

Criteria	Type	Buffer * (ft)
Location	Medina	40
	Upper	60
	Mid	75
	Coastal	80

* Buffer is applied to each side of the floodplain

Figure 2-5. Final Criteria for the 0.2% Future Floodplain Buffer



Coastal Future Conditions

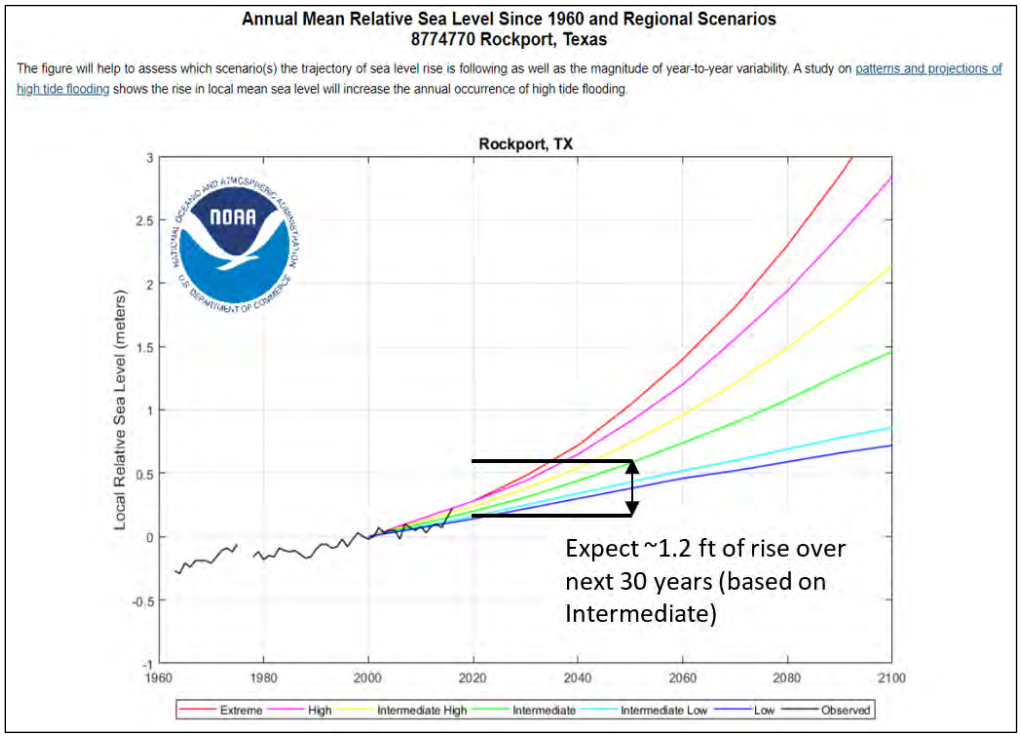
Relative sea level rise (SLR) is also considered a significant factor in the future condition flood risk along the coastline. For this study, relative sea level change is estimated on best available existing data. The following data sources are currently available and were reviewed for this task.

- National Research Council (NRC) (1987) Responding to Changes in Sea Level: Engineering Implications – The NRC study developed sea level rise (SLR) / change (SLC) scenarios. This study was leveraged by USACE and National Oceanic and Atmospheric Administration (NOAA) and is the main resource for all present-day estimates
- National Oceanic and Atmospheric Administration (NOAA) 2017 – Global & Regional Sea Level Rise Scenarios for the United States (TR NOS CO-OPS 083) – NOAA has developed a tool to calculate the approximate SLR computed from the most recent Intergovernmental Panel on Climate Change (IPCC) and modified NRC projections. NOAA computed five scenarios including “high,” “intermediate-high,” “intermediate,” “intermediate-low,” and “low.” These SLR scenarios are presented in Figure 2 18. This data can be extrapolated from graphs and applied to a digital terrain model.
- NOAA 2022 – Sea Level Rise Technical Report - Update to 2017 report and data.
- U.S. Army Corp of Engineers (USACE) 2013 - Incorporating Sea Level Change in Civil Works Programs (ER 1100-2-8162) – This source provides design guidelines for incorporating the direct and indirect physical effects of projected future sea level change across the project life cycle in managing, planning, engineering, designing, constructing, operating, and maintaining USACE projects and systems of projects.
- USACE Sea-Level Change Curve Calculator (Version 2021.12) – The USACE developed a tool to calculate the approximate SLR for three scenarios including “high”, “intermediate”, and “low”.
- General Land Office (GLO) Coastal Texas Protection and Restoration Feasibility Study Final Report (2021) (Coastal Texas Study) - Uses the NOAA 2017 data and prepared inundation mapping for entire coast of Texas. The inundation mapping is based on various scenarios, including: 100-year and 500-year storm events modeled and future conditions with no mitigation (i.e., a “no action”) scenarios available for years 2035 and 2085.

Table 2-5. Comparison of NOAA and USACE Sea Level Rise Scenarios

NOAA Scenarios	USACE Scenarios	Description
Low	Low	Linear historic sea level rise.
Intermediate-Low	Intermediate	NRC Curve I – Moderate Greenhouse Gas Emission
Intermediate	-	NRC Curve I – High Greenhouse Gas Emission
Intermediate-High	High	NRC Curve III – Moderate Glacier Melt
High	-	NRC Curve III – High Glacier Melt

Figure 2-6. NOAA 2017 - Annual Mean Relative Seal Level Scenarios – Rockport, TX



NOAA's Global & Regional Sea Level Rise Scenarios for the United States (2017 with 2022 update) provides the most relevant technical data related to SLR. When considering the various scenarios of SLR, the "intermediate-low" scenario has a high likelihood of occurrence based on predicted outcomes and includes scientifically reasonable considerations for increased greenhouse gas emissions, ocean thermal expansion, and land-based subsidence/uplift. However, the "intermediate" scenario is the most typical scenario selected for design. It includes considerations for past observed sea level trends and global effects due to moderate increases in greenhouse gas

emissions. Table 2-6 compares the NOAA and USACE data to understand what the expected SLR is for the San Antonio Region at the 30-year projected time frame.

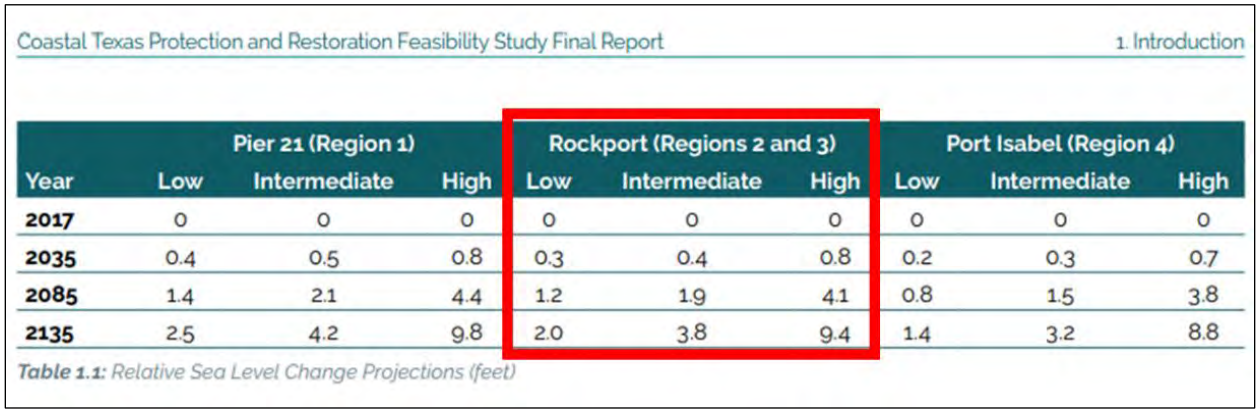
Table 2-6. Water Surface Elevation Increase (ft) projected from 2020 to 2050

NOAA Scenarios	USACE Scenarios	USACE 2013[1]	NOAA 2017[2]	NOAA 2022[2]	Description
Intermediate-Low	Intermediate	0.7	0.9	1.0	NRC Curve I
Intermediate	-	-	1.2	1.1	
Intermediate-High	High	1.5	1.6	1.3	NRC Curve II

1. https://cwbi-app.sec.usace.army.mil/rccslc/slcc_calc.html
2. https://coast.noaa.gov/sir/

GLO's 2021 Coastal Texas Protection and Restoration Feasibility Study Final Report (Coastal Texas Study) used the NOAA 2017 data to prepare inundation mapping for the entire coast of Texas for several different scenarios and various projections into the future (Figure 2-7). None of the modeled scenarios precisely match the 30-year projection required by the RFP. However, the Year 2035 "low" and Year 2085 "intermediate" scenarios result in a SLR of approximately 2 ft.

Figure 2-7. Coastal Texas Study Relative Sea Level Change Projections



Coastal Texas Protection and Restoration Feasibility Study Final Report 1. Introduction

	Pier 21 (Region 1)			Rockport (Regions 2 and 3)			Port Isabel (Region 4)		
Year	Low	Intermediate	High	Low	Intermediate	High	Low	Intermediate	High
2017	0	0	0	0	0	0	0	0	0
2035	0.4	0.5	0.8	0.3	0.4	0.8	0.2	0.3	0.7
2085	1.4	2.1	4.4	1.2	1.9	4.1	0.8	1.5	3.8
2135	2.5	4.2	9.8	2.0	3.8	9.4	1.4	3.2	8.8

Table 1.1: Relative Sea Level Change Projections (feet)

This 1-2 ft SLR matches closely with the future rise in riverine WSELs (as seen in section 2.3.1) and therefore the buffers shown in Table 2-4 of 80 feet on each side (or total of 160 ft) were used in the future mapping limits development.

Identified Future Flood Hazard Areas

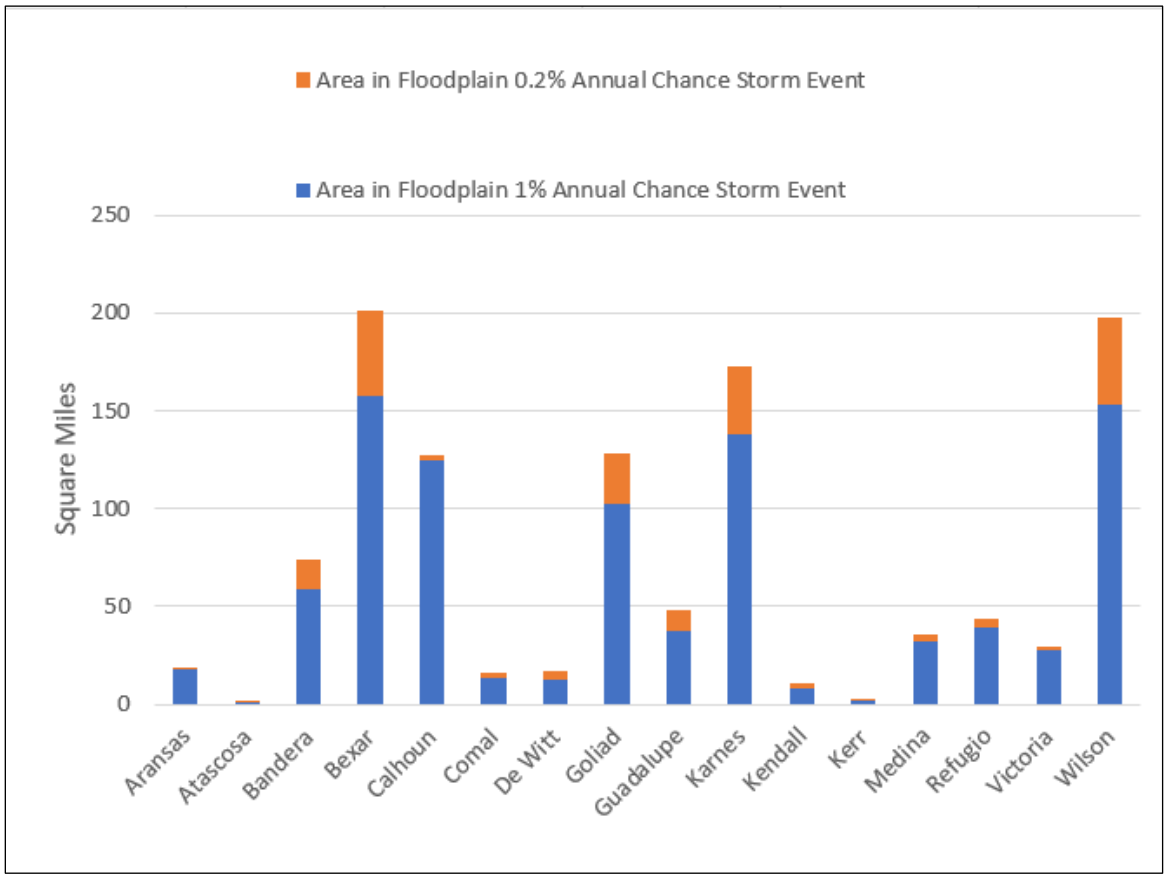
Using the method described earlier, the maps for the future 1% and 0.2% annual chance storm event flood hazard areas were developed in GIS. A comparison of the existing and future flood hazard area is presented tabularly in the Table below. An additional 200 square miles of flood hazard area is added to the floodplain with estimated future conditions, or an increase of 22%.

Table 2-7. Existing and Future Flood Hazard Comparison

Flood Hazard Area	Total Existing Area (sq. mi.)	Total Future Area (sq. mi.)	Area Change (sq. mi.)	Area Change
1%	800.2	925.57	125.37	16%
0.2%	124.34	199.32	74.98	60%
Total	925.54	1124.89	200.35	22%

The total future condition flood hazard area is summarized by county in Figure 2-8. As with existing conditions, Bexar, Calhoun, Goliad, Bandera, Wilson, and Karnes are the counties with significantly high total area in both the 1% and 0.2% annual chance storm events. The future area in square miles inundated under future conditions is represented in Figure 2-8. Due to the methodology selected, most of the increase in floodplain is from more urbanized counties. Of the counties located in SAFPR, the flood hazard area increased the most in Wilson, Bexar, and Karnes Counties.

Figure 2-8. Future Area Located in Floodplain



Future Conditions Data Gaps

Region 12 used detailed study floodplains and the buffer to develop the future modeling extents, not all existing detailed mapping in the SARB has detailed future conditions. As a result, large portions of the region are considered to be a data gap under future conditions.

2.3.2 Future Condition Flood Exposure Analysis

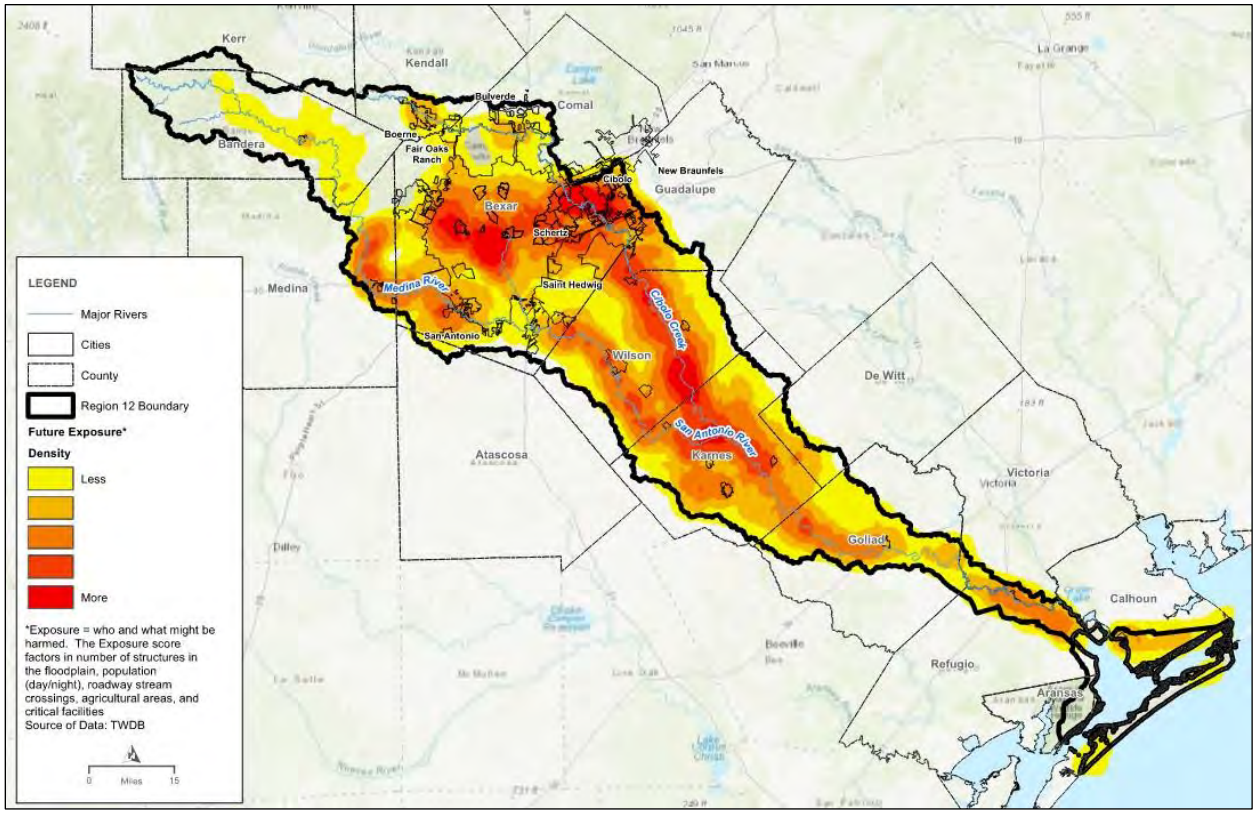
The same flood exposure analysis procedure was followed to quantify exposure under future conditions. This exposure was only quantified for existing development as it compared to the future condition flood hazard area. It is difficult to quantify exposure of future development due to the inherent uncertainty in the exact location of development and changes in population. However, an effort was made to evaluate areas of future development and provide qualitative information regarding potential exposure in these areas.

Future Flood Exposure Summary

The following sections describe the results of the future flood exposure analysis through the same series of maps that is presented for existing flood

exposure. The Cities of San Antonio, Boerne, Bandera, and Karnes continue to have a high concentration of flood exposure in the region. The urban areas around the San Antonio River, Medina River, and Cibolo Creek have the highest concentration of flood exposure in the region, due to the density of development and total population in these areas. However, other portions of the region see a greater density of flood exposure as compared to existing conditions. A heat map illustrating the future conditions flood exposure in the SAFPR is shown in Figure 2-9 below.

Figure 2-9. Future Condition Exposure Heat Map



Residential Properties

Table 2-8 summarizes residential property exposure by county. Those counties with the largest increase in number of residential structures impacted are the most urbanized counties in the region (Bexar, Wilson, Guadalupe, and Bandera). The total number of residential structures that are exposed to future floodplains greatly increases from 19,203 structures to close to 42,830 structures.

Non-Residential Properties

Table 2-8 summarizes non-residential property exposure by county. While the total number of non-residential properties contained in the future flood hazard

area did not increase as dramatically as residential properties, urbanized counties still saw an increase. Bexar, Wilson, Guadalupe, and Bandera Counties, which saw high residential building increases, are also represented in some of the highest increases of non-residential properties in the same areas. The total increase in non-residential property exposed to future 1% and 0.2% annual chance storm events is 5,224 structures.

Public Infrastructure

There are 872 buildings marked as public infrastructure within the future flood hazard, 348 more than in the existing flood hazard. Within this group, 402 buildings are critical facilities and discussed further below. Most of these buildings are located within municipalities, with a large portion found within San Antonio.

MAJOR INDUSTRIAL AND POWER GENERATION FACILITIES

There are 167 buildings in the future flood hazard that are marked as industrial, 80 more than in the existing mapped flood hazard. Of those marked as Industrial facilities, none are classified as critical facilities. Within the future flood hazard area, there are 35 facilities associated with power generation. Similar to the existing power generation facilities, all 35 are considered critical facilities.

CRITICAL FACILITIES

There are 402 critical facilities total within the future flood hazard area, 182 more than in the existing flood hazard.

Table 2-8 shows a count for each type of critical facility, while Figure 2-9shows the location of these facilities. The two most common types of facilities within the flood hazard area are schools and DOD facilities.

ROADWAY CROSSINGS

The number of roadway stream crossings in the future flood hazard area are greatest where there is more urbanization, such as Bexar, Bandera, Wilson, and Karnes counties (Table 2-8). The number of crossings in the future 1% and 0.2% annual chance storm event flood hazard area is 4,004, putting over a thousand more roadway crossings in the future flood zones. As mentioned before, this increase in stream crossings per county is associated with a greater extent of urban area becoming exposed under the future flooding scenario.

ROADWAY SEGMENTS

Similar to the roadway crossings Bexar, Bandera, Wilson, and Karnes counties have the most miles of roadway within the future hazard area. This can be attributed to an increase in urbanized flooding in the future flood scenario. All the counties in SAFPR have roadways that would be inundated in the future by the 1% and 0.2% annual chance storm events. There is a total of 1,571 miles of roadway exposed to flood risk in future assessments.

AGRICULTURAL AREAS

Table 2-8 shows represents the relative number of agricultural areas inundated by flooding under future conditions by county. The amount and value of agricultural areas impacted by flooding increased by only 3.8% in the future flood hazard condition to 50 square miles and almost $5.0 billion, respectively. Of the counties located primarily in SAFPR, the counties with the largest increase are Bexar, Wilson, Karnes, and Medina. These areas saw larger increases in overall floodplain size so this increase is expected for the area.

Table 2-8. Summary of Structures in the Future Flood Hazard Areas

County	Area in Floodplain (square Miles)	Number of Structures in Floodplain	Residential Structures in Floodplain	Pop. (daytime)	Pop. (nighttime)	Pop.	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (square miles)	Critical Facilities (#)
1% Annual Chance Storm Event										
Aransas	17.791	0	0	0	0	0	0	13.069	0.033	0
Atascosa	0.962	57	51	32	95	95	14	2.205	0.045	0
Bandera	58.648	1601	857	1339	1664	2430	245	81.746	1.284	5
Bexar	157.539	13608	10204	59842	36667	85305	1286	397.758	11.849	103
Calhoun	124.950	1533	1145	648	956	1300	24	33.078	1.787	4
Comal	13.000	649	507	1482	749	2010	69	19.661	0.600	34
De Witt	12.484	47	14	6	17	18	57	8.388	0.560	0
Goliad	102.239	287	95	158	334	354	122	38.410	13.794	0
Guadalupe	37.577	3809	3123	16208	11218	24081	161	85.629	5.640	45
Karnes	138.381	563	255	318	594	761	334	86.113	25.871	0
Kendall	7.798	961	606	4322	2357	5871	56	17.109	0.093	10
Kerr	1.615	34	10	6	23	23	7	1.292	0.039	0
Medina	31.692	1229	852	2004	1654	3116	82	41.284	9.241	6
Refugio	39.090	179	69	109	188	207	11	12.255	3.156	1

County	Area in Floodplain (square Miles)	Number of Structures in Floodplain	Residential Structures in Floodplain	Pop. (daytime)	Pop. (nighttime)	Pop.	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (square miles)	Critical Facilities (#)
Victoria	27.580	37	14	10	21	24	9	5.658	1.906	1
Wilson	153.218	2039	1401	1819	2622	3757	426	123.846	21.987	11
TOTAL	924.57	26633	19203	88303	59159	129352	2903	967.50	97.89	220
0.2% Annual Chance Storm Event										
Aransas	1.059	0	0	0	0	0	0	2.897	0.003	0
Atascosa	0.232	22	19	9	30	30	2	0.472	0.012	0
Bandera	15.181	1095	631	938	1363	1798	57	22.146	0.098	5
Bexar	43.917	22277	19061	94501	74892	146537	346	237.517	2.056	149
Calhoun	2.335	121	104	11	49	49	8	8.941	0.111	0
Comal	2.660	441	382	980	797	1531	22	9.525	0.055	1
De Witt	4.341	44	12	5	18	19	25	9.799	0.242	0
Goliad	25.613	263	114	434	400	649	85	40.699	1.106	3
Guadalupe	10.807	1483	1251	4468	4033	7398	59	37.138	1.644	10
Karnes	34.492	471	204	408	416	710	261	80.011	3.441	0
Kendall	3.025	536	391	1612	1868	2914	16	6.922	0.016	3
Kerr	0.899	47	19	5	19	20	1	0.832	0.008	0

County	Area in Floodplain (square Miles)	Number of Structures in Floodplain	Residential Structures in Floodplain	Pop. (daytime)	Pop. (nighttime)	Pop.	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (square miles)	Critical Facilities (#)
Medina	3.988	285	171	288	413	563	7	7.419	0.522	1
Refugio	4.722	78	27	234	130	279	13	20.397	0.722	3
Victoria	1.968	22	12	6	25	26	4	4.586	0.119	0
Wilson	44.082	1666	1229	1941	2478	3731	195	115.094	2.928	7
TOTAL	199.32	28851	23627	105840	86931	166254	1101	604.40	13.08	182
Combined 1% and 0.2% Flood Risk Total	**1123.88**	**55484.00**	**42830.00**	**194143.00**	**146090.00**	**295606.00**	**4004.00**	**1571.90**	**110.97**	**402.00**

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Potential Flood Mitigation Projects

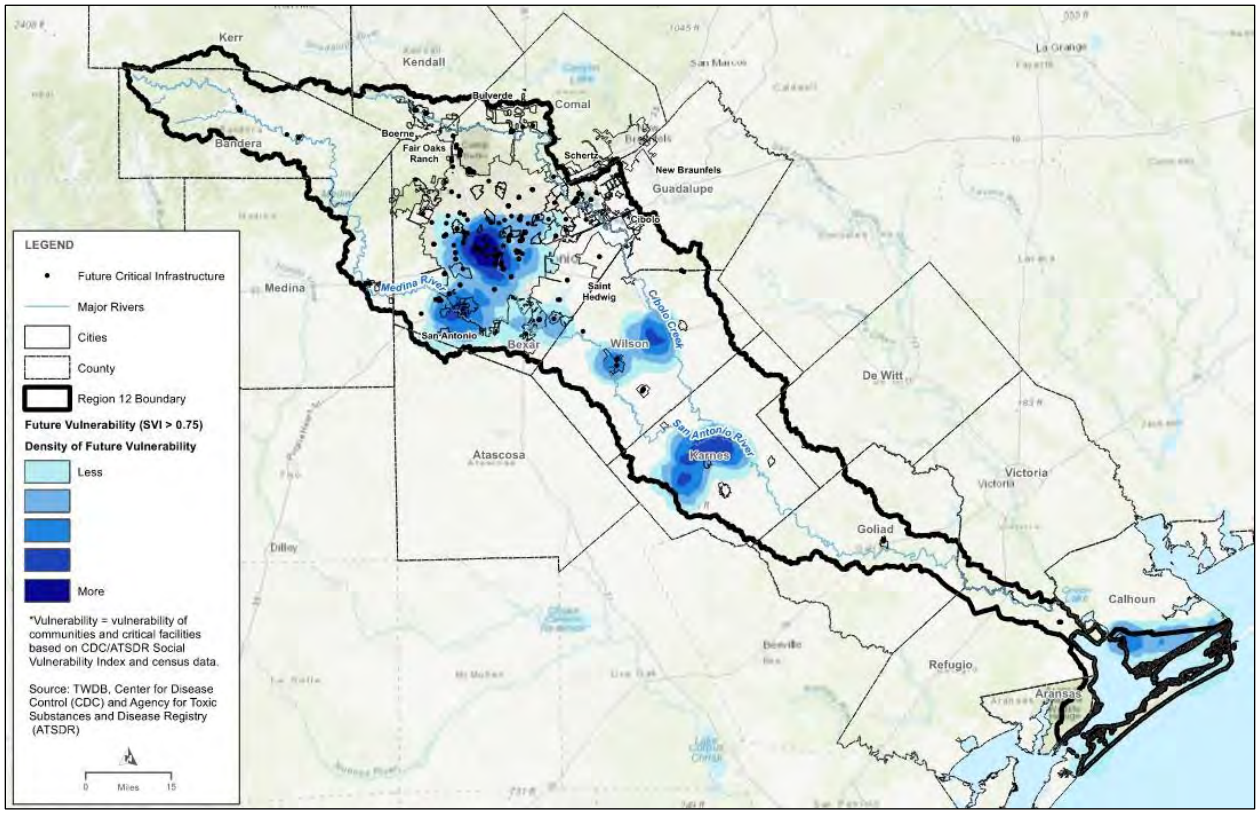
The future condition flood exposure analysis also required the consideration of impacts from flood mitigation projects in progress with dedicated construction funding that are scheduled for completion prior to the adoption of the next SFP. There are 46 proposed and on-going projects have been identified in the SAFPR that meet this criteria.

Major cities within the SAFPR have Capital Improvement Plans (CIPs) and stormwater fees, which may lead to the implementation of additional local stormwater projects. However, these projects do not have specific allocations, so they were not considered in the development of the future flood hazard layer since their construction is not guaranteed. Additionally, these projects will have a minor impact on the floodplain and will not result in major impacts on regional flood risk.

2.3.3 Future Conditions Vulnerability Analysis

The vulnerability analysis for future conditions was performed in the same manner as the existing analysis but considering the future condition flood exposure features. The results of the analysis are summarized in Figure 2-10.

Figure 2-10. Future Condition Vulnerability Heat Map



3

Floodplain Management Practices and Flood Protection Goals

3 Floodplain Management Practices and Flood Protection Goals

The San Antonio Regional Flood Planning Group (RFPG) was tasked with evaluating current floodplain management practices/recommending future floodplain management practices (Task 3A) and recommending flood mitigation goals (Task 3B). The following chapter details the process and findings of the San Antonio region to accomplish this chapter's tasks.

3.1 Evaluation and Recommendations on Floodplain Management (361.35)

The initial effort under Task 3A was to collect and perform an assessment of current floodplain management regulations within the region (i.e., floodplain ordinances, court orders, drainage design standards, and other related policies). The Texas Water Development Board (TWDB) provided floodplain ordinances, as well as a summary of the Texas Floodplain Management Association's (TFMA) Higher Standards Survey results by entities who participated. Floodplain management regulations not provided by TWDB that were readily available on the regulatory entity's websites were also collected. Parallel to this effort, a web-based survey was sent out to each regulatory entity in the Region to gather additional information. All information collected was used to evaluate the current floodplain management and land use practices within the San Antonio region.

3.1.1 Extent to which Current Floodplain Management and Land Use Practices Impacts Flood Risks

Policies, regulation, and regional trends are some of the different aspects of floodplain management and land use practices. Implementing these aspects improves protection of life and property. However, different entities can vary greatly from one another on floodplain management and land use practices. The minimum standards for development in and around the floodplain can be found in the Nation Flood Insurance Program (NFIP) which is managed by the Federal Emergency Management Agency (FEMA).

Congress created the NFIP in 1968 through the National Flood Insurance Act of 1968 to provide federally subsidized flood insurance protection. Since its creation, the NFIP has been updated on multiple occasions to strengthen it. Title 44 of the Code of Federal Regulations (44 CFR) includes the rules and

regulations of the NFIP. 44 CFR Part 60 establishes the minimum criteria that FEMA requires for NFIP participation, which includes identifying special flood hazard areas within the community. 44 CFR Part 60 establishes the minimum criteria that FEMA requires for NFIP participation and the minimum standards for floodplain development.

Cities and counties work with FEMA to establish Base Flood Elevations (BFEs) and Special Flood Hazard Areas (SFHAs) along rivers, creeks and large tributaries that are shown on Flood Insurance Rate Maps (FIRMs). Communities use the FIRM, BFE, and SFHA data in their floodplain permitting processes as a requirement for participating in the NFIP. Insurance agents use FIRMs to determine flood risk, which determines the flood insurance rate for individual properties.

The entities of the region can establish their own policies, standards, and other practices for managing the land use areas of flood risk. Any entities participating in the NFIP have the authority and responsibility to permit or deny the development of special flood hazard areas (SFHA). They can adopt and enforce higher standards than the FEMA NFIP minimum standards to better protect people and property from flooding. FEMA supports entities who choose to establish higher standards to better protect life and property.

Cities and counties who participate in the NFIP program can purchase NFIP flood insurance to reduce the economic impacts of floods (FEMA Flood Insurance, 2021). Renters also can purchase NFIP “contents only” flood insurance policies to cover the cost of their belongings in the event of flood damage. NFIP participation also makes the community eligible for disaster assistance following a flood event.

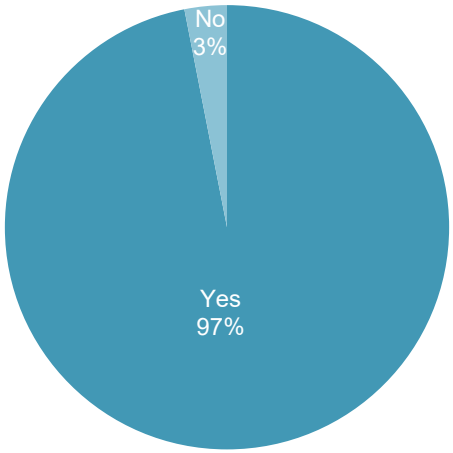
Existing Population and Property

Multiple resources were considered in determining the extent to which current floodplain management and land use practices impact flood risk to existing population and property. Cities and communities have the authority to approve floodplain ordinances or court orders, respectively. There are 110 existing political subdivisions within the San Antonio Region that have flood related authority. They include cities, counties, river authorities, and additional entities with flood-related authority.

Of the 110 existing political subdivisions in the San Antonio region, there are 16 counties and 49 cities for a total of 65 eligible NFIP participants. NFIP participating communities are required to have a floodplain ordinance or court order that meet or exceed the minimum standards set out in the NFIP. Of the 65 eligible entities, 63 are NFIP participants. NFIP participants are limited to

cities and counties, so the results discussed in the rest of this chapter are limited to those entities. Figure 3-1 shows the percentage of entities within the region that participate in the NFIP.

Figure 3-1. Percentage of NFIP Participating Entities in the Region



The minimum standards set out in 44 CFR Part 60 state that buildings are required to be constructed at or above the Base Flood Elevation (BFE), provide for floodproofing options for nonresidential buildings, and mandate provisions specific to the elevation and anchoring of manufactured houses. While the minimum standards are in place for flood protection, these standards may be based on maps that were developed with outdated topography, rainfall, and runoff data. Therefore, standards adopted based on these sources could result in limited protection from flood damages.

While adopting only minimum standards has a chance of providing flood damage protection, cities and counties can adopt “higher” standards to improve the extent of flood damage protection. In the TWDB Exhibit C guidance document, the term “higher” standard is defined as freeboard, detention requirements or fill restrictions. FEMA defines freeboard as additional height above the BFE that serves as a factor of safety when determining the elevation of the lowest floor. The BFE is the elevation of surface water resulting from a flood that has a 1 percent chance of occurring in any given year. The BFE is typically based on FEMA FIRMs (maps) and associated Flood Insurance Studies (models). However, the BFE can be based on localized data developed by the community that may not be incorporated into a FEMA mapping product.

The Texas Floodplain Management Association (TFMA) performs a Higher Standards Survey every year of cities and counties to document which entities have adopted higher standards. According to the TFMA Higher Standards Survey in 2016, and additional research performed, 31 entities in the San Antonio region are reported as having freeboard requirements of one or more feet above the BFE, two entities with no freeboard requirement, and all other entities required to be elevated to or above the BFE. A breakdown of the freeboard requirements are shown in Table 3.1 below. Of the cities and counties that have a freeboard requirement, the majority require the BFE plus 1 foot.

Table 3-1. Freeboard Requirements for Cities and Counties in the San Antonio Region

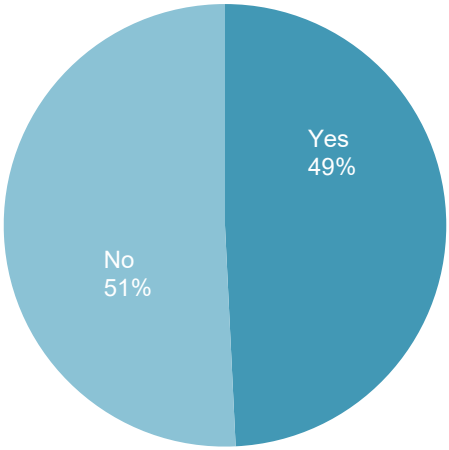
Freeboard Requirements	Number of Entities	Percent
At or above BFE	34	52%
1’ above BFE	20	31%
1.5’ above BFE	2	3%
2’ above BFE	6	9%
3’ above BFE	1	2%
None	2	3%
Total	**65**	**100%**

In addition to freeboard requirements, some cities and counties enforce other higher standards such as:

- Requiring new developments to perform detailed studies to establish BFE data when not available.
- Stormwater detention requirements.
- Limitations to criteria variance within designated floodways.
- Local floodplains to identify risk outside of FEMA flood zones.
- Drainage way protection zones to provide resilience against storms that exceed current design standards.
- Ultimate development design criteria

Of the 63 NFIP participating entities, a total of 32 entities have adopted higher standards. Figure 3-2 demonstrates that nearly half of the region’s entities require some form of higher standards.

Figure 3-2. Percentage of Entities that Require Higher Standards



Within the NFIP, FEMA manages the Community Rating System (CRS) program. The CRS program is a voluntary program in which the cities and counties can participate (FEMA CRS,2021), (FEMA CRS Manual, 2021). The more flood risk reduction activities in which an entity participates, the more points it earns. The points translate to a CRS score that ultimately provides residents and businesses within the jurisdiction the opportunity to receive a discount of flood insurance premiums. The flood insurance savings encourages residents and businesses to purchase flood insurance to protect buildings and contents.

As of October 2022, the San Antonio Region will have four entities participating in the Community Rating System. These communities have a CRS class ranging between 6 and 8 and represent a 5 percent to 20 percent savings on flood insurance premiums. Per TWDB Technical Guidance, these communities qualify as having “Strong” floodplain management standards. The list of CRS participating entities is provided in Table 3-2.

Table 3-2. San Antonio Region Entities Participating in the Community Rating System (CRS) Program

Entity	CRS Class	% Discount for Structures within Special Flood Hazard Area	% Discount for Structures Located Outside the Special Flood Hazard Area
Guadalupe County	8	10	5
Live Oak, City of	7	15	5
New Braunfels, City of	8	10	5
San Antonio, City of	6	20	10

An additional portion of the data collection effort included a question that asked survey participants to select the description that best represented their impression of their enforcement level of their floodplain regulations. The TWDB Exhibit C described enforcement levels as the following:

- high – actively enforces the entire ordinance, performs many inspections throughout construction process, issues fines, violations, and Section 1316s where appropriate, and enforces substantial damage and substantial improvement;
- moderate – enforces much of the ordinance, performs limited inspections and is limited in issuance of fines and violations;
- low – provides permitting of development in the floodplain, may not perform inspections, may not issue fines or violations;
- none – does not enforce floodplain management regulations.

From the survey responses and other data collection efforts, the San Antonio region gathered 14 entity enforcement levels. Following the TWDB guidance, the remaining entities were not categorized as their level of enforcement is unknown. Table 3-3 summarizes the 14 collected responses.

Table 3-3. Level of Enforcement of Floodplain Regulations in the San Antonio Region

Level of Enforcement	Number of Responses	Percent
High	4	29%
Moderate	8	57%
Low	1	7%
None	1	7%
Total	14	100%

Utilizing the data collected, the level of floodplain management practices were identified as “strong”, “moderate”, “low” or “none” based on the following criteria provided by the TWDB.

- Strong (significant regulation that exceed NFIP standards with enforcement, or community belongs to the Community Rating System)
- Moderate (some higher standards, such as freeboard, detention requirements or fill restrictions)
- Low (regulations meet the minimum NFIP standards)
- None (no floodplain management practices in place)

Of the 65 NFIP eligible entities, 6 entities are classified as ‘strong’, 27 entities are classified as ‘moderate, and 30 entities are classified as having a ‘low’ level of floodplain management practices. The remaining two entities are classified as ’none’. Table 3-4 and Figure 3-3 summarize the results of the floodplain management practices. TWDB-Required Table 6 is included in Appendix A and provides details considered for each community and county in determining the appropriate description of overall floodplain management practices.

Figure 3-3. Floodplain Management Practices for NFIP Eligible Communities in the San Antonio Region

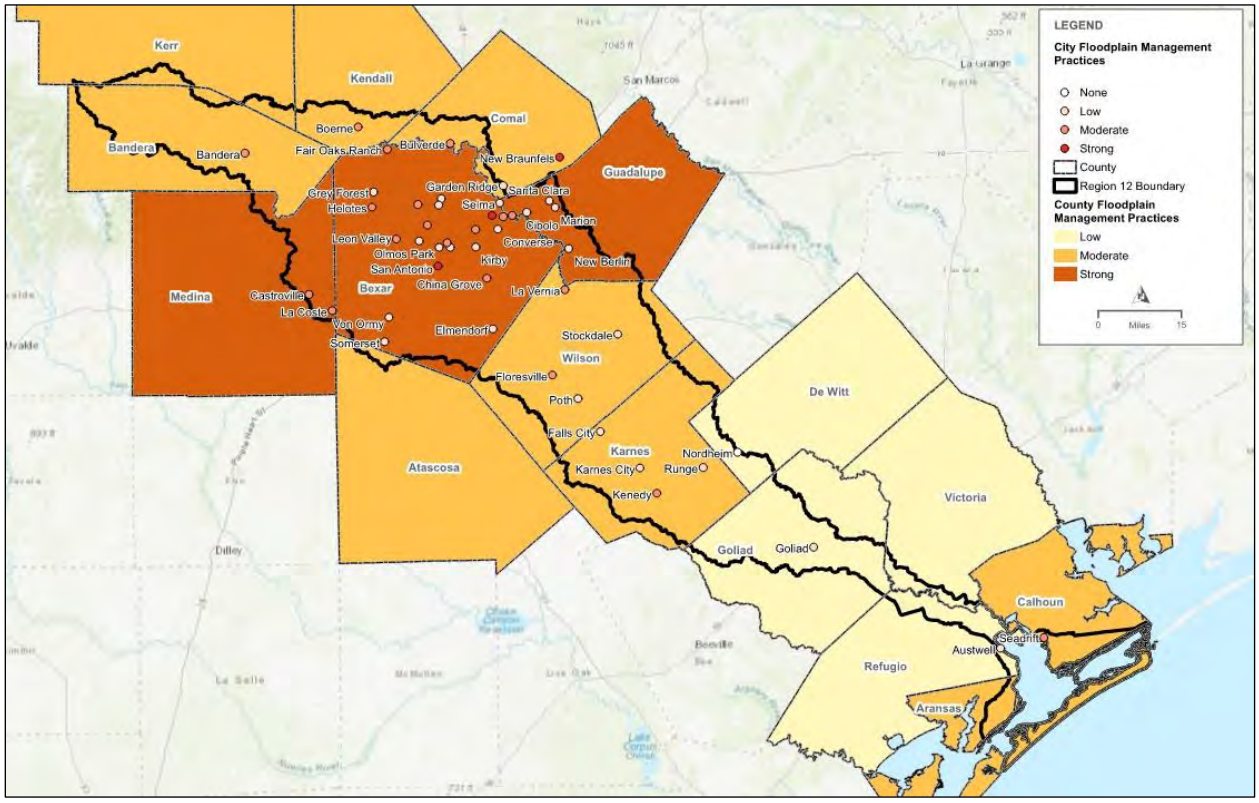


Table 3-4. Floodplain Management Practices for NFIP Eligible Communities in the San Antonio Region

Description	Number of Communities and Counties	Percent
Strong	6	8%
Moderate	27	43%
Low	30	46%
None	2	3%
Total	65	100%

Although 97% of the entities in the San Antonio Region are NFIP participants, there is still a significant gap between key floodplain management practices and certain communities that could enhance their floodplain management policies.

Future Population and Property

Future floodplains are uncertain. However, it is anticipated that the future floodplains will look different from existing floodplains in many areas within the region. The hydrologic and hydraulic models used to generate floodplain maps are regularly being updated with new topography, survey, precipitation, runoff, and other data as development occurs in and around floodplains. For future population growth and development in and around the floodplain, areas without maps or with outdated floodplain maps and models are at a greater danger of increased flood risk. Incorporating the existing and future floodplains will provide cities and counties with additional direction as to where population and development should be directed to protect people and property.

The existing floodplain ordinances or court orders that include higher standards may continue to protect life and property if they are enforced appropriately. At the same time, future floodplain models and maps will need to be updated with best available data, and advanced modeling techniques, to effectively assess risk. The combination of applying higher standards and best available data should translate into life and property savings in the future.

Correctly designed detention and retention ponds are often required to mitigate the impacts that impervious surfaces and more efficient drainage infrastructure have on the runoff from a developed property. The standard engineering design requirement is to manage runoff so that it discharges from the developed property at the existing rate that it leaves the property in its natural state. Incorporating this requirement may help mitigate increased runoff in the future, which in turn can reduce future flood hazard exposure.

Another way communities can prepare and protect future life and property is to include a future conditions scenario in watershed and stream studies. Typically, the future conditions scenario is based on a defined time in the future, often 30 years, or is based on the area's fully developed land conditions. In addition, future conditions may include rainfall greater than current design criteria to reflect the increased rainfall depth trends seen in rainfall records and known as non-stationarity. Applying a future conditions scenario to studies essentially adds a factor of safety to the area to help better protect the current areas from future flood risk.

An additional factor of safety that can be implemented to reduce future flood hazard exposure is freeboard. Freeboard is the term used for additional height provided above the base flood elevation discussed in Section 3.A.1.a.

Even if the BFE changes in the future, freeboard could allow the structure to remain above the future flood water surface level.

3.1.2 Consideration of Recommendation or Adoption of Minimum Floodplain Management and Land Use Practices

For this task, the San Antonio RFPG is required to consider the possibility of recommending or adopting consistent minimum floodplain management standards and land use practices regionwide. Recommended practices encourage entities with flood control responsibilities to establish minimum floodplain management standards over the next several years, while the adoption of minimum standards requires entities to have adopted the minimum standards before their floodplain management strategies (FMS's), evaluations (FME's), and projects (FMP's) could be considered for potential inclusion in the regional flood plan. After considering and analyzing the data collected for Task 3A, the San Antonio Region decided to encourage floodplain management and land use practices rather than recommending entities to adopt higher standards.

The San Antonio RFPG recommends that entities that are not currently NFIP participants should adopt at least the minimum standards and take the necessary steps in order to become active NFIP participants.

There are also higher standards outlined in the goals found in section 3.2.2. Region 12 recommends those as higher standards for entity floodplain management practices. In support of entities looking to evaluate and advance their floodplain management practices through higher standards can refer to Table 11 in Appendix A for example statements of additional higher standards.

As in other chapters of this report, the TWDB requires a detailed table of existing floodplain management practices with the region. The TWDB-required Table 6 has been populated for all cities and counties within the San Antonio Region and is included in Appendix A Table 6.

3.2 Flood Mitigation and Floodplain Management Goals (361.36)

One of the critical components of the inaugural State Flood Plan process was the development of flood mitigation and floodplain management goals. The objective of Task 3B is to define and select a series of goals that will serve as the drivers of the regional flood planning effort. The San Antonio RFPG put a

lot of effort into discussing and selecting a series of goals that they felt were the most beneficial for the region.

As stated in the Guidance Principles in 31 TAC §362.3, the main goal of the regional floodplain plans must be “to protect against the loss of life and property”, which is further defined as:

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

With the guidance principles in mind, the RFPG must set goals that are achievable by the entities of the region. Once implemented, the goals must demonstrate progress towards the overarching goal set by the state. This section summarizes the flood mitigation and floodplain management goals determined by the San Antonio RFPG.

3.2.1 Flood Mitigation and Floodplain Management Goal Categories

When determining the flood mitigation and floodplain management goals, the San Antonio RFPG established six overarching goal categories. The categories were established to better define and clarify the individual goals set forth by the San Antonio RFPG. The goals and goal categories build upon TWDB regional flood planning guidance and provide a comprehensive framework for future strategy development focused on reducing flood risk to people and property, while not negatively affecting neighboring areas. The six goal categories include:

1. Education and Outreach
2. Flood Warning and Readiness
3. Flood Studies and Analysis
4. Flood Prevention
5. Non-Structural Flood Infrastructure Projects
6. Structural Flood Infrastructure Projects

3.2.2 Goals

The six goal categories are detailed below. They include specific goal statements that can be achieved and measured in either short (10 years) or long term (30 years). Per Texas Water Development Board (TWDB)

requirements and guidelines, the goals selected by the RFPG must include the information listed below:

- Description of the goal
- Term of the goal set at 10 years (short-term) and 30 years (long-term)
- Extent or geographic area to which the goal applies
- Residual risk that remains after the goal is met
- Measurement method that will be used to measure goal attainment
- Association with overarching goal categories

The goals must be specific and achievable flood mitigation and floodplain management goals that when implemented will demonstrate progress towards the overarching goal. The following were considered in the development of the goals:

- Guidance Principles as listed in 31 TAC §362.3
- The existing condition flood risk analyses
- The future condition flood risk analyses
- The consideration of current floodplain management and land use approaches
- Input from the public
- Understanding of the residual risk of each goal (i.e. the remaining risk)

The flood mitigation and floodplain management goals were developed by Region 12 Technical Subcommittee and approved by the San Antonio RFPG at the Planning Group Meeting on November 16, 2021. The adopted goals apply to the entire flood planning region; no sub-regional goals were identified. The information requirements listed above are presented for each goal in Appendix A Table 11.

Goal Category 1: Education and Outreach

This category intends to increase the number of flood education and outreach opportunities across the region. Public education and outreach may incorporate a variety of methods from publishing newsletter articles to hosting booths at in-person events. Communities that participate in FEMA's Community Rating System (CRS) program typically have significant public outreach elements in their stormwater programs as they receive credit for doing so. The CRS program is described in Section 3.1.1.1 of this chapter.

The education and outreach category increases education and outreach opportunities, improves flood hazard awareness, encourages Region 12 entities to review their floodplain management practices, and promotes the protection of people and property by better preparing the region entities for future flooding events. Additional higher standards for floodplain management practices that promote these goals can be found in Table 11 in Appendix A**.** Table 3-5 includes four specific goals for this category.

Table 3-5. Education and Outreach Goals

Goal ID	Goal Statement	Goal Term
12000001	Track existing public outreach and education activities to improve awareness of flood hazards and benefits of flood planning including nature based solutions in the region and ensure there are at least 6 additional occurrences per year.	Short Term (10 Year)
12000002	Increase to 12 per year or maintain public outreach and education activities to improve awareness of flood hazards and benefits of flood planning including nature based solutions in the region.	Long Term (30 Year)
12000003	Increase the proficiency of stakeholders and floodplain managers across the region through training from Region 12 entities, TFMA, ASFPM and FEMA. Improve 50% of FPM knowledge of nature based solutions, floodplain preservation, and cost/benefit of traditional structural solutions including providing certificates.	Short Term (10 year)
12000004	Increase the proficiency of stakeholders and floodplain managers across the region through training from Region 12 entities, TFMA, ASFPM and FEMA. Improve 100% of FPM knowledge of nature based solutions, floodplain preservation, and cost/benefit of traditional structural solutions including providing certificates.	Long Term (30 year)

Goal Category 2: Flood Warning and Readiness

This category aims to improve the overall flood warning and readiness across the San Antonio Region by reducing flood deaths and high-water rescues, improving response time of flood warning notifications across the region. Improving flood warning and readiness involves multiple entities and departments and will provide timely warning of impending flood danger. Table 3-6 includes six specific goals for this category.

Table 3-6. Flood Warning and Readiness Goals

Goal ID	Goal Statement	Goal Term
12000005	Support the development of a regionally coordinated warning and emergency response program that can detect the flood threat and provide timely warning of impending flood danger to reduce flood deaths and high-water rescues across the region.	Short Term (10 Year)
12000006	Support the development of a regionally coordinated warning and emergency response program that can detect the flood threat and provide timely warning of impending flood danger to reduce flood deaths and high-water rescues across the region.	Long Term (30 Year)
12000007	Increase the number of flood gauges (rainfall, stream, reservoir, etc.) in the region to provide localized information to emergency responders, and storage and accessibility of data to agencies.	Short Term (10 year)
12000008	Increase the number of flood gauges (rainfall, stream, reservoir, etc.) in the region to provide localized information to emergency responders, and storage and accessibility of data to agencies.	Long Term (30 year)
12000009	Increase the number of entities that communicate real time flood warnings to the public. Leverage mobile phone navigation apps to provide real time rerouting for the public.	Short Term (10 year)
12000010	Increase the number of entities that communicate real time flood warnings to the public. Leverage mobile phone navigation apps to provide real time rerouting for the public.	Long Term (30 year)

Goal Category 3: Flood Studies and Analysis

The intent of goal category 3 is to increase the overall number and extent of flood studies and analyses. Updating floodplain maps and studying or restudying streams with best available data improves flood hazard awareness and the protection of people and property. By better understanding the current and potential future status of flood hazard areas, entities can use flood studies and analyses to better manage their development. It also allows them to use more accurate data to pursue flood hazard mitigation projects and funding for them. Table 3-7 includes six specific goals for this category.

Table 3-7. Flood Studies and Analysis Goals

Goal ID	Goal Statement	Goal Term
12000011	Establish a baseline and increase the number of entities which utilize Atlas 14 (Volume 11) or best available data from NOAA revised rainfall data as part of revisions to design criteria and flood prevention regulations by 50% percent. (Region specific)	Short Term (10 Year)
12000012	Increase the number of entities which utilize/adopt Atlas 14 (Volume 11) or best available data from NOAA revised rainfall data as part of revisions to design criteria and flood prevention regulations by 100%. (Region specific)	Long Term (30 Year)
12000013	Increase the number of entities that conduct detailed studies to update their local flood risk by 25%.	Short Term (10 Year)
12000014	Increase the number of entities that conduct detailed studies to update their local flood risk by 100%.	Long Term (30 Year)
12000015	Decrease the average age of FEMA Flood Insurance Rate Maps (NFHL/FIRMs/FIS) to less than 10 years.	Short Term (10 Year)
12000017	Establish a baseline number of existing studies and process for analyzing watersheds to identify existing Natural Flood Mitigation Features (NFMF) such as headwaters, buffers, and conservation easements.	Short Term (10 Year)

Goal Category 4: Flood Prevention

The intent of goal category 4 is to increase the overall extent of flood prevention. Entities that make an effort to prevent flooding will reduce the risk of future floods and see less severe damages from flooding events. Preventative flood measures are a way to protect life and property before flooding occurs. Preventative measures also warrant better overall floodplain management effects which can be seen in the five specific goals for this category. Table 3-8 includes five specific goals for this category.

Table 3-8. Flood Prevention Goals

Goal ID	Goal Statement	Goal Term
12000019	Increase the number of participating Community Rating System (CRS) entities in the FPR by 5.	Short Term (10 Year)
12000020	Increase the rating of participating entities within Community Rating System (CRS) in the FPR by 100%.	Long Term (30 Year)
12000021	Increase the number of entities which regulate to the 1% annual chance future conditions floodplains as part of new development and redevelopment by 10%.	Short Term (10 year)
12000022	Increase the number of entities which regulate to the 1% annual chance future conditions floodplains as part of new development and redevelopment by 50%.	Long Term (30 year)
12000023	Increase the number of entities above the established baseline that have adopted a holistic watershed approach using existing Natural Flood Mitigation Features (NFMF) such as headwaters, buffers, and conservation easements for flood risk reduction as a basis for comprehensive subdivision regulations.	Short Term (10 year)

The Region 12 RFPG committee has identified a gap in flood risk and flood mitigation knowledge related to nature-based infrastructure (NBI) across the region. The committee recognizes that NBI provides significant, low-cost flood mitigation and many NBI areas also serve as the source of groundwater recharge in the region sustaining the water supply for many communities. Protecting and enhancing NBI where appropriate, provides benefits for flood peak attenuation, ecosystem services, groundwater recharge, and recreational value typically at a lower cost than constructed solutions. NBI provides both monetary and non-monetary benefits that should be accounted for in flood mitigation planning.

Goal Categories 5 and 6: Flood Infrastructure Projects

Flood infrastructure projects can reduce flood risks and hazards through the maintenance and rehabilitation of existing infrastructure. This can occur for structural infrastructure projects, non-structural projects, and a combination of structural/non-structural projects. Twelve specific goal statements were created for this category. The directly align with TWDB's overarching goal of the protection of life and property. Of the 12 goal statements listed below, goals 12000025, 12000026, 12000027, and 1000028 are non-structural infrastructure goals. Goal statements 12000031, 12000032, 12000033,

12000034, 12000035, and 12000036 are non-structural infrastructure goals. Goal statements 12000029, and 12000030 are structural/non-structural infrastructure goals. Table 3-9 includes twelve specific goals for this category.

Table 3-9. Flood Infrastructure Project Goals

Goal ID	Goal Statement	Goal Term
12000025	Establish a baseline and increase the number of acres of publicly protected open space by 10 % as part of land conservation and acquisitions to reduce future impacts of flooding.	Short Term (10 Year)
12000026	Increase the number of restored acres of publicly protected open space land in the region.	Long Term (30 Year)
12000027	Reduce the number of NFIP repetitive-loss properties in the FPR by 25%.	Short Term (10 year)
12000028	Reduce the number of NFIP repetitive-loss properties in the FPR by 75%.	Long Term (30 year)
12000029	Reduce the number of existing (2022) residential properties in the future 1% annual chance floodplain by 10%.	Short Term (10 year)
12000030	Reduce the number of existing (2022) residential properties in the future 1% annual chance floodplain by 50%.	Long Term (30 year)
12000031	Reduce the number of vulnerable critical facilities located within the existing and future 1% annual chance (100-year) floodplain by 50%.	Short Term (10 year)
12000032	Reduce the number of vulnerable critical facilities located within the existing and future 1% annual chance (100-year) floodplain by 100.	Long Term (30 year)
12000033	Identify the eligible top 50 vulnerable roadway segments and low water crossings located within the existing and future 1% annual chance (100-year) floodplain.	Short Term (10 year)
12000034	Eliminate or mitigate the eligible top 50 vulnerable roadway segments and low water crossings located within the existing and future 1% annual chance (100-year) floodplain.	Long Term (30 year)
12000035	Increase the number of structural projects by 10% that include a NBS or Green Infrastructure (GI) component.	Short Term (10 year)

Goal ID	Goal Statement	Goal Term
12000036	Increase the number of structural projects by 50% that include a NBS or Green Infrastructure (GI) component.	Long Term (30 year)

3.2.3 Benefits and Residual Risk after Goals are Met

The goals were developed by the San Antonio RFPG to set the stage for actions that can be quantified and measured in the future regional and state flood planning cycles. Future data collection efforts and the implementation of floodplain management projects/evaluations/strategies can be used to establish baseline data for future measurements to determine the progress towards achieving the Region's goals. Once implemented, the specific goals detailed in this section will fulfill the TWDB's overarching goals of identifying and reducing the risk and impact to life and property, and avoiding increasing or creating new flood risk by addressing future development within the areas known to have existing or future flood risk. Beyond protecting against the loss of life and property, the goals offer several benefits, including protecting infrastructure, water supply, and the environment and sustainability. The types of benefits are presented below in Table 3-10.

Table 3-10. Flood Planning Goal Benefits

Types of Benefits*	Overarching Goal Categories					
	Flood Education and Outreach	Flood Warning and Readiness	Flood Studies and Analysis	Flood Prevention	Non-Structural Flood Infrastructure	Structural Flood Infrastructure
Protect Life	◑	●	◑	◑	●	●
Protect Infrastructure		◑	◑	●	◑	●
Protect Property		◑	◑	●	●	●
Protect the environment	◑		◑	●	●	●
Protect/enhance water supply				◑	◑	◑
Sustain the economy		◑		◑	●	◑
Realize multiple benefits*				◑	◑	◑
Increase public awareness	●	●	◑	◑	◑	◑
Build community support	●	●	◑	◑		

●-Direct Benefit ◑-Potential Benefit

*Multiple benefits could include improvements to flood protection while improving water supply and increasing public recreation opportunities

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However, it is recognized that it is not possible to protect against all potential flood risks. In selecting the flood risk reduction goals, the RFPG is inherently determining the accepted residual risk for the region. In general, residual risks for flood risk reduction goals could be characterized as follows:

1. While a new development may be constructed outside the 1% annual chance floodplain, flood events of greater magnitude will inundate areas beyond those preserved as a floodplain.
2. Flood events may exceed the level of service for which infrastructure is designed.
3. Communities depend on future funding and program priorities to maintain, repair, and replace flood protection assets. Routine maintenance of infrastructure is required to maintain its design capacity. Maintenance is sometimes overlooked due to budget, staff, and time constraints.
4. Policies, Regulations, and Standards reduce adverse impacts associated with development activity but does not eliminate it. Limitations placed on local government by the state legislature reduce the ability to adopt locally defined best approaches to protect the community.
5. The lack of local enforcement of floodplain regulations also creates risk.
6. In our representative government, policy changes that adversely impact budgets, prior plans, assets, and standards is always a possibility.
7. Practical (time and money) limits of understanding and precision associated with studies, models, and plans.
8. Human behavior is unpredictable, people may choose to ignore flood warning systems or cross over flooded roadways for a variety of reasons.

As in other chapters of this report, the TWDB requires a detailed table of the recommended flood mitigation and floodplain management goals. The TWDB-required Table 11 has been populated and is included in Appendix A Table 11.

4

Assessment and Identification of Flood Mitigation Needs

4 Assessment and Identification of Flood Mitigation Needs

This chapter identifies the greatest flood risk knowledge gaps and known flood risks in the SAFPR. The flood mitigation needs analysis identifies where the greatest flood risk knowledge gaps exist and where known flood risk and flood mitigation needs are located within the SAFPR. This information guides the identification of potentially feasible flood mitigation actions.

4.1 Greatest Flood Risk Knowledge Gaps

The greatest flood risk knowledge gaps for the SAFPR have been identified as areas in the region where:

7. Flood inundation boundaries are either not defined or are considered inaccurate
8. Flood studies have not occurred in the recent past and are not on-going or proposed
9. Flood management practices do not exist or are not enforced effectively

4.1.1 Flood Inundation Boundary Gaps

Flood inundation boundaries are used to define the location and magnitude of flooding. Without accurate flood inundation boundaries, the existing flood risk is not well understood, and controlling future risk through floodplain management regulations is difficult. Flood inundation boundaries based on recent detailed hydrologic and hydraulic models are considered accurate. Refer to Chapter 2 – Flood Risk Analysis Figure 2-1, which depicts where there are the largest modeling gaps occur in the SAFPR. The lower half of the SAFPR does not have accurate flood mapping available, and only approximate and/or Fathom data are available.

4.1.2 Flood Studies and On-Going Projects Gaps

- Flood studies are used to identify existing and future flood risks and often recommend solutions and actionable steps to reduce those risks. Flood mitigation projects are crucial to reducing risks in an area. Generally, flood studies and projects have occurred or are occurring for counties throughout the SAFPR. Current major flood studies and projects include the following:
- General Land Office Flood Studies

- City Wide Drainage Improvements
- County-Wide Drainage Improvements
- TxDOT Crossing Improvements
- Refer to Appendix A – Required Maps, Map 2: Proposed or Ongoing Flood Mitigation Projects depicting where these projects are occurring in the SAFPR.

4.1.3 Floodplain Management Practices

Enacting floodplain management practices (regulation and enforcement) is effective in preventing activities that will result in increased flood risk in the future. Examples include requiring a floodplain permit for development activity in the floodplain and/or requiring building finished floor elevations to be one foot above the 1% annual chance storm event elevation. Without floodplain management practices, it is difficult to mitigate future flood risks. Refer to Chapter 3 Floodplain Management Practices and Flood Protection Goals Figure 3-4, which depict where the level of floodplain management practices are unknown or considered “low.” This includes rural areas near the coast and away from the major population center of San Antonio.

4.2 Greatest Known Flood Risk and Flood Mitigation Needs

The areas of greatest known flood risk and flood mitigation needs in the SAFPR are defined as areas with elevated levels of risk to property and life. The level of risk is defined by identifying the location and magnitude of flooding from the 1% and 0.2% annual chance flood event (flood hazard), who and what may be harmed (flood exposure), and what communities and critical facilities may be vulnerable (flood vulnerability). The details of the flood hazard, exposure, and vulnerability analyses are fully described in Chapter 2 – Flood Risk Analysis.

4.2.1 Flood Hazard

The flood hazard analysis defined the 1% and 0.2% annual chance storm event boundaries for the entirety of the SAFPR’s rivers and associated tributaries with contributing drainage areas greater than one square mile. The existing condition flood hazard is depicted on a sub-region level in Appendix A – Required Maps, Map 4: Existing Condition Flood Hazard.

4.2.2 Flood Exposure

The flood exposure analysis indicated roughly 26,633 structures at potential risk of flooding from the 1% and 0.2% annual chance flood event. From this analysis, several critical areas for flood exposure appear to be (1) the urban areas around the Cibolo and Medina Rivers due to the density of development and total population in those areas and (2) and the confluence of the San Antonio and Cibolo Rivers due to the magnitude of flood volume on each respective creek and similarity in watershed size. Additionally, flooded roadways and agricultural areas are found throughout the region, and the impacts due to the loss of function in these areas should not be understated. A map produced to illustrate flood exposure in the SAFPR is shown in Appendix A – Required Maps, Map 6: Existing Condition Flood Exposure.

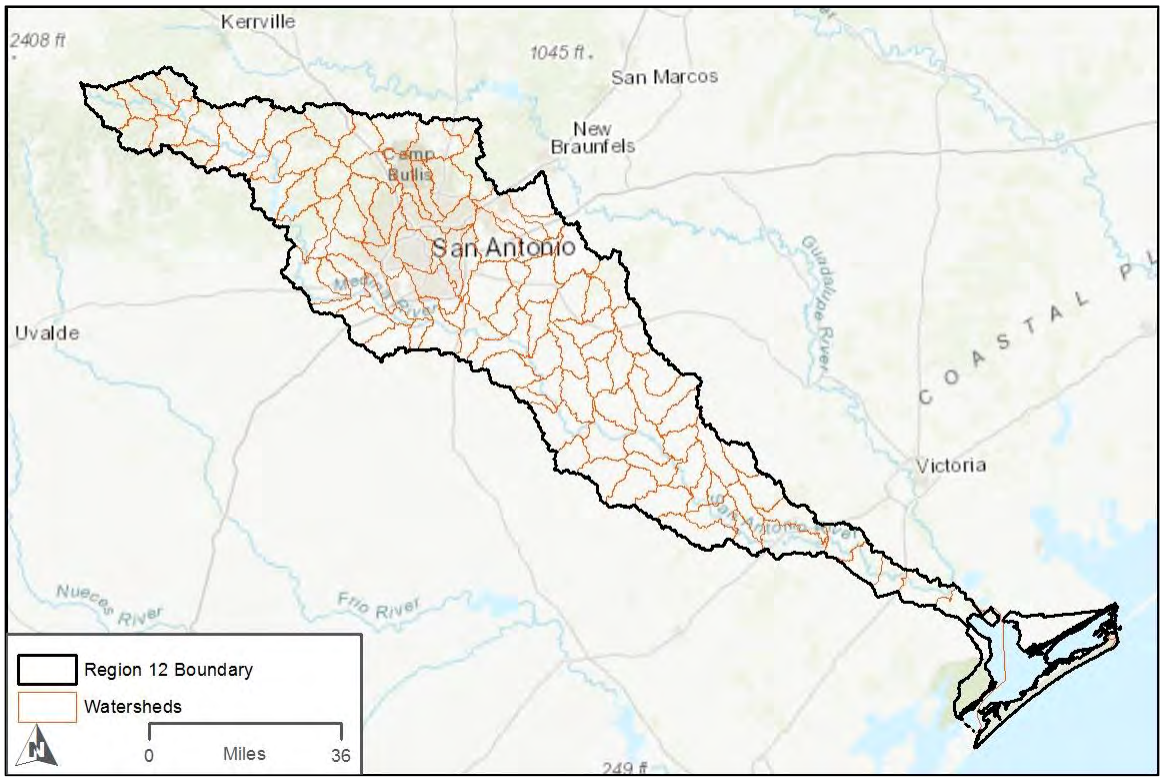
4.2.3 Flood Vulnerability

The flood vulnerability analysis identified roughly 220 critical facilities in the 1% and 0.2% annual chance storm event inundation and, in general, mirrored the exposure analysis in terms of critical areas as shown in Appendix A – Required Maps, Map 7: Existing Condition Flood Vulnerability. The most vulnerable locations are on the outskirts of the City of San Antonio and at confluence of the San Antonio and Cibolo Rivers in Karnes County.

4.2.4 Greatest Known Flood Risk Analysis

The main objectives of Task 4A are to identify the areas of greatest known flood risk and areas where the greatest lack of flood risk knowledge exists. The Task 4A analysis is based on a geospatial process that combines information from multiple datasets. The geospatial process was developed in a geographic information system (GIS) based on the data collected in Tasks 1 through 3. The geospatial assessment was conducted at a HUC-12 watershed level of detail, consistent with TWDB guidelines and rules. A Hydrologic Unit Code (HUC) is a unique code assigned to watersheds in the United States. As the watersheds have longer unique codes. The smallest unit of division used to identify a watershed is 12-digits or a HUC-12. The San Antonio Region has 180 HUC-12 watersheds, with an average area of 3.94 square miles.

Figure 4-1. San Antonio Flood Planning Region HUC 12 Watersheds



A total of 9 data categories were used in the geospatial analysis. A scoring range was determined for each data category based on the statistical distribution of the data. A scoring scale of one to five was adopted, and each HUC-12 was assigned an appropriate score for each category. The scores for each HUC-12 under each category were then added to obtain a sum. The sum of the component scores was then assigned a 1-5 score that was used to reveal the areas of greatest known flood risk and need for mitigation activities. The following sections briefly describe the data categories included in the assessment and how each HUC-12 watershed was scored. Note that the objective of the Task 4A process is to determine the risk factors present within a given HUC-12 and to what degree. The Task 4A process does not necessarily determine the relative importance of each factor in determining flood risk. Therefore, no weight has been applied to emphasize one factor over another at this time.

Analysis Categories and Matrix

The following 9 risk factors were used to calculate the total risk score:

- Exposed Buildings – Exposure data representing the number of building structures located within the best available 1% and 0.2% annual chance flood inundation boundaries.

- Exposed Critical Facilities - Vulnerability data representing critical facilities such as hospitals, schools, fire and police stations, etc., identified in the ‘exposure’ layer above.
- Exposed Low Water Crossings - Data as provided by TNRIS and verified with floodplain limits.
- Inundated Roadway Length - The length of roadway inundated in each HUC12 watershed.
- Non-functioning Dams and Levees - Data representing potentially hazardous dams that have been identified as either hydraulically inadequate or deficient by the TCEQ as well as levees that have been identified as unaccredited.
- Fatalities– Flood related fatality data collected by the NWS since 1996.
- Inundated Agricultural Area - The inundated area used for agriculture in each HUC12 watershed.
- Social Vulnerability of Exposed Buildings – Vulnerability data representing the number of building structures identified in the ‘exposure’ layer above within a high vulnerability area (i.e., SVI > 0.75).
- Public Comments - Reported flooding problems collected from public comments.

The 9 categories applied in this analysis were selected based on their inherent reflection of either risk or absence of information for each of the San Antonio Region's HUC-12 watersheds and are described in the sections below. Each category and its respective categories and score distributions are shown in Table 4-1. The geospatial assessment was conducted using the existing condition 1 percent annual chance (100-year) event as that is the most representative of current conditions.

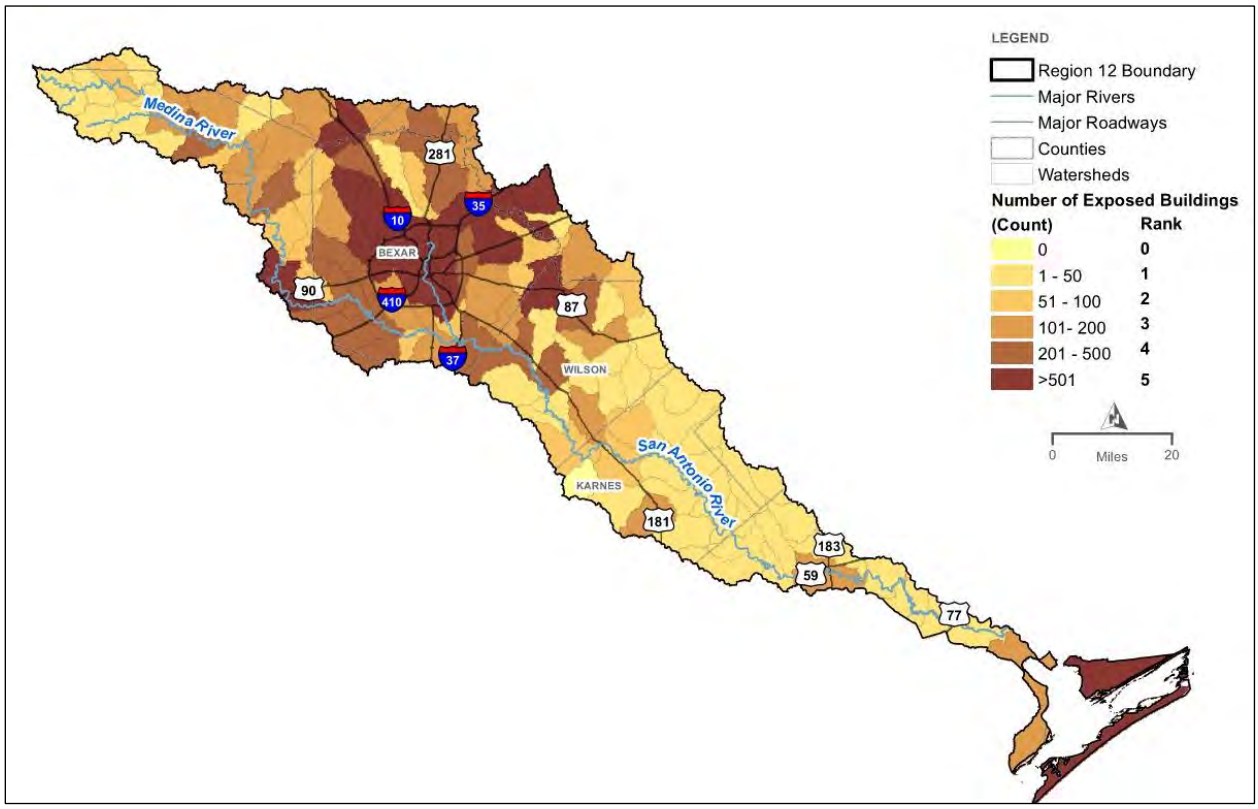
Table 4-1. Risk Scoring Criteria

Criteria	Points Scored					
	0	*1*	*2*	*3*	*4*	*5*
Number of Exposed Buildings	0	1-50	51-100	101-200	201-500	501+
Number of Exposed Critical Facilities	0	1-5	6-10	11-15	16-20	20+
Number of Exposed Low Water Crossings	0	1-2	3-5	5-8	8-11	12+
Miles of Inundated Roadway Segments	0	0.1-5	5.1-10	10.1-15	15.1-25	>25
Number of Non-Functioning Dams and Levees	0	N/A	N/A	1	N/A	2+
Number of Lives Lost Due To Flooding (Fatalities NWS)	0	N/A	N/A	N/A	N/A	1+
Square Miles of Inundated Ag Land	0	0-0.5	0.5-1	1-1.5	1.5-4	4+
Average Social Vulnerability Index of Exposed Buildings	0	0-0.2	0.2-0.4	0.4-0.6	0.6-0.8	0.8-1
Number of Public Comments Received	0	1	2	3	4	5+

Exposed Buildings

The TWDB provided a building dataset utilized in Chapter 2: Flood Risk Analysis to conservatively identify buildings with a footprint within the existing condition 1 percent annual chance (100-year) event floodplain. Using this exposed building dataset, each HUC-12 was populated with the number of exposed buildings located within each HUC-12 boundary. The exposed building counts ranged widely across the region, with rural HUC-12s only having only a few buildings in the floodplain while urban HUC12s may have over 500 exposed buildings. The scoring associated with the number of exposed buildings per watershed is displayed in, and the scoring results are displayed in Figure 4-2. The brown watersheds represent the HUC-12s with the greatest number of exposed buildings. These watersheds are located in more urban areas of Bexar County near San Antonio, and along the coast.

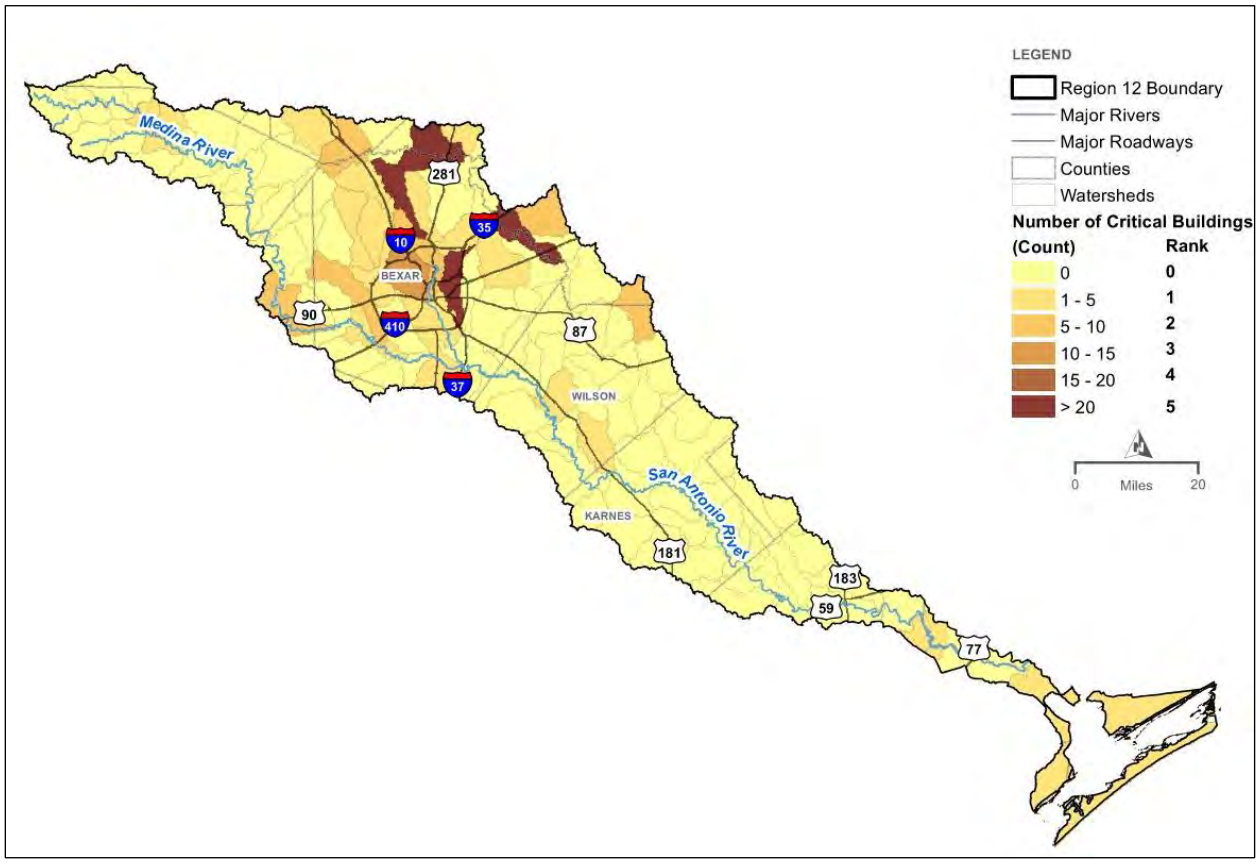
Figure 4-2. Scoring of Exposed Buildings



Exposed Critical Facilities

The exposure analysis in Chapter 2: Flood Risk Analysis conservatively identified critical facilities with a footprint within the existing condition 1 percent annual chance (100-year) event floodplain. Using this exposed critical facility dataset, each HUC-12 was populated with the number of exposed critical facilities located within each HUC-12 boundary. The exposed critical facility counts are relatively low across the region; however, there are six watersheds with five or more critical facilities potentially at risk of flooding. The scoring associated with the number of exposed critical facilities per watershed is displayed in Table 4-1, and the scoring results are displayed in Figure 4-3. The brown watersheds represent the HUC-12s with the greatest number of exposed critical facilities.

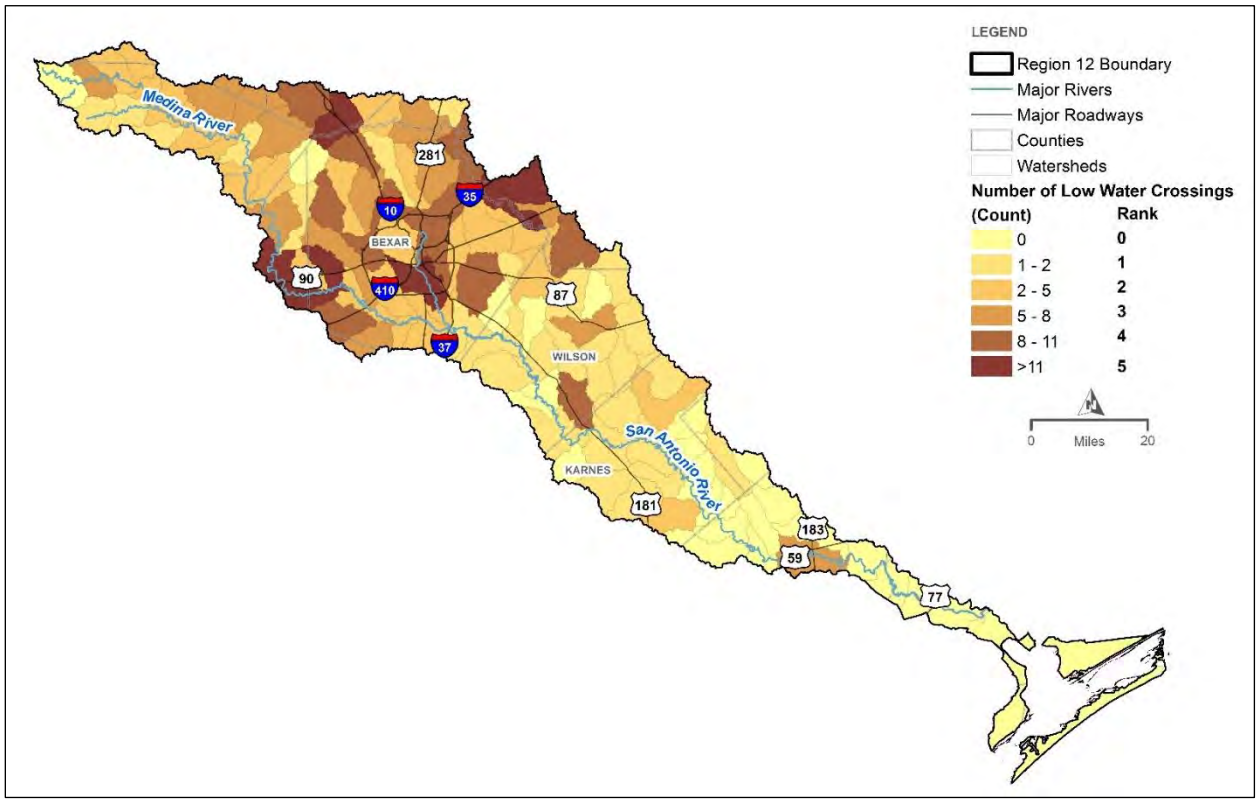
Figure 4-3. Scoring of Exposed Critical Facilities



Exposed Low Water Crossings

The exposure analysis in Chapter 2: Flood Risk Analysis identified low water crossings located within the existing condition 1 percent annual chance (100-year) event floodplain. Using this exposed low water crossing dataset, each HUC-12 was populated with the number of exposed low water crossings located within each HUC-12 boundary. The exposed low water crossing counts are relatively low across the region; however, there are 10 watersheds with 16 or more exposed low water crossings. The scoring associated with the number of exposed low water crossings per watershed is displayed in Table 4-1, and the scoring results are displayed in Figure 4-4. The tan and brown watersheds represent the HUC 12s with the greatest number of exposed low water crossings.

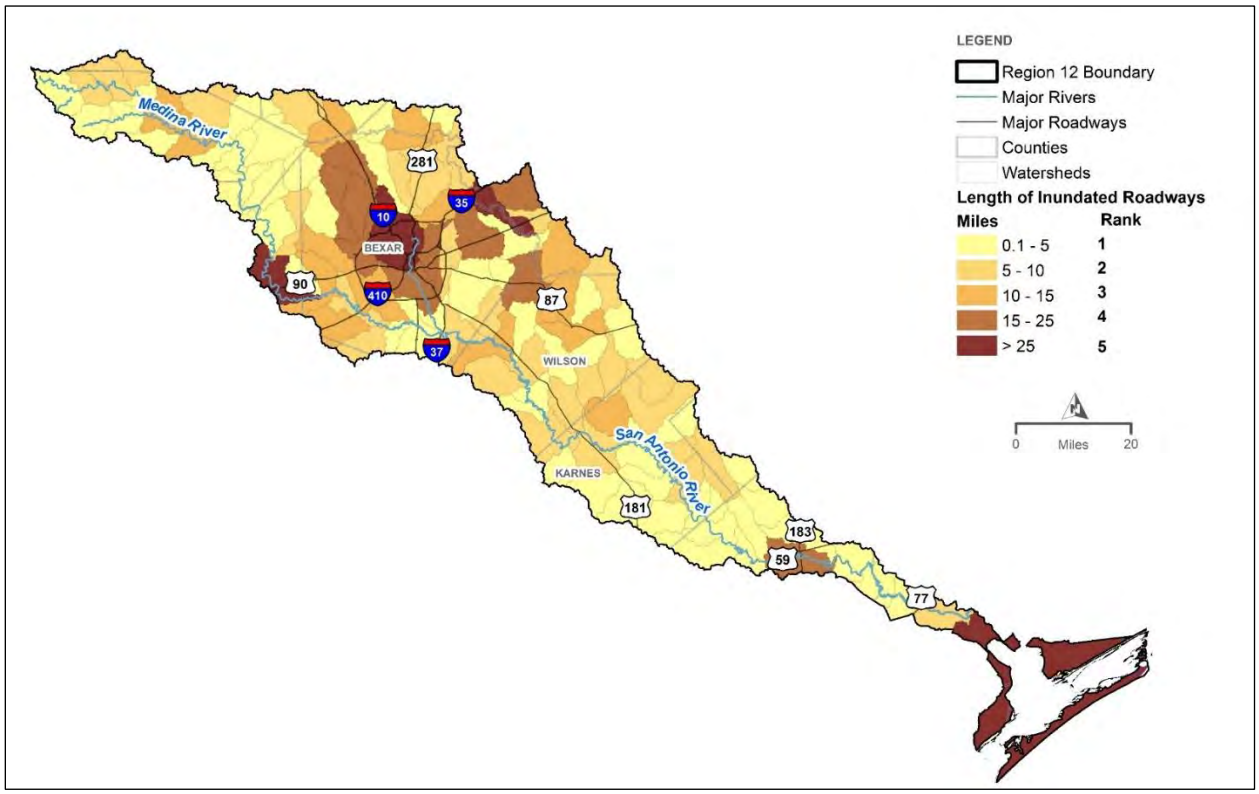
Figure 4-4. Scoring of Exposed Low Water Crossings



Inundated Roadway Segments

As described in Chapter 2: Flood Risk Analysis, inundated roadway segments were identified by clipping the Texas Department of Transportation (TxDOT) geospatial linework with the existing condition 1 percent annual chance (100-year) floodplain. Using this dataset, each HUC-12 was populated with the miles of inundated roadway segments located within each HUC-12 boundary. The inundated roadway mileage ranged widely across the region, with the majority of HUC-12s having less than five miles of roadway in the floodplain, while coastal HUC-12s may have over 30 miles of inundated roadway segments. The scoring associated with the miles of inundated roadway segments per watershed is displayed in Table 4-1, and the scoring results are displayed in Figure 4-5. The brown watersheds represent the HUC-12s with the greatest number of inundated roadway segments.

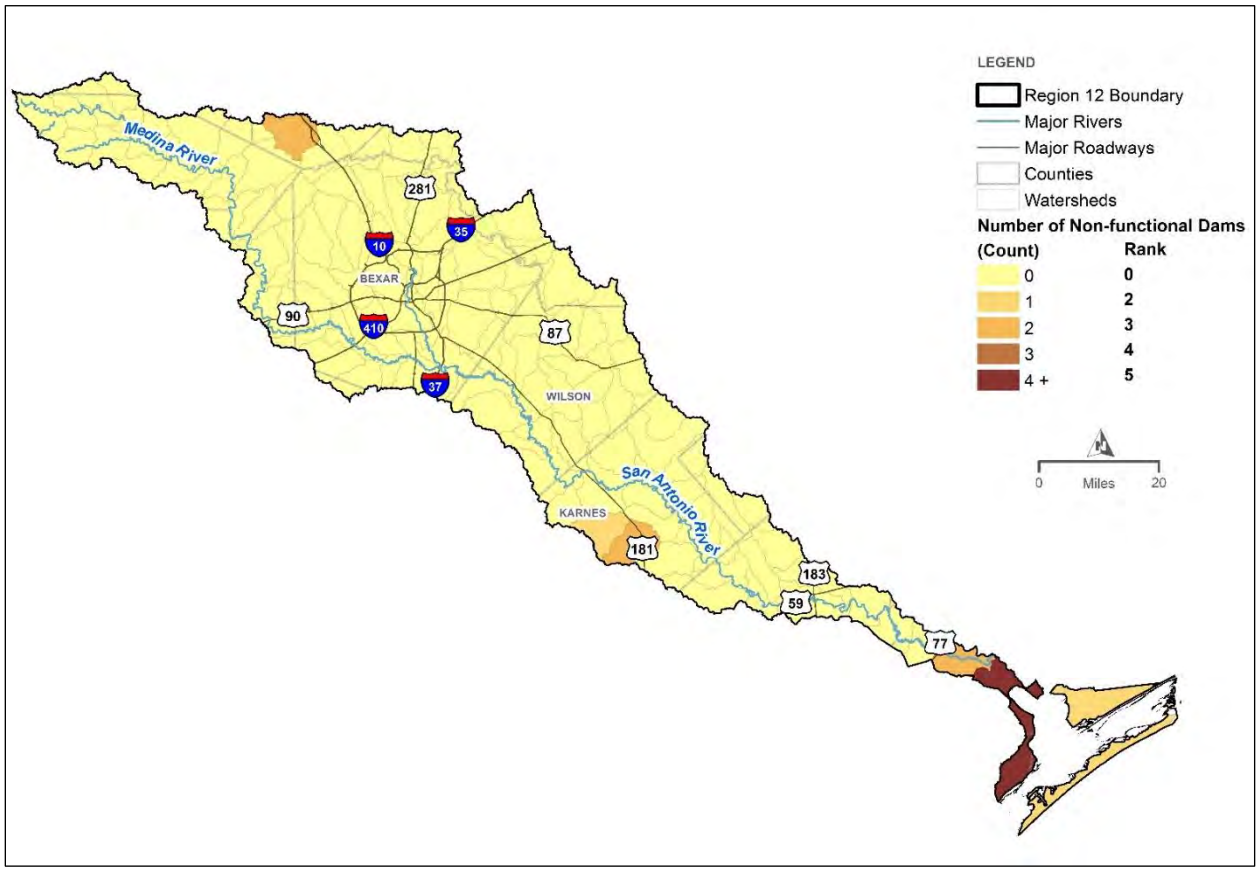
Figure 4-5. Scoring of Exposed Roadway Segments



Non-Functional Dams and Levees

Levees data in the San Antonio Region was obtained from the 2020 National Levee Database developed by the United States Army Core of Engineers (USACE). Dams data in the San Antonio Region was obtained from the 2020 National Inventory of Dams, developed by the United States Army Core of Engineers (USACE). Only the dams and levees that were hydraulically inadequate or deficient were used. Although many HUC-12s contained dams and levees, most HUC-12s did not contain structurally deficient or hydraulically inadequate dams and levees. The scoring associated with non-functional dams and levees is displayed in Table 4-1, and the scoring results are displayed in Figure 4-6. The brown watersheds represent the HUC-12s with the greatest number of inundated agricultural areas.

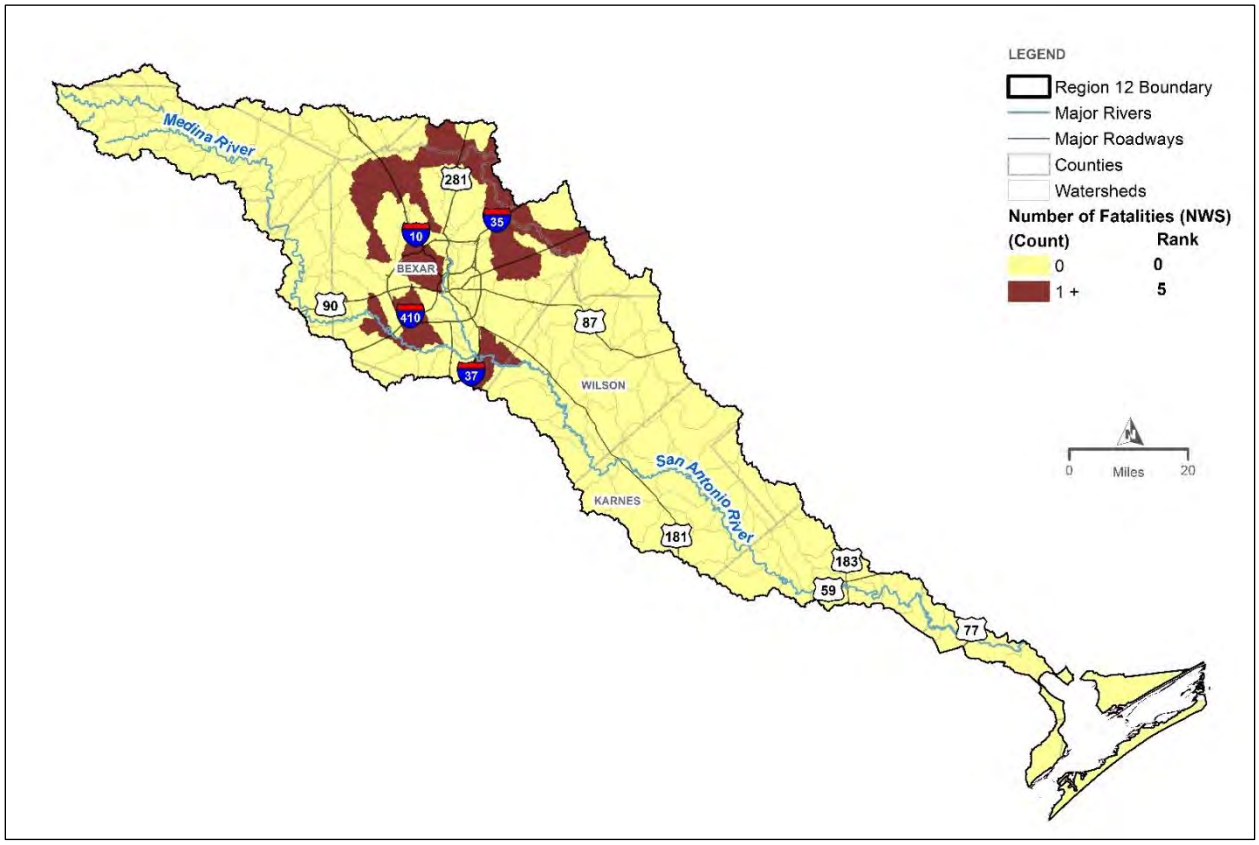
Figure 4-6. Non-Functional Dams and Levees



Fatalities

Fatalities data in the San Antonio Region was obtained from the National Weather Service (NWS). Most HUC-12s do not contain reported fatalities. The majority of fatalities were clustered around San Antonio metro area. The scoring associated with fatalities is displayed in Table 4-1, and the scoring results are displayed in Figure 4-6. The brown watersheds represent the HUC-12s with the greatest number of inundated agricultural areas.

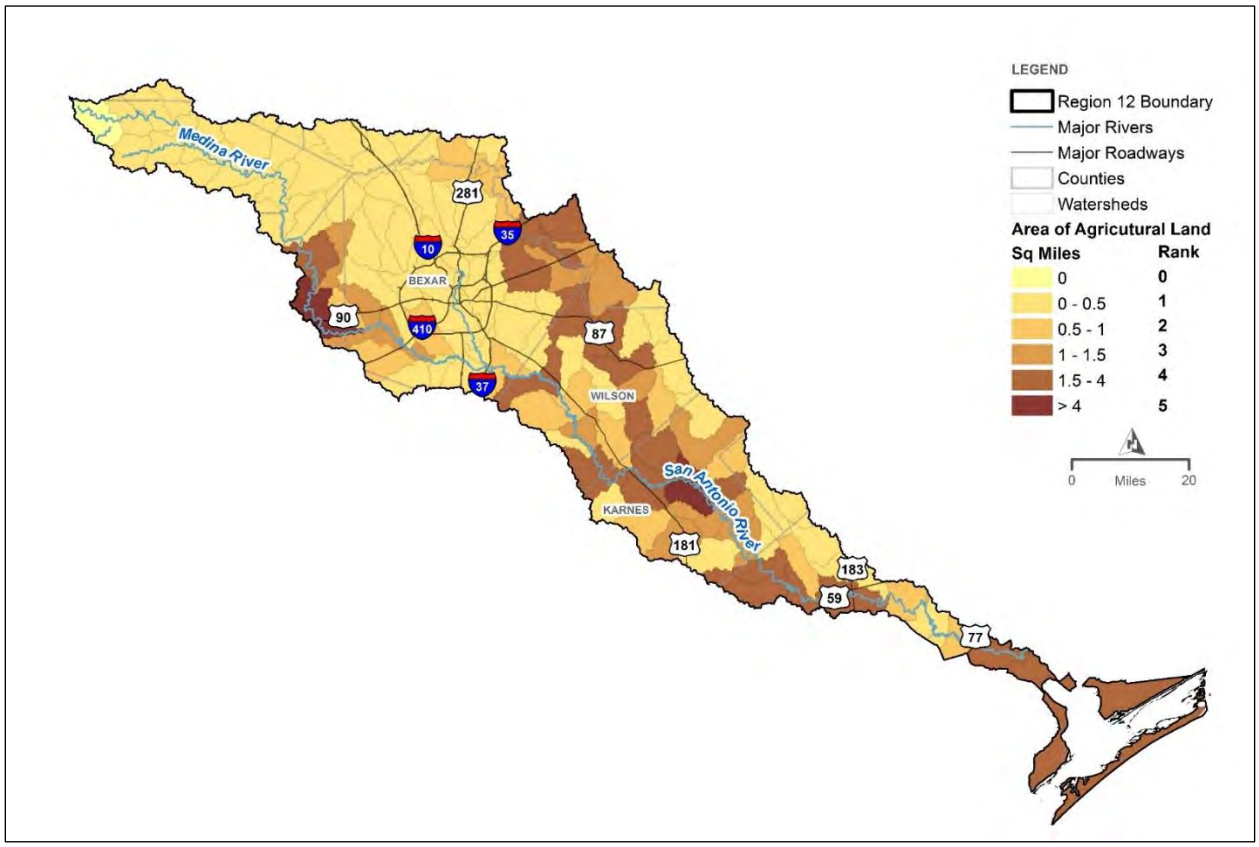
Figure 4-7. Fatalities Risk Score Over Region 12



Inundated Agricultural Areas

Agricultural land use data in the San Antonio Region was obtained from the 2020 Texas Cropland Data layer developed by the United States Department of Agriculture National Agricultural Statistics Service. The exposure analysis in Chapter 2: Flood Risk Analysis identified agricultural areas with a footprint within the existing condition 1 percent annual chance (100-year) event floodplain. Using this dataset, each HUC-12 was populated with the square miles of inundated agricultural areas within each HUC-12 boundary. As anticipated, the urban watersheds display less inundated agricultural areas than the rural watersheds. The scoring associated with the square miles of inundated agricultural areas per watershed is displayed in Table 4-1, and the scoring results are displayed in Figure 4-8. The brown watersheds represent the HUC-12s with the greatest number of inundated agricultural areas.

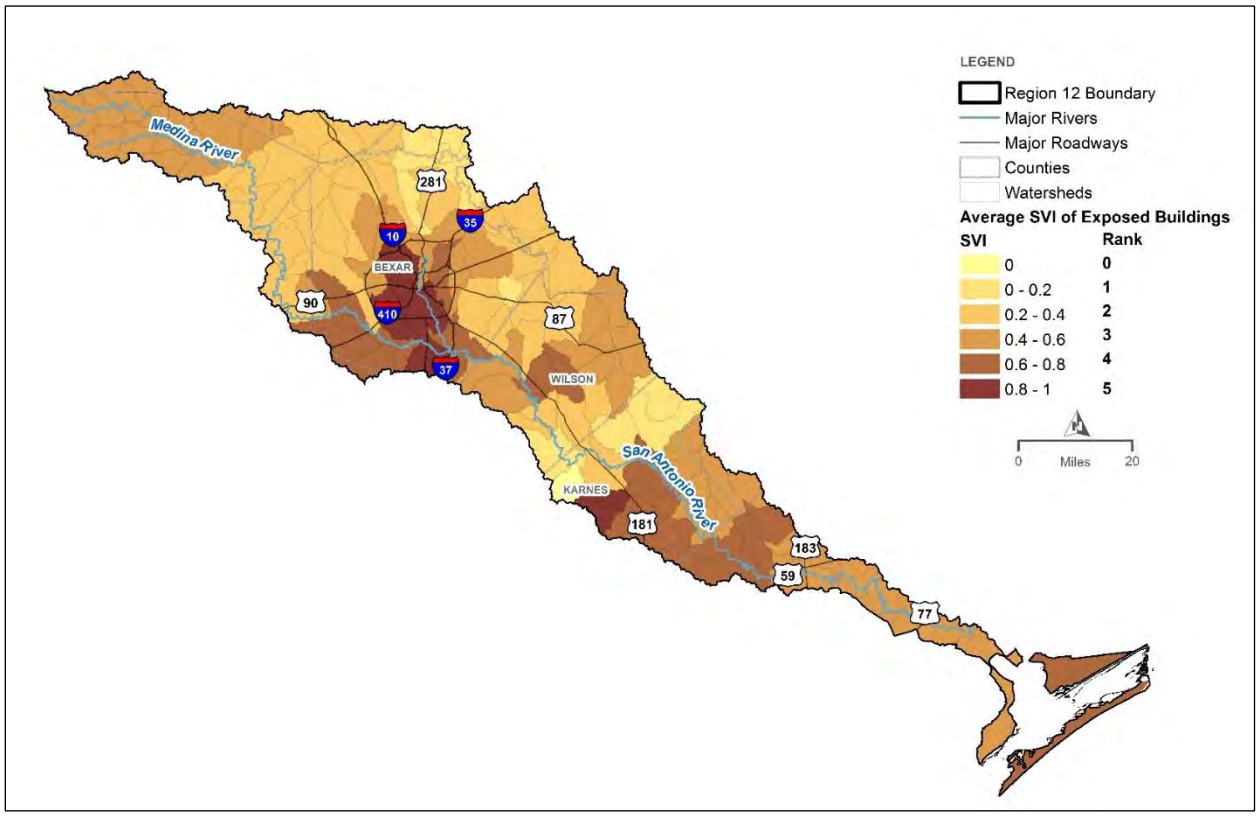
Figure 4-8. Scoring of Inundated Agricultural Areas



Average Social Vulnerability Index (SVI)

Social vulnerability is the measure of the capacity to weather, resist, or recover from the impacts of a hazard in the long and short term. SVI values are present within the building footprints dataset provided by the TWDB and used in the existing condition vulnerability analysis discussed in Chapter 2: Flood Risk Analysis. Using the SVI values for the exposed building dataset, each HUC-12 was populated with the average SVI within each HUC-12 boundary. Higher SVI values represent watersheds with greater vulnerability, while lower SVI values represent watersheds with higher resilience. The scoring associated with the SVI of exposed buildings per watershed is displayed in Table 4-1, and the scoring results are displayed in Figure 4-9. The brown watersheds represent the HUC-12s with the greatest social vulnerability.

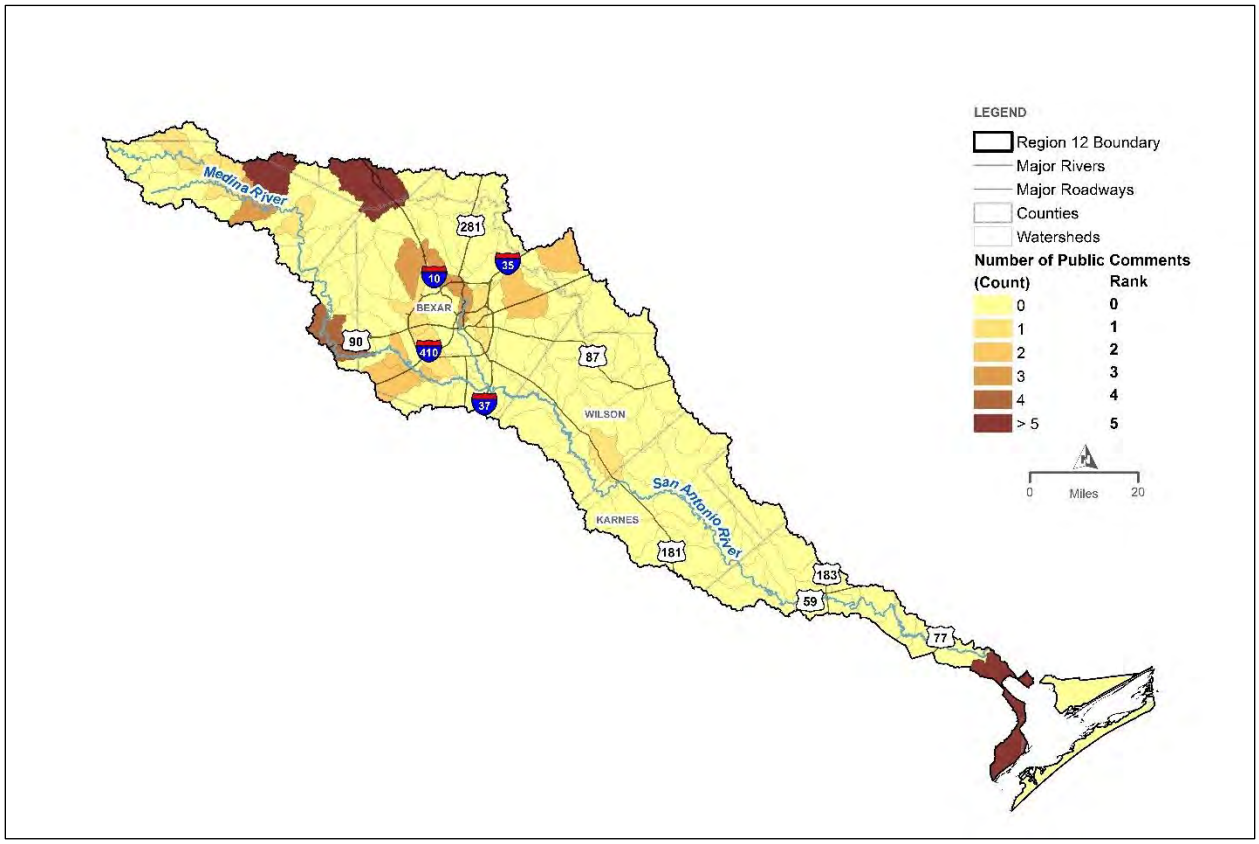
Figure 4-9. Average SVI For Exposed Buildings Risk Score Over Region 12



Public Comments

The Public comments dataset in the San Antonio Region was obtained from the public outreach efforts described in Chapter 10. Most of the comments were provided via the interactive web map developed for Region 12 to collect stakeholder comments on areas of flood risk in the planning region. While there were only a few comments, the planning group thought it was important to note them when evaluating the highest potential for flood risk in the region. The scoring associated with the public comments received per watershed is displayed in Table 4-1, and the scoring results are displayed in Figure 4-9. The brown watersheds represent the HUC-12s with the greatest number of comments received.

Figure 4-10. Public Comments Risk Score Over Region 12



Mitigation Needs Analysis Results

The process and scoring methodology described above were implemented across the entire San Antonio Region. The objective was to determine the areas of greatest known flood risk and flood mitigation needs. The San Antonio RFPG understands that this excersise in the evaluating of flood threat to the region is not a standard flood risk analysis and should only be use for flood planning purposes and not used to evaluate scoring/ranking of projects.

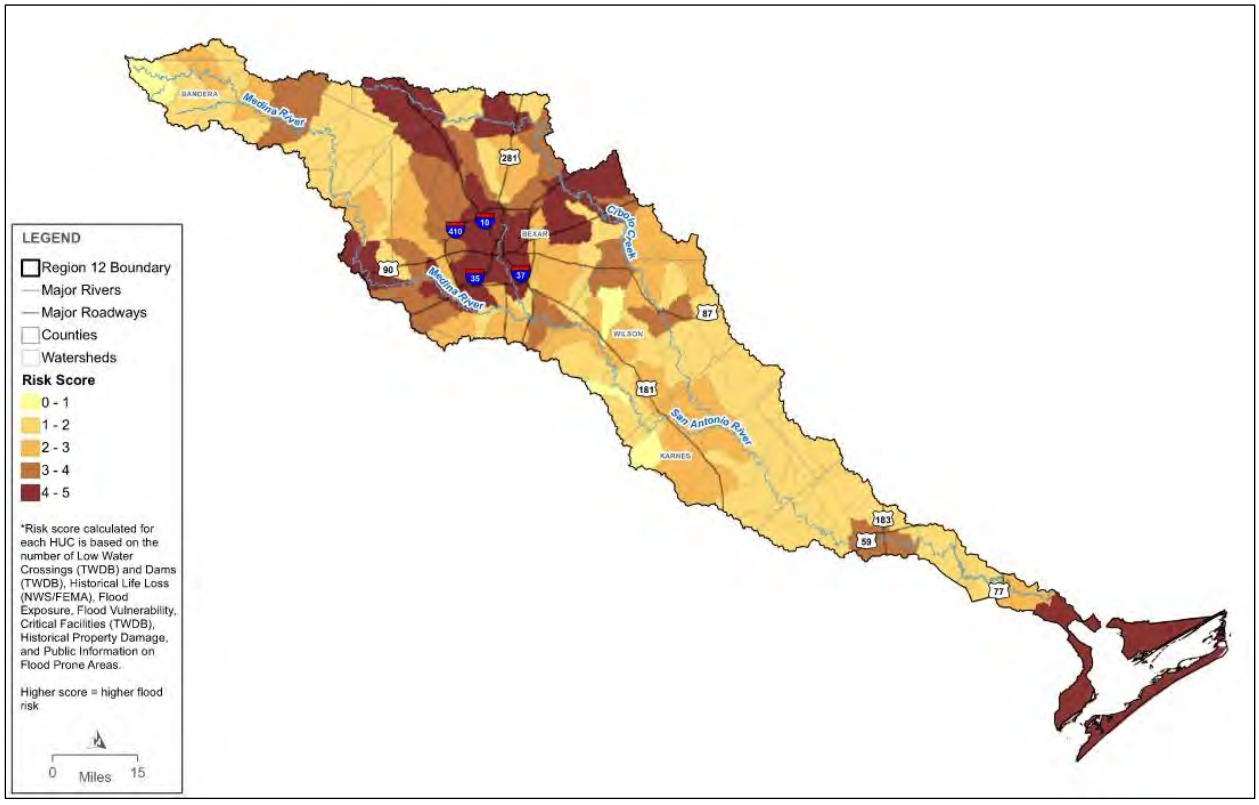
For each HUC-12 in the San Antonio Region, the scores from the 9 categories in the assessment matrix were added to obtain a total score based on Table 4-2 below.

Table 4-2. SARFPG Flood Risk Score

Total Pts	Risk Score
1-5	1
6-10	2
11-15	3
15-20	4
20+	5

Flood risk scores for each HUC-12 watershed in the SAFPR are shown in Figure 4-11. No risk is represented by a score of zero and the highest risk is represented by a score of 5. Risk scores of 2 or greater are considered moderate or high risk. The highest risk areas in the SAFPR are centralized in and around Bexar County and the coastal areas.

Figure 4-11. Overall Flood Risk per HUC 12 Watersheds



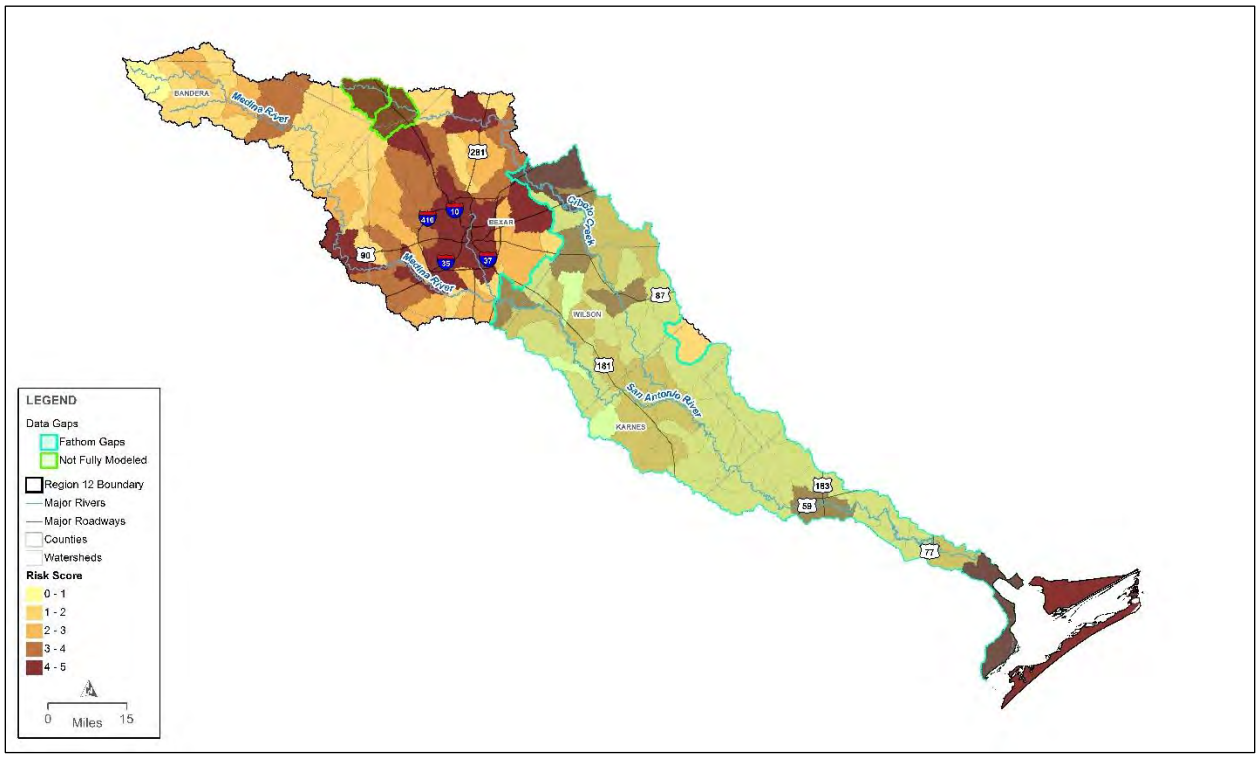
Based on the distribution of the final scores in this preliminary assessment, the watersheds with the greatest risk of flooding and the need for flood

management and mitigation activities are displayed in dark brown. It is important to note that low-scoring HUC-12 watersheds likely have flood risks, but the risk is relatively low compared to the others.

Flood Mitigation Needs – Modeling Gaps

Figure 4-12 overlays where flood modeling gaps have been identified with the overall flood risk. There are multiple high flood risk areas identified in the upper and lower basins. There are two tributaries in the City of Boerne surrounding areas that are not mapped, each in a different HUC totaling to two HUCs with some portion not mapped. In the lower basin fathom data was used for the 0.2% annual storm event flood boundaries. A total of 53 HUCs were identified as using fathom data. Investment in detailed hydrologic and hydraulic models should be prioritized in the gap areas with the highest overall flood risk.

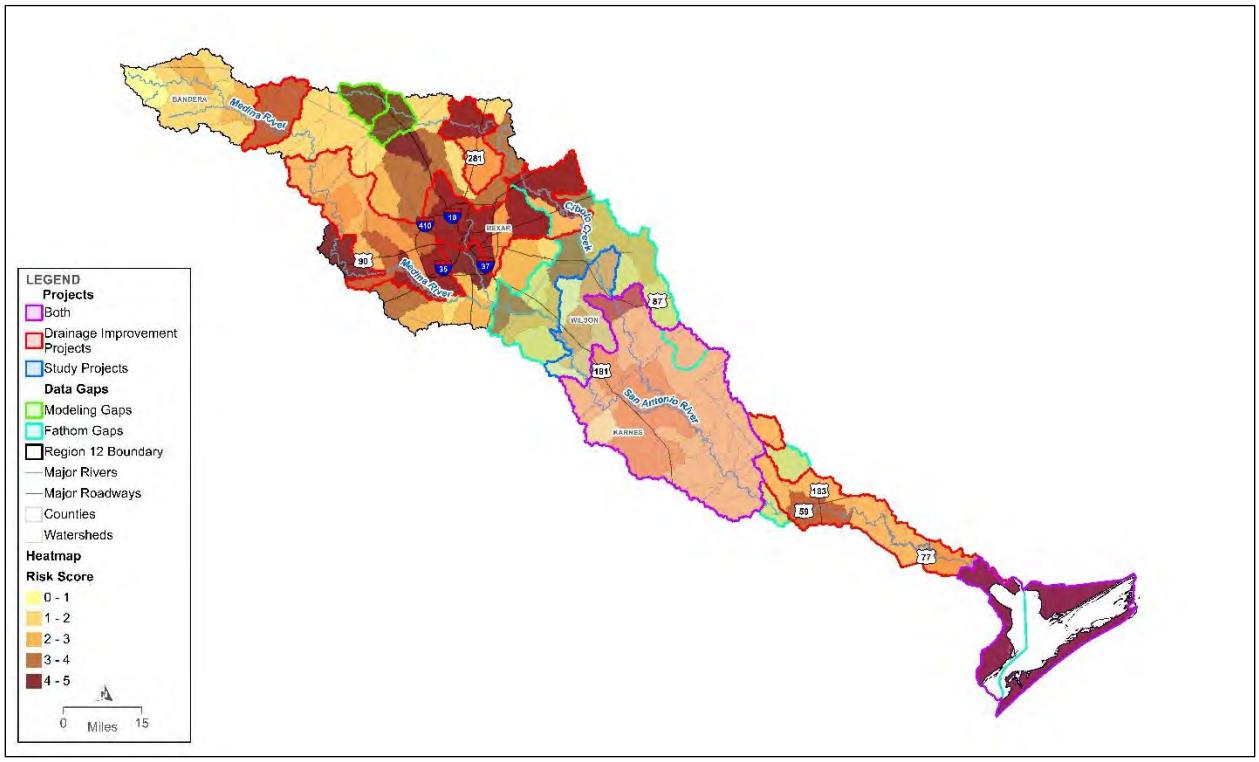
Figure 4-12. Modeling and Mapping Gaps Overlay w/ Overall Flood Risk



Flood Mitigation Needs – Flood Study / Project Gaps

Mapping and modeling gaps make it hard to determine the accurate flood risk for an area, these gaps can be mitigated with studies. High flooding risk areas can be reduced by incorporating flood mitigation projects. Figure 4-13 displays where on-going or proposed flood studies / projects that have been identified overlapping the overall flood risk and the modeling gaps. This map shows that there are many on-going flood mitigation efforts occurring across the SAFPR that could both fill in the gaps and reduce the risk. Investment in flood studies or projects in the remaining gap areas with high flood risk is recommended.

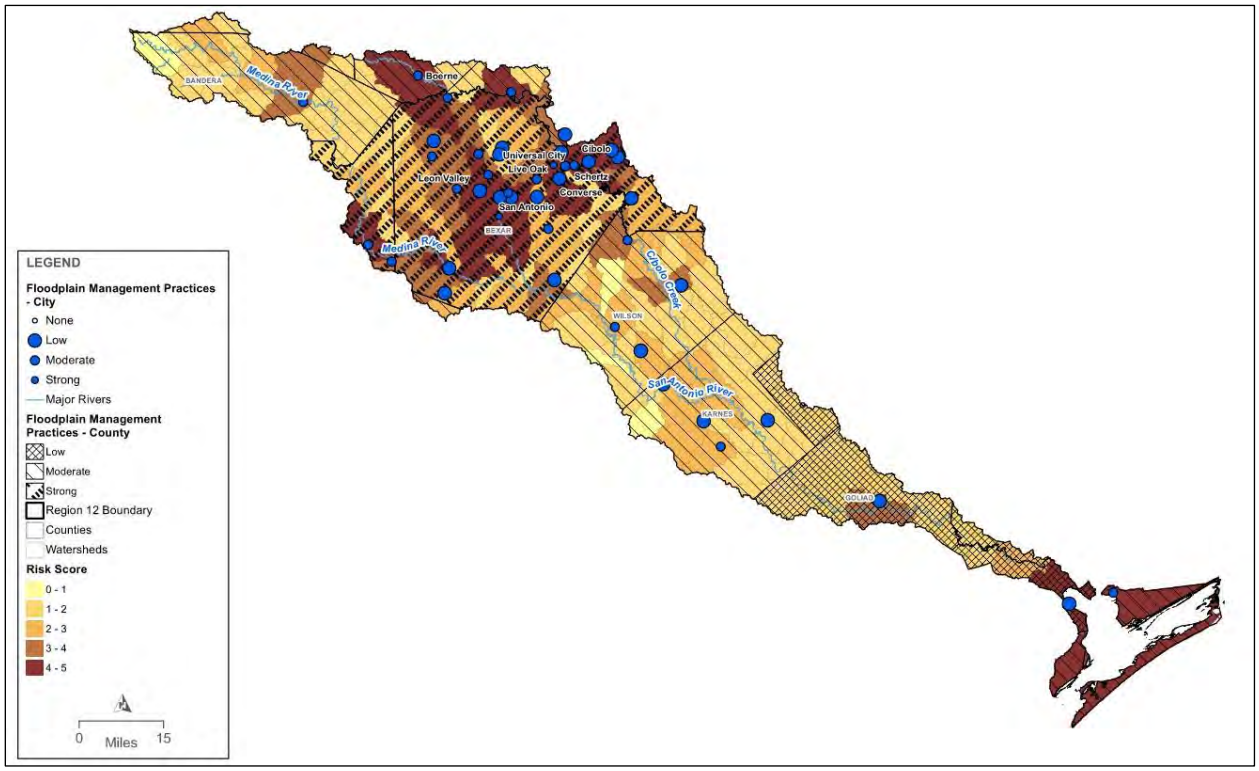
Figure 4-13. Flood Study / Project Gaps Overlay w/ Overall Flood Risk



4.2.5 Flood Mitigation Needs– Floodplain Management Gaps

Figure 4-14 overlays where the level of flood management practice is none or low with the overall flood risk. Flood management practices should be enhanced in areas with a high flood risk and no or low levels of floodplain management. Examples would be the enhancement of floodplain management in the lower basin where the levels for both the cities and counties are low to moderate.

Figure 4-14. Floodplain Management Overlay w/ Overall Flood Risk



5

Identification and Evaluation of Potential Flood Management Evaluations and Potentially Feasible Flood Management Strategies and Flood Mitigation Projects

5 Identification and Evaluation of Potential Flood Management Evaluations and Potentially Feasible Flood Management Strategies and Flood Mitigation Projects

This chapter's objective is to focus on Tasks 4b and 5 as prescribed in the State Flood Plan rules and guidelines. The scope of Task 4b involves the identification and assessment of potential flood management evaluations (FMEs) and potentially feasible flood management strategies (FMSs) and flood mitigation projects (FMPs). The scope of Task 5 involves further evaluation of identified FMEs, FMSs, and FMPs through a final recommended list of such actions to be incorporated into the Region 12 Flood Plan.

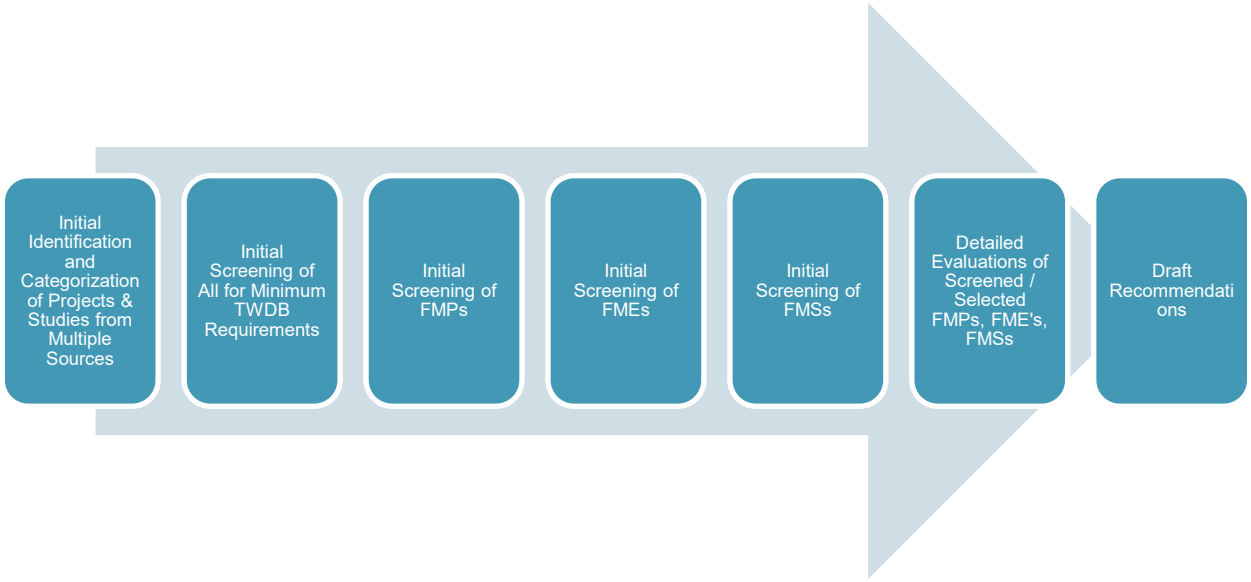
Tasks 4b and 5 build on subsequent Tasks 1 through 4a with the ultimate objective of recommending FMEs, FMSs, and FMPs that:

- Reduce flood risk identified in Task 2 – Existing and Future Conditions Flood Risk Analyses
- Address flood mitigation and floodplain management goals established in Task 3 – Evaluation and Recommendation of Flood Mitigation and Floodplain Management Practices and Goals
- Address flood mitigation needs identified in Task 4a – Flood Mitigation Needs Analysis

The SAFPR adopted a process for screening and evaluation of FMEs, FMSs, and FMPs as summarized in the graphic below based on requirements and guidance within the State Flood Plan rules and guidelines including region-specific interpretations and preferences. The San Antonio RFPG formed a "Task 5" Technical Committee in accordance with SFP rules to oversee the process and eventual recommendations from the Technical Consultant.

The SFP rules and guidelines allow for some region-specific flexibility and interpretation when recommending FMPs, FMEs, and FMSs for the RFP. The San Antonio RFPG's general approach to this flexibility was to be more inclusive as opposed to being more restrictive for this first cycle of the RFP. The following sections summarize the process and draft results of Tasks 4b and 5 for the SAFPR, Figure 5-1 shows the outlined process that will be discussed in this chapter.

Figure 5-1. Identification, Evaluation, and Recommendation Process



5.1 Identification and Evaluation of Potential FME, FMP, and Potentially Feasible FMS

FMEs, FMPs, and FMSs are broadly categorized as “flood risk reduction projects or practices” in the *Technical Guidelines*. Once potential flood risk reduction actions were preliminarily identified, a high-level screening process was used to confirm that potential actions had been sorted into their appropriate categorization.

5.1.1 Process to Identify FME, FMP, and FMS

The goal is to define and evaluate a wide range of potential actions to identify and mitigate flood risk across the SAFPR. These actions have been broadly categorized into the following three distinct types of actions as defined by the State Flood Plan rules and guidelines:

Flood Management Evaluation (FME): a proposed flood study of a specific flood-prone area that is needed to assess flood risk and/or determine whether there are potentially feasible FMSs or FMPs.

Flood Mitigation Project (FMP): a proposed project, either structural or non-structural, that has non-zero capital costs or other non-recurring cost and, when implemented, will reduce flood risk, or mitigate flood hazards to life or property.

Flood Management Strategy (**FMS**): a proposed plan to reduce flood risk or mitigate flood hazards to life or property.

The *Technical Guidelines* also list several potential project types for each subcategory, summarized below in Table 5-1.

Table 5-1. FMP, FME, FMS Project Types

Flood Risk Reduction Project Category	Project Types
Flood Management Evaluation (FME)	• Watershed Planning • H&H Modeling • Flood Mapping Updates • Regional Watershed Studies • Engineering Project Planning • Feasibility Assessments • Floodproofing • Preliminary Engineering (alternative analysis and up to 30% design) • Property or Easement Acquisition • Regulatory Requirements for Reduction of Flood Risk • Studies on Flood Preparedness
Flood Mitigation Project (FMP)	Structural • Low Water Crossings or Bridge Improvements • Infrastructure (channels, ditches, ponds, stormwater pipes, etc.) • Regional Detention • Regional Channel Improvements • Storm Drain Improvements • Reservoirs • Dam Improvements, Maintenance, and Repair • Flood Walls/Levees • Nature Based Projects – living levees, increasing storage, increasing channel roughness, increasing losses, de-synchronizing peak flows, dune management, river restoration, riparian restoration, run-off pathway management, wetland restoration, low impact development, green infrastructure, playas improvements • Comprehensive Regional Project – includes a combination of projects intended to work together

Flood Risk Reduction Project Category	Project Types
	Non-Structural • Property or Easement Acquisition • Elevation of Individual Structures • Flood Readiness and Resilience • Flood Early Warning Systems, including stream gauges and monitoring stations • Floodproofing • Regulatory Requirements for Reduction of Flood Risk
Flood Management Strategy (FMS)	None specified; at a minimum, regional flood planning groups (RFPGs) should include as FMSs any proposed action that the group would like to identify, evaluate, and recommend that does not qualify as either a FME or FMP. Five general categories were identified by the San Antonio RFPG; • Flood mitigation education and outreach • Area-wide low water crossing flood mitigation studies and projects • Identify and fund buyout programs • Develop regional flood warning measures • Strengthen flood management regulations

Identifying potential FMEs and potentially feasible FMPs and FMSs begins with completing the flood mitigation analysis (Chapter 4) to identify the areas with the greatest gaps in flood risk knowledge and the areas of greatest known flood risk. Based on the results of this analysis, several sources of data were used to develop a list of potential flood risk reduction actions that may address the basin's needs. The data includes information compiled under previous tasks:

- Existing flood infrastructure, flood mitigation projects currently in progress, and known flood mitigation needs (Task 1).
- Existing and future flood risk exposure and vulnerability (Tasks 2A and 2B).
- Floodplain management and flood protection goals and strategies developed by the regional flood planning group (RFPG) for the Region (Tasks 3A and 3B); and Stakeholder input.

The initial list of potential actions (FMP, FME, FMS) identified for screening and evaluation were collected from three primary sources:

- Data collected from initial introductory community outreach,

- Other community drainage master plans or capital improvement programs (CIPs), and
- Hazard Mitigation Plans for each community within the region
- Table 5-2 below documents the sources from which projects were collected.

Table 5-2. List of Studies Relevant to the RFP

Source	Jurisdiction	Counties	Source Year
Barbara Drive Drainage Study	City of San Antonio	Bexar	2021
Boerne Master Drainage Plan	City of Boerne	Kendall	2021
Castroville Drainage Master Plan	City of Castroville	Medina	2022
Cibolo Creek Watershed Holistic Master Plan	City of Bulverde, City of San Antonio, Wilson County	Bexar, Comal, Wilson, Wilson/ Guadalupe	2018
City of Bulverde Mapping Improvements Cibolo Creek Tributary 19 Drainage Report	City of Bulverde	Comal	2016
City of Bulverde Mapping Improvements Indian Creek Drainage Report	City of Bulverde	Comal	2016
City of Bulverde Mapping Improvements Lewis Creek Watershed Phase 2 Alternative Analysis Drainage Report	City of Bulverde	Comal	2016
City of Fair Oaks Ranch Master Drainage Plan	City of Fair Oaks Ranch	Bexar	2018

Source	Jurisdiction	Counties	Source Year
Holbrook Road Preliminary Engineering Report	City of San Antonio	Bexar	2021
Holistic Watershed Master Plan Wilson, Karnes, and Goliad Counties	City of Falls City, City of Kenedy	Karnes	2015
Holistic Watershed Master Plan Wilson, Karnes, and Goliad Counties, Flood Issues Volume	Goliad County, Karnes County	Karnes, Goliad	2015
Huebner Creek CAP 205	City of Leon Valley	Bexar	2021
Judson and Lookout Project Narrative	City of San Antonio	Bexar	2016
Karnes and Wilson Counties Hazard Mitigation Plan	City of Falls City, City of Floresville, City of Karnes City, City of Kenedy, City of La Vernia, City of Poth, City of Runge, City of Stockdale, Karnes County, La Vernia ISD, Wilson County	Karnes, Wilson	2020
Leon Creek Watershed Master Plan Phase 3	City of San Antonio	Bexar	2011
Medina County HMAP Adopted	City of La Coste	Medina	2020
Medina River Holistic Watershed Master Plan	City of San Antonio, Medina County	Bexar, Medina	2015
Overall Preliminary Drainage Report	La Vernia	Wilson	2022

Source	Jurisdiction	Counties	Source Year
CoSA Stormwater Planning Studies (Bond Project Summary Sheet)	City of San Antonio	Bexar	2010-2022
Projects for Flood Risk in Helotes	City of Leon Valley	Bexar	2016
Salado Creek Watershed Master Plan Report Phase 1	City of San Antonio	Bexar	2011
SARA: Projects for Flood Risk Reduction Helotes	City of Helotes	Bexar	2016
Thames Drainage Channel Improvements	City of San Antonio	Bexar	2016
Upper San Antonio River Master Plan	City of San Antonio	Bexar	2013-2021
Upper Woodlawn Lake Drainage Study	City of Balcones Heights	Bexar	2014
Wilson County Watershed Master Plan	City of Floresville, City of La Vernia, City of Poth, City of Stockdale, Wilson County, Wilson County/TxDOT	Wilson	2012

Flood Mitigation Projects (FMPs)

One of the primary objectives of the SFP is to identify and fund flood mitigation projects for implementation, therefor, identifying FMPs that meet SFP criteria and requirements for inclusion into the SFP is priority one. Per the TWDB rules, of the four common phases of emergency management shown below, the regional flood planning process focuses primarily on mitigation projects but may also include preparedness projects.

A flood mitigation project, by TWDB definition, is “a proposed project that has a non-zero capital cost or other non-recurring costs and that when implemented will reduce flood risk and mitigate flood hazards to life or property”. FMPs are further categorized as either structural or non-structural.

Structural FMPs

Structural FMPs are defined as building or modifying infrastructure to change flood characteristics to reduce flood risk. They are infrastructure projects with advanced analysis and 30% - 100% design development including construction plans, specifications, and cost estimates. Structure FMPs include one or a combination of the following project types:

- Culvert/Bridge Improvements
- Channel Improvements
- Flood Detention
- Flood Walls / Levees
- Flood Diversion
- Storm Drain Improvements
- Coastal Protections

Culvert and Bridge Improvements - Typical culvert and bridge improvements address roadway flooding at waterways ranging from large riverine crossings to roadway crossings at smaller creeks and streams. Low water crossings are defined by the TWDB rules as roadway creek crossings that are overtopped by a 50% annual chance storm event (2-year storm). Bridges and culverts that have insufficient area to convey higher flows tend to overtop frequently, preventing the passage of vehicles during high flow times and produce excess backwater that may result in flooding of upstream properties. Bridges and culverts that overtop frequently pose a significant threat to public safety as most flood related deaths occur at these types of crossings. Culvert and bridge improvement FMPs are often part of larger flood risk reduction projects (such as channel widening projects) and not necessarily just single low water crossing projects.

Channel Improvements - Channel improvements generally lower flood levels by improving the hydraulic efficiency of a stream or roadside channel by enlarging, straightening, and/or reducing the channel friction by smoothing the contours and/or lining of the channel banks and removing obstructions. Channel improvements can reduce flood risk to large populations but can require significant modifications to mitigate 1% annual chance floods (100-year foods). Channel improvement projects typically require land acquisition and can be costly and difficult to permit and implement in urbanized areas. Channel improvements can incorporate nature-based natural channel design techniques to help provide ecological function uplift and reduce environmental impacts as well as erosion risk. In urban settings, channel improvements can

include recreational, cultural, and educational features providing socio-economic benefits.

Flood Detention – Typical flood detention projects are regional in scale ranging from large flood control reservoirs to smaller regional flood detention ponds and can provide benefit to relatively large populations and or agricultural areas. Regional flood detention facilities require significant storage volume to mitigate 1% annual chance floods (100-year foods) requiring large tracts of land and can be costly and difficult to implement in urban areas. They also require long-term operations and maintenance costs. Flood detention can reduce flood risk and provided additional benefits such as recreation and water supply but can create dam safety risks and environmental impacts.

Floodwalls/Levees – Levees and floodwalls confine out-of-bank flows to areas along rivers and streams to reduce flood risk to properties located in the natural flood plain. The confinement of floodwaters using levees or floodwalls considerably alters the characteristics of flood flows. Reduction of natural valley storage capacity in the floodplain can increase peak discharges for a given flood and increase flood damages downstream of a project. Land must be reserved behind levees or floodwalls for ponding areas, and impounded water must be retained or pumped over the levee. Levees are most applicable where the floodplain is wide and development is located a considerable distance from the channel. Levees can cause catastrophic damage if overtopped by a flood greater than their design flood. Therefore, the design flood for levees is typically the 100-year flood at a minimum, with additional freeboard to reduce risk of overtopping. Levees and floodwall facilities can require significant land acquisition and can be costly and difficult to implement in urban areas. They require closures at road and railroad crossings and interior drainage measures such as stormwater pump stations. They also require long-term operations and maintenance costs typically associated with FEMA certification. Levees and floodwalls can reduce flood risk but can create levee safety risks, environmental impacts, and negative socio-economic impacts.

Flood Diversions - Typical flood diversion projects include diversion channels or diversion conduits (tunnels). Diversion channels intercept flood waters upstream of populated areas and convey them safely above ground to a discharge point downstream of the populated areas. They require significant land acquisition and can be difficult and costly to build in urbanized areas. Diversion tunnels convey flood water underground to reduce flood risk to large, populated areas. They required long-term O&M costs. Flood

diversions can reduce flood risk but can cause downstream hydrologic impacts and environmental impacts.

Storm Drain Improvements – Excessive street flow in urbanized areas can cause flooding of residential and commercial structures, safety issues to traffic, damage to pavement, and in some cases life loss. Installing new storm drain systems to collect runoff and convey it underground to a receiving stream is a typical solution for improving street flow and diverting stormwater around problem areas. Storm drain improvements can reduce flood risk to large populations but can require significant sizes of conduit or box sections to mitigate 1% annual chance floods (100-year foods). Storm drain improvement projects typically require other measures to mitigate increases in flood discharges to downstream areas and can be costly and difficult to implement in urbanized areas.

Coastal Protections – Coastal flood protections reduce flood risk to large populations from coastal storm surges and combined riverine and coastal effects. Typical coastal protections include coastal levees, dikes, and seawalls and often include beach erosion countermeasures such as riprap revetments. Similar to inland levees and floodwall facilities, coastal protections can require significant land acquisition and can be costly and difficult to implement in urban areas. They require closures at road and railroad crossings and interior drainage measures such as stormwater pump stations. They also require long-term operations and maintenance costs typically associated with FEMA certification. Coastal protections can reduce flood risk but can create levee safety risks, environmental impacts, and negative socio-economic impacts.

Nature-based Features – FMPs can include nature-based features as part of flood mitigation solutions where applicable including, but not limited to, stream and coastal restorations, wetlands, natural channel design, other green infrastructure elements, and land preservation. Although nature-based solutions generally do not provide significant flood risk reduction to 1% annual chance flood hazards (100-year floods), they can improve stormwater quality, provide ecological function uplift, and reduce riverine and coastal erosion risk.

Non-Structural FMPs

Non-structural FMPs are flood mitigation projects or actions that change the way people interact with flood risk and move people out of harm's way. These types of projects do not involve modifications to the watershed or flood infrastructure and therefore do not have negative impacts to adjacent areas or environmental impacts. Non-structure FMPs include one or a combination of the following project types:

- Regulatory Improvements
- Floodplain Evacuation (Property Acquisition/"Buyouts")
- Flood Warning
- Floodproofing
- Flood Readiness and Resilience

Regulatory Improvements – Adoption of regulations by local governments provide legal measures to control development in flood prone areas and to prevent the occurrence of future drainage related problems. Regulatory improvements create or improve local regulatory requirements such as floodplain development ordinances and drainage design criteria related to planning, zoning, land development, and building codes. Regulatory improvements include requirements of those proposing new developments or redevelopment to identify flood hazard areas and keep people out of them. This type of non-structural FMP has very low capital cost compared to structural FMPs. Regulation of flood prone land increases the likelihood that such property will be properly used in the best interest of public health, safety, and welfare. However, such regulations offer no relief for existing development.

Floodplain Evacuation – Floodplain evacuation involves acquiring real property at high risk of incurring flood damage and loss of life. Typically referred to as floodplain "buyouts", these can be voluntary or involuntary. One major advantage of this type of FMP is that it eliminates flood risk leaving no residual risk. Buyouts are costly up front, but typically have no long-term O&M costs. Buyouts can provide environmental enhancements by creating open space, riparian restoration, and park land, but can also have negative socio-economic impacts.

Flood Warning – Typical flood warning measures or systems provide means for temporary evacuation of flood hazard areas during floods to reduce flood risk. These types of measures range from simple stream gauges and warning signals to more complex early flood warning systems that can forecast floods and warn large populations to evacuate. Flood warning systems save lives but do not save property. This type of non-structural FMP has low capital costs compared to structural FMPs.

Flood Proofing – Floodproofing generally consists of providing watertight coverings for door and window openings of habitable structures, raising structures in place, raising access roads and escape routes, constructing levees and floodwalls around individual or groups of buildings or critical infrastructure, and waterproofing of walls and mechanical and electrical

equipment. Floodproofing is more easily applied to new construction and more applicable where flooding is of short duration, low velocity, infrequent, and of shallow depths. Floodproofing is appropriate for locations where other structural flood mitigation alternatives are not feasible. Floodproofing can mitigate risk from 1% annual chance floods (100-year foods) but does not eliminate all flood risk.

Flood Readiness and Resilience – Typical flood readiness and resilience projects or actions focus on improving flood preparedness and response to save lives and include developing flood response plans, flood or hurricane evacuation plans, and flood or dam emergency action plans. This type of non-structural FMP has low capital costs compared to structural FMPs.

Flood Management Evaluations (FMEs)

A flood management evaluation (FME), by TWDB definition, is “a proposed flood study of a specific, flood-prone area that is needed in order to assess flood risk and/or determine whether there are potentially feasible FMSs or FMPs.” There are 4 general categories of FMEs as described below. An FME may include any or all of these study elements or phases.

Flood hazard modeling and mapping / risk identification studies – These are studies to quantify flood risk in areas where significant flood risk is thought to exist but do not have flood risk data or have insufficient flood risk data. An example of this type of FME is a floodplain modeling and mapping study of a chronic flood prone area with a certain population at risk that has not been studied before.

Flood mitigation alternatives analysis / feasibility studies – These FMEs involve using flood hazard and flood risk data for a known flood problem area to evaluate structural and non-structural flood mitigation alternatives or project types, as the FMP types described above, to provide the most flood risk reduction benefit for the least amount of capital cost. These FMEs include a benefit cost analysis and include evaluations of other factors such as environmental constraints and permitting requirements, land acquisition and utility relocation requirements, constructability and other constraints, and public input and social factors.

Preliminary Engineering studies – Once a flood prone area has been studied and a preferred flood mitigation alternative or set of alternatives have been identified from a feasibility study, a preliminary engineering study of these alternatives would develop at least a 30% level design including initial plans, permitting assessments, and refined capital cost estimates. Potential FMPs that have previously been studied within the region but do not meet the standards set by the TWDB for FMPs will fall into this category of FME.

Flood Management Strategies (FMSs)

Proposed actions that did not qualify as an FMP or FME were considered as "strategies". The term flood management strategy is not a typical term used in the flood mitigation industry, however, in a few cases, there were community sponsor-specific strategies provided to the San Antonio RFPG that met the TWDB definition. A flood management strategy, by TWDB definition, is "a proposed plan to reduce flood risk or mitigate flood hazards to life or property. A flood management strategy may or may not require associated Flood Mitigation Projects to be implemented". Regional or subregional FMS's generally fell into the following five categories:

- Flood mitigation education and outreach
- Area-wide low water crossing flood mitigation studies and projects
- Identify and fund buyout programs
- Develop regional flood warning measures
- Strengthen flood management regulations

5.1.2 Screening of FMPs, FMEs, and FMSs

TWDB requirements for Task 4B state that each RFPG is to develop and receive public comment on a "…proposed process to be used by the RFPG to identify and select flood management evaluations, flood mitigation strategies, and flood mitigation projects". This process, once adopted by the RFPG, is to be documented and such documentation is to be included in the Technical Memorandum, the Initial Draft Regional Flood Plan, and the adopted Regional Flood Plan.

The following describes the proposed process being considered by the RFPG and on which public comment will be taken, both during the December RFPG meeting and via written comments submitted through the RFPG's website. The process, as described below, was designed to conform with TWDB requirements as expressed in the rules, the scope-of-work for the regional flood planning process, and technical guidelines.

Step 1. Conduct an initial screening of Projects, Evaluations, and Strategies that were received by or developed in conjunction with floodplain management communities/project sponsors:

In this first step, screening is conducted based on minimum TWDB requirements. The screening criteria applied in this step are:

- The evaluation/strategy/project is related to a flood mitigation or floodplain management goal.

- The evaluation /strategy/project meets an emergency need.
- The evaluation /strategy/project addresses a flood problem with drainage area of 1 square mile or greater.
- The evaluation /strategy/project reduces flood risk for the 100-year (1% annual chance) flood.
- Exceptions for level of flood risk reduction or problem area size include instances of flooding of critical facilities, transportation routes, or other factors as determined by the RFPG.

Step 2-1. Screening of Projects (FMPs):

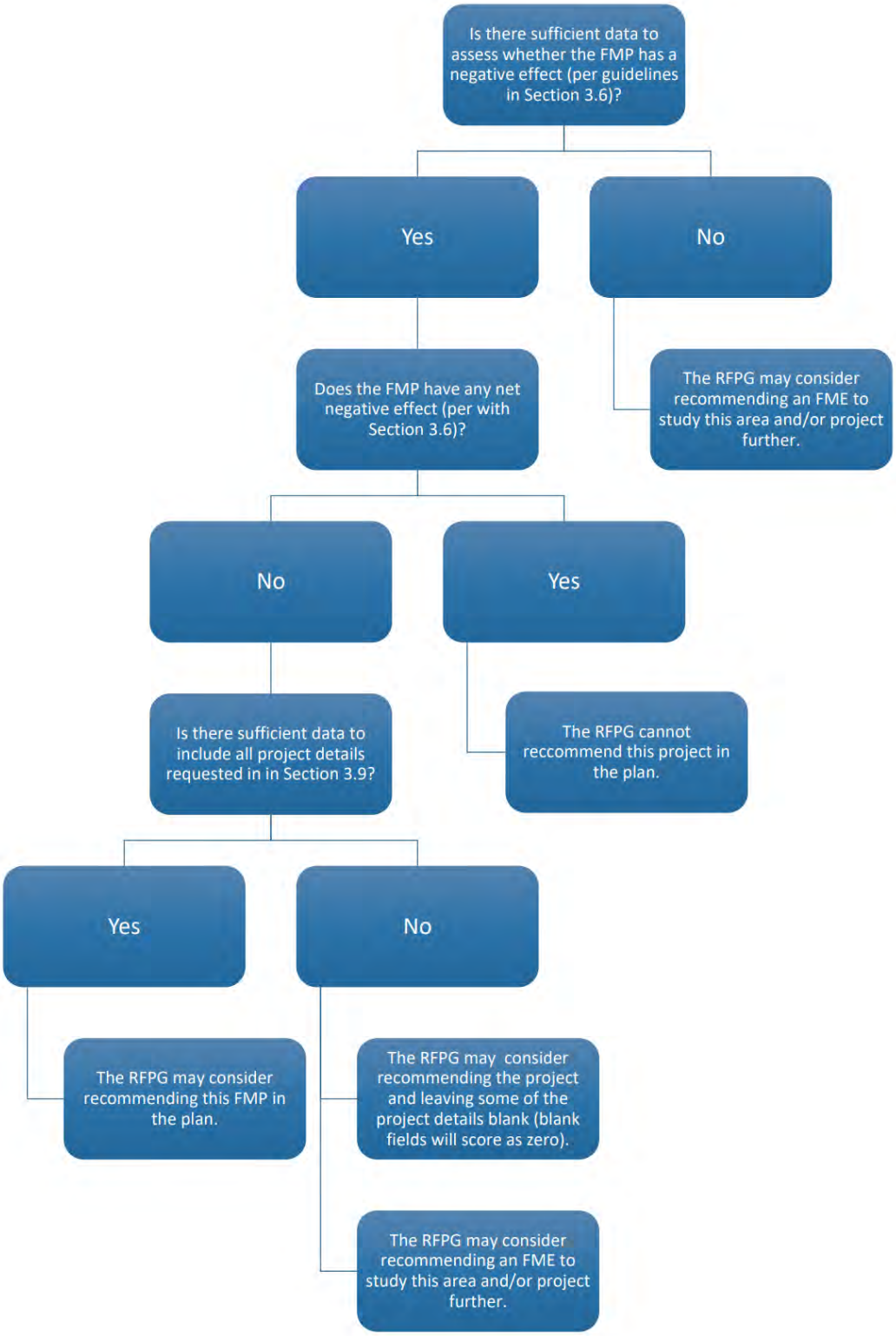
In the second step, potential Flood Mitigation Projects

(FMPs) are subjected to a screening-level evaluation based on the TWDB Technical Guidelines for Regional Flood Planning (April 2021) and specifically Figure 5 FMP flowchart, Figure 5-2. If a potential FMP does not satisfy the screening criteria in this step, it will then become a potential Flood Management Evaluation. There are three criteria that are applied in this step are: “sufficient data”, “no negative effect”, and “project details”.

- **Sufficient data** - The data upon which an assessment of no negative effect has been made must be reliable and have minimal uncertainty. H&H modeling, mapping, and basis for mitigation analysis must generally meet Section 3.5 of TWDB technical guidelines.
- **No negative effect** - The potential Project must not have negative impact on the 100-year (1% annual chance) flood event. It must not raise the flood elevation or increase discharge of the 100-year flood event. Any of the following will disqualify the potential project in this screening step:
  - Potential project increases inundation on homes, commercial buildings, critical facilities, and other structures.
  - Potential project increases inundation beyond existing or proposed ROW or easements.
  - Potential project increases inundation beyond existing drainage infrastructure capacity.
- **Project details** – Data used to define the potential project must include sufficient project details as described in Section 3.9 of TWDB technical guidelines, including but not limited to the following:
  - Flood severity level metrics
  - Flood risk/damage reduction metrics
  - Estimated capital and O&M costs

- Benefit/Cost ratios
- Environmental benefits/impacts
- Potential for natural flood mitigation components
- Implementation constraints
- Water supply benefits

Figure 5-2. FMP Flowchart



Step 2-2: Screening of Evaluations (FMEs):

Flood Management evaluations may fall into one of three general categories:

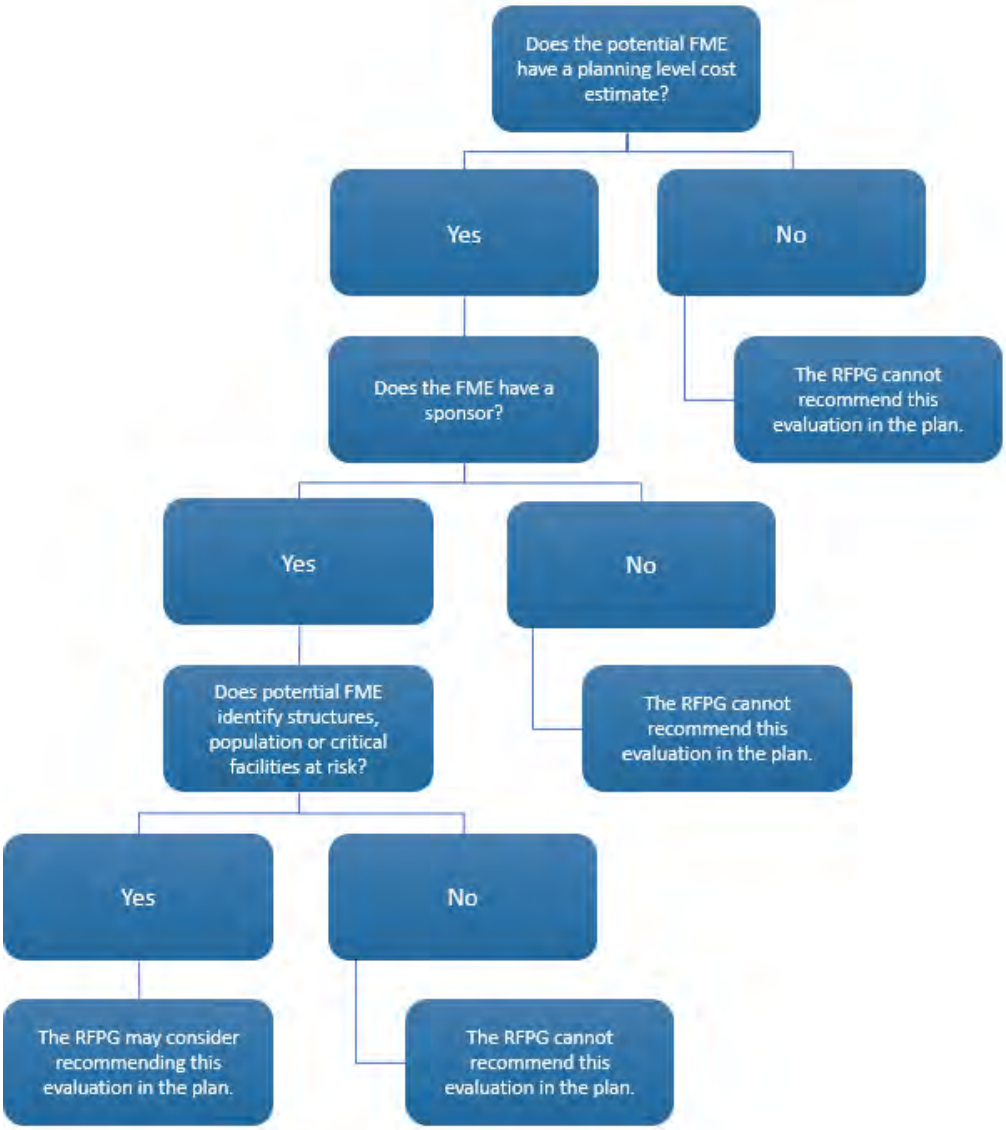
9. Potential projects (FMPs) that did not meet screening criteria Step 2-1.
10. Planned flood studies or flood risk reduction alternatives analyses provided by or developed in conjunction with floodplain management communities/project sponsors.
11. Potential flood studies or flood risk reduction alternatives analysis needs identified by the technical consultant in Task 4A.

In this step potential studies are screened based on the following criteria from TWDB technical guidelines and illustrated in the flowchart in Figure 5-3:

- Potential evaluation must identify structures, population, and critical facilities at risk within the flood problem area being studied.
- Potential evaluation must identify roadways impacted by flooding within the flood problem area being studied, if applicable.
- Potential evaluation must quantify area of agricultural land at risk within the flood problem area being studied, if applicable.
- Potential evaluation must have willing sponsor(s) identified that are willing to commit resources and some level of potential cost sharing.
- Potential evaluation must have reasonable planning-level cost estimate.

If there is sufficiently detailed H&H analysis and flood mitigation alternatives analysis, then the Evaluation may be considered as Project (FMP) or Strategy (FMS)

Figure 5-3. FME Flowchart



Step 2-3. Screening of Strategies (FMSs):

Strategies are proposed plans or actions that reduce flood risk or mitigate flood hazards to life or property. Any proposed action that doesn't meet the criteria to qualify as an evaluation or as a project can potentially be considered as a strategy. Strategies can also be flood studies or flood risk reduction alternatives analysis needs that are identified in Task 4A. In general, RFPG has flexibility with what qualifies as Strategies.

In this step, Strategies are screened based on the following criteria from the TWDB technical guidelines:

- Potential strategies must include a planning-level cost estimate.
- Potential strategies must have an identified sponsor(s) that are willing to commit resources and some level of potential cost sharing.
- Potential strategies must quantify the estimated flood risk being addressed and potential level of flood risk reduction.

Step 3. Sorting of Projects, Evaluations and Strategies by Flood Mitigation and Floodplain Management Goals:

In the third step, the projects, evaluations, and strategies identified will be assigned to one or more of the goals defined in Task 3B.

Step 4. Detailed assessment of selected Projects, Evaluations, and Strategies:

In the fourth step, potential evaluations, strategies, and projects that meet the criteria in the initial screening processes described in Steps 1 and 2 are to be evaluated further for potential feasibility and must meet the following:

- Potential projects are preferred to have an estimated benefit-cost ratio greater than 1.0. If less than 1.0 projects may still be considered with additional justification from the RFPG.
- Potential evaluations, strategies, and projects must have a willing sponsor(s) that has been verified.
- There must be no known insurmountable implementation constraints or hurdles, such as ROW acquisitions, utility conflicts, and/or permitting issues.
- Potential evaluations, strategies, and projects will be evaluated to identify maintenance requirements and their costs.
- Potential strategies and projects must include a description of residual, post-project, and future risks.
- Potential strategies and projects must indicate potential use of federal funds, or other sources of funding, as a component of the total funding mechanism.

Step 5: Final recommendation of Projects, Evaluations, and Strategies:

In this final step recommended studies, strategies, and projects are to be incorporated in the initial draft and final regional flood plan. The regional flood plan must also include:

  - Public comments and RFPG response on the recommended FMPs, FMEs and FMSs

- Initial and final adoption

The RFPG conducted a targeted outreach effort to each potential sponsoring community to discuss the initial list of potential actions for potential additions, deletions, or edits to the actions and their attributes, and to verify that they are a willing sponsor. A total of 110 potential sponsors were contacted, approximately 34 responded and met to discuss via online video conferences.

5.1.3 Initial Screening Results

Potentially Feasible FMPs

Potentially feasible FMPs were identified based on responses to survey, reviews of previous studies, and direct coordination with stakeholders. FMPs are required to be developed in a sufficient level of detail to be included in the San Antonio RFP and recommended for state funding. In most cases, this includes having recent H&H modeling data to assess the impacts of the project and an associated project cost to develop the project's benefit-cost ratio (BCR). The development and use of the technical information to evaluate potentially feasible projects is described in the subsections that follow.

Thanks to multiple completed drainage master plans, the RFPG was able to identify 28 potentially feasible FMPs, mostly within the City of San Antonio and City of Boerne. Additional potentially feasible FMPs may be identified through continued outreach with regional stakeholders under Task 11 and through the execution of identified FMEs, either as FMEs are approved by the San Antonio RFPG to be performed under Task 12, or as other funding sources are acquired by individual stakeholders.

Potentially Feasible FMEs

All potential FMEs that were identified are listed with their supporting technical information in Appendix A, TWDB required Table 12. In total, 165 potential FMEs were identified and evaluated. The evaluation of FMEs relied on the compilation of planning level data to gauge alignment with regional strategies and flood planning guidance, the potential flood risk in the area, and the funding need and availability.

Potentially Feasible FMSs

The San Antonio RFPG identified 20 potentially feasible FMSs for the SAFPR, these are listed in Appendix A, TWDB required Table 14. A variety of FMS types were identified. Some strategies encourage and support communities and municipalities to actively participate within the NFIP. Other FMSs recommend the establishment and implementation of public awareness

and educational programs to better inform communities of the risks associated with flood waters. Additional FMSs promote preventive maintenance programs to optimize the efficiency of existing stormwater management infrastructure, recommend the development of a stormwater management manual to encourage best management practices, or the establishment of conservation easement programs.

Because many projects are constrained physically and financially, the San Antonio RFPG decided that they did not want to exclude flood reduction projects based on the level of service or benefit-cost-ratio. Similarly, because many of the known flood mitigation projects were identified by local jurisdictions the drainage areas are sometimes under one-square mile, and the San Antonio RFPG did not want to exclude those from the plan for this first planning cycle. The San Antonio RFPG did express a desire to identify and group small individual projects to create larger FMXs within single jurisdictions where allowable as well as to encourage communities to work together on regional projects. Those efforts are somewhat limited in this first cycle but will be an important aspect of the amended plan due to be submitted in July 2023.

5.2 Task 5 - Recommendation of flood management evaluations and flood management strategies and associated flood mitigation projects

The objective of Task 5 is for RFPGs to use the information developed under Task 4 to recommend flood mitigation actions for inclusion in the Regional Flood Plan. In essence, Task 5 was a continuation of 4B. As described above, Task 4B was an initial technical evaluation and screening of potential FMEs and potentially feasible FMSs and FMPs. Task 5 and the remainder of Chapter 5 focus on how the RFPG used this information to further evaluate and develop its recommendations for the inclusion of flood mitigation actions in the Regional Flood Plan. This chapter summarizes and documents:

1. The process undertaken to make final recommendations on flood mitigation actions
2. The potential FMEs and potentially feasible FMSs and FMPs identified and evaluated under Task 4B and whether these actions are recommended by the RFPG
3. The entities that will benefit from the recommended flood mitigation actions

There is a significant need across the SAFPR to improve flood risk awareness and to develop and implement actions to reduce existing and

future flood risk. The San Antonio RFPG opted to take an inclusive approach to the evaluation and recommendation process. If an evaluation, strategy, or project met the TWDB requirements and was aligned with the SAFPR flood mitigation and floodplain management goals the planning group choose to show deference to the local communities/sponsors and leaned towards including in the regional plan.

5.2.1 Detailed Evaluation Requirements Per Rules and Guidelines

Due to the overlap of Tasks 4B and 5, the recommendation process was in many ways an extension of the initial screening process, with a more detailed evaluation of each action, geospatial location, determination of flood risk indicators and risk reduction potential, and reassignment of actions as needed (example: FMP to FME).

Figure 5-4 and Figure 5-5 expands upon the initial screening process previously described for FMPs/FMSs and FMEs, respectively. These processes were developed following the TWDB rules and requirements that left some evaluation criteria at the discretion of the RFPG. The discretionary evaluation criteria are the following:

- Level of Service (LOS) to be provided, if a 100-yr LOS is not feasible the RFGP can recommend an FMP with a lower LOS.
- Benefit/Cost Ratio (BCR) for the project, TWDB recommends that proposed actions have a BCR greater than one, but the RFPG may recommend FMPs with a BCR lower than one with proper justification.
- Drainage Area (DA), TWDB recommends actions with a DA greater than one-square mile to encourage regional actions and cooperation, but the RFPG may recommend FMPs with a smaller DA and justification.

Due to some projects being physically and financially constrained, the RFPG decided they did not want to exclude good flood reduction projects based on the level of service or benefit-cost ratio. Similarly, because many of the known flood mitigation projects were identified by local jurisdictions, the drainage areas are often under 1 square mile, and the RFPG did not want to exclude those from the plan.

Figure 5-4. FMP and FMS Final Screening and Recommendation Process

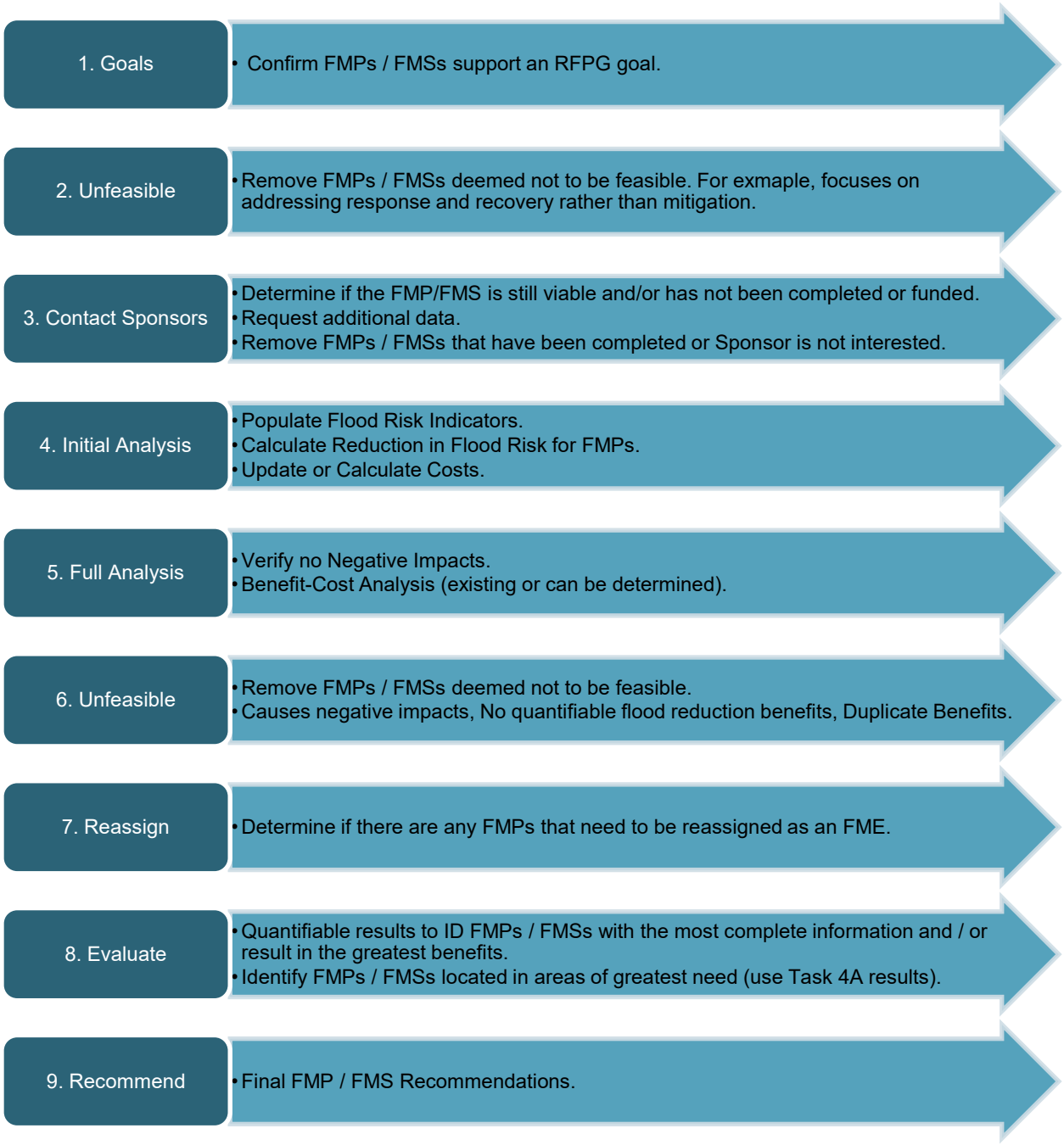
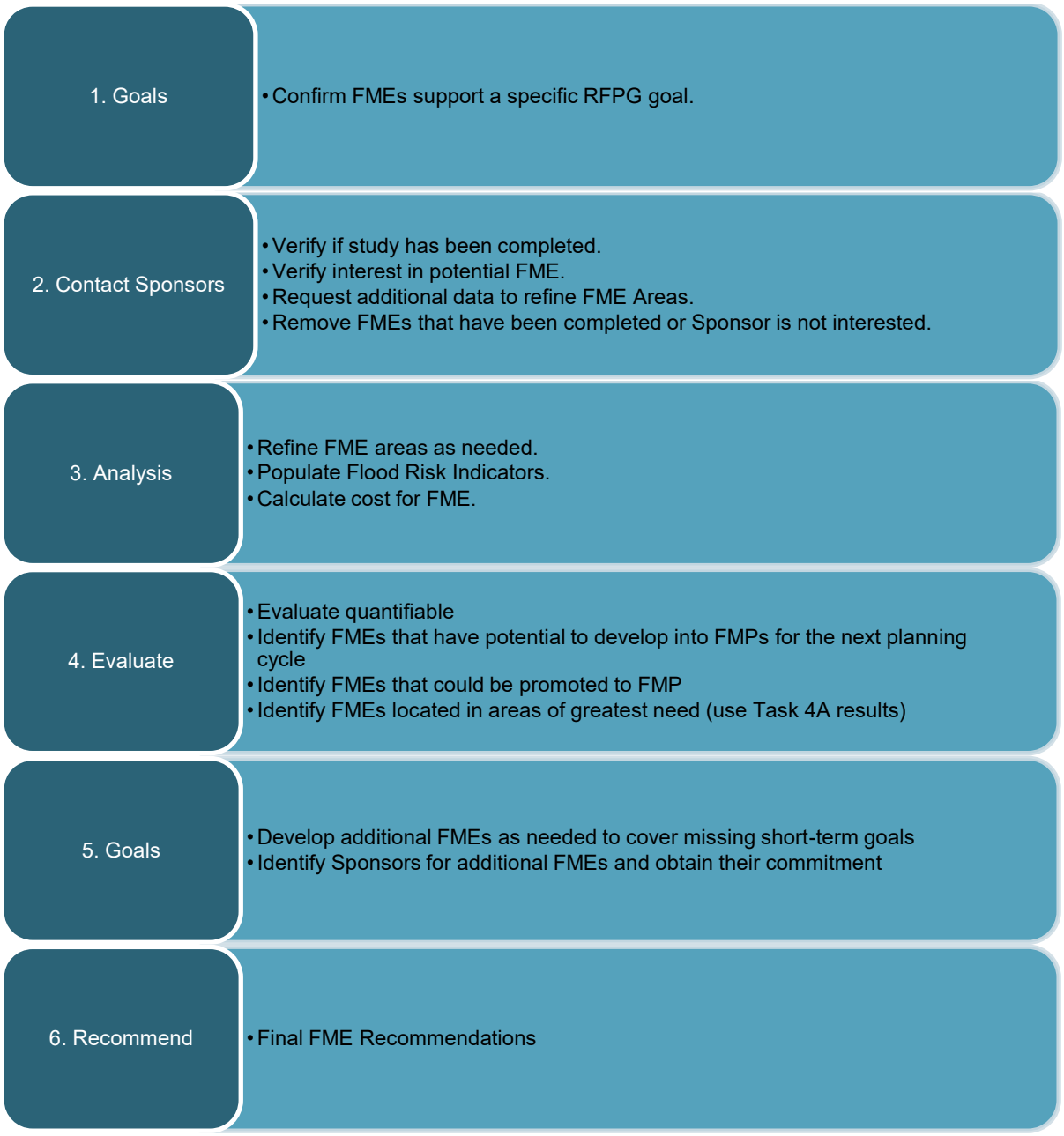


Figure 5-5. FME Final Screening and Recommendation Process



FMX Costs and Benefit-Cost-Ratio for FMPs

FME Planning Level Cost Estimates

Planning level cost estimates are based on Sponsor provided information and verification/validation of those costs in accordance with the *Technical Guidelines*. The process to produce cost estimates where none exist for each FME type is summarized below. Cost estimates presented are for planning purposes only and are not supported by detailed scopes of work or workhour estimates. Sponsors were provided the opportunity to confirm or alter the

costs through the Flood Infrastructure Financing survey discussed in Chapter 9.

Watershed Planning – Floodplain Modeling and Mapping. A unit cost per square mile was developed to generate estimates based on the size of the study area. Based on previous FEMA FIF projects, Regional or Watershed Planning Studies costs are estimated to be $2,500/sq. mi.

Watershed Planning – Drainage Master Plans. Depending on the size of the desired drainage master plan a unit cost per square mile was used for the estimates. After a comparative analysis of previously completed City Wide and County Wide Studies, unit costs were separated into three categories to capture the appropriate funds necessary to accomplish each. The following Table 5-3 shows the estimated ranges.

Table 5-3. Drainage Master Plan Cost Estimate Ranges

Area (sq. mi)	Cost Estimate (per sq. mi)
0-10	$40,000
10-25	$30,000
>25	$20,000

Engineering Project Planning – These studies consider two components: the evaluation of a proposed project to determine whether implementation would be feasible (conceptual design) and an initial engineering assessment including alternative analysis. Analyzed from pasts projects a range of estimated costs were estimated based on size, the following Table 5-4 is the criteria set for FMEs falling in this category.

Table 5-4. Preliminary Engineering /Site Cost Estimate Ranges

Site Size	Cost Estimate (per site)
Small	$50,000
Medium	$100,000
Large/Bridge	$150,000

Estimated Capital Cost of FMPs and FMSs

Cost estimates for each FMP and FMS were taken from associated engineering reports and were adjusted as needed. These costs were escalated using construction cost indices to account for inflation and other changes to the construction market and to include applicable non-recurring

and recurring project costs as listed on Table 22 of the *Technical Guidance*. The cost estimates listed in the TWDB required Table 13 and Table 14 (Appendix B) are expressed in September 2020 dollars.

Benefit-cost Ratios for FMPs

Benefit-Cost Analysis (BCA) is the method by which the future benefits of a hazard mitigation project are determined and compared to its costs. The result is a Benefit-Cost Ratio (BCR), which is calculated by dividing the project's total benefits, quantified as a dollar amount, by its total costs. The BCR is a numerical expression of the relative "cost-effectiveness" of a project. A project is generally considered to be cost effective when the BCR is 1.0 or greater, indicating the benefits of a prospective hazard mitigation project are sufficient to justify the costs (Federal Emergency Management Agency, 2009). However, a BCR greater than 1.0 is not a requirement for inclusion in the Regional Flood Plan. The RFPG can recommend a project with a lower BCR with appropriate justification.

When a BCR had been previously calculated in an engineering report or study that was used to create an FMP, the previously calculated BCR value was utilized for the FMP analysis. For any FMP that did not already have a calculated BCR value, the TWDB BCA Input Spreadsheet was utilized in conjunction with the FEMA BCA Toolkit 6.0 to generate BCR values.

Willing Sponsors for FMEs, FMPs, and FMSs

Initial efforts to contact potential sponsors consisted of sending surveys to communities. These surveys included actions associated identified for each community, giving the community an opportunity to identify any that are no longer relevant or that they are actively pursuing. These surveys were followed up with calls to inform communities of the survey and its purpose. To supplement this outreach effort the Technical Consultant Team leveraged existing relationships to contact communities to increase community participation and to gather additional input.

While these efforts furthered the goal of receiving community feedback on what FMEs, FMPs, and FMSs they wanted to pursue, not all communities were able to be reached, and accordingly, the San Antonio RFPG decided that an affirmative willingness to sponsor a given action would not be a prerequisite for inclusion in the plan. Therefore, all potential FMEs, FMPs, and FMSs were considered for inclusion in the plan unless an entity had specifically declined to be listed as a sponsor and no other appropriate potential sponsor was identified. This approach was adopted because:

1. It provides a conservative estimate of the flood mitigation need in the region.
2. Inclusion in the plan does not obligate an entity to sponsorship an action, it simply allows an entity to be eligible for funding if they have the interest and capacity to pursue an action.

It is important to note that all sponsors associated with recommended actions were subsequently sent a survey to identify potential funding sources for the actions listed in the plan. This effort is detailed in Chapter 9.

Residual, Post-Project, and Future-Risks of FMPs

The implementation of recommended FMPs is expected to reduce current and future levels of flood risk in the region. While it is not possible to protect against all potential flood risks, the evaluation of FMPs should consider their associated residual, post-project, and future risks, including the risk of potentially catastrophic failure and the potential for future increases to these risks due to lack of maintenance. In general, residual and future risks for FMPs could be characterized as follows:

1. Flood events may exceed the level of service for which infrastructure is designed.
2. Potential failure or overtopping of dams and levees.
3. Lack of routine maintenance to maintain, repair or replace its design capacity.
4. Policy changes that adversely impact budgets, prior plans, assets, and design or floodplain management standards.
5. Human behavior is unpredictable, and people may choose to ignore flood warning systems or cross over flooded roadways for a variety of reasons

Insurmountable Constraints of FMPs

Potential project implementation issues include conflicts pertaining to rights-of-way, permitting, acquisitions, utility or transportation relocations, amongst other issues that might be encountered before an FMP is able to be fully implemented. Such issues are an inherent part of flood mitigation projects, so they do not exclude actions from being considered for the plan.

Because a right-of-way is a public use on private land, it can create issues when securing access to projects for construction and maintenance. The acquisition of right-of-way or other property and utility relocation located near or on property impacted by a project requires close coordination between

government agencies, private entities, and landowners. Coordination and early engagement with the appropriate entities is key to facilitating projects.

Most FMPs will require a variety of permits from local to state and federal depending on the scale. Because permitting can be a lengthy process, the goal is to identify permitting needs during the project development phase and initiating the permitting process as early as practicable during final design. This will minimize significant design changes and delays in project implementation.

The terms “buyout” and “acquisition” are often utilized interchangeably, but in the context of flood protection, both refer generally to the purchase of private property by the government for public use. In the case of flood acquisitions, the process most often involves the purchase of property in a floodplain to reduce repetitive flood damage. Voluntary buyout programs are a specific subset of property acquisitions in which private land is purchased, existing structures demolished, and the land is returned to an undeveloped state in perpetuity. Voluntary property acquisition is not a simple process and requires agreement by the property owner and local jurisdiction. If state or federal funding is involved, the process could also include other governmental agencies and program requirements. The process can also be financially burdensome and lengthy.

Utility relocations may include water and wastewater lines, existing storm drain systems, telecommunication, power lines, and similar infrastructure. The local government and franchise utility owners are usually responsible for utility relocations; however, developers may also assume responsibility for utility relocations depending on the project. Utility relocation includes removing and reinstalling the utility, including necessary temporary utilities; acquiring necessary right-of-way; and taking any necessary safety and protective measures. Utility relocations can take significant lead time to accomplish and can be a significant portion of the total project implementation cost.

5.2.2 Recommendations Evaluation Summary of Screening Results

Overview Process

Tech Committee Formation

The San Antonio RFPG created a Technical Subcommittee tasked with establishing a selection methodology, implementing the evaluation and selection process, and reporting their findings and recommendations back to the San Antonio RFPG for formal approval. The methodology included a screening of all potential flood mitigation actions based on the general

process described in Section 5.1.1 (above) and any other additional considerations established by the Technical Subcommittee.

On January 13, 2022, the Technical Committee meeting members reviewed, discussed, and approved the process and timeline for reviewing FMEs, FMSs, and FMPs and making recommendations to the full San Antonio RFPG. The Technical Committee met over a series of meetings in 2022 to further discuss recommendations.

Technical Committee 2022 Meeting Dates:

- January 13, 2022
- March 3, 2022
- April 7,2022
- May 26, 2022
- June 27, 2022
- July 25, 2022

Tech Committee Review and Approval of Draft FMX Recommendations

Initial meetings of the Technical Committee focused on completion of the initial screening process to identify potentially feasible evaluations, projects, and strategies. This included the discussion of how the actions were being categorized, limitations of the available data, and confirmation of how the discretionary evaluation criteria was applied to each applicable action.

On March 24, 2022, the Technical Committee established a process for reviewing, discussing, and making their recommendations. In short, the committee agreed that future batches would be reviewed prior to the meeting at which they were to be considered and the actions would be brought forward in groups, or batches, for consideration in a manner like a consent agenda. This format allowed each committee member to provide comments on, or to discuss any of the individual actions, and allowed the committee to make recommendations to the San Antonio RFPG for each batch. At the June 23, 2022, Technical Committee meeting the group reviewed and forwarded recommendations for approval to the full San Antonio RFPG for 165 individual FMEs, 29 FMPs, and 22 FMSs.

RFPG Review and Approval of Draft FMX Recommendations

On July 19, 2022, the San Antonio RFPG voted to recommend FMEs, FMPs, and FMSs as presented.

Flood mitigation Projects (FMPs)

Initial Evaluation: The scope of work for each FMP was evaluated to ensure that it would support at least one of the regional floodplain management and flood mitigation goals established in Chapter 3. The goals associated with each FMP are included in TWDB required Table 11. Based on a review of supporting information, it was determined that the primary purpose for each FMP is mitigation (rather than a response or recovery project) and they do not have any anticipated impacts to water supply or water availability allocations as established in the most recent adopted State Water Plan.

No Negative Impacts Determination: Each identified FMP must demonstrate that there would be no negative impacts on a neighboring area due to its implementation. No negative impact means that a project will not increase flood risk of surrounding properties. Using best available data, the increase in flood risk must be measured by the 1% annual chance event water surface elevation and peak discharge. It is recommended that no rise in water surface elevation or discharge should be permissible (without acquiring the effected land or obtaining permission from the effect parties), and that the analysis extent must be sufficient to prove proposed project conditions are equal to or less than the existing conditions.

For the purposes of flood planning effort, a determination of no negative impact can be established if a project does not increase inundation of infrastructure such as residential and commercial buildings and structures. Additionally, the following requirements, per TWDB Technical Guidelines, should be met to establish no negative impact, as applicable:

- Does not increase inundation in areas beyond the public right-of-way, project property, or easement
- Does not increase inundation of storm drainage networks, channels, and roadways beyond design capacity
- Maximum increase of 1D Water Surface Elevation must round to 0.0 feet (<0.05 ft) measured along the hydraulic cross-section
- Maximum increase of 2D Water Surface Elevations must round to 0.3 feet (<0.35 ft) measured at each computation cell
- Maximum increase in hydrologic peak discharge must be <0.5 percent measured at computation nodes (sub-basins, junctions, reaches, reservoirs, etc.). This discharge restriction does not apply to a 2D overland analysis.

If negative impacts are identified, mitigation measures may be utilized to alleviate such impacts. Projects with design level mitigation measures already

identified may be included in the Regional Flood Plan and could be finalized at a later stage to conform to the "No Negative Impact" requirements prior to funding or execution of a project.

Furthermore, the RFPG has flexibility to consider and accept additional "negative impact" for the above requirements based on engineer's professional judgment and analysis given any affected stakeholders are informed and accept the impacts. This should be well-documented and consistent across the entire region. However, flexibility regarding negative impact remains subject to TWDB review.

A comparative assessment of pre- and post-project conditions for the 1% annual chance event (100-yr flood) was performed for each potentially feasible FMP based on their reported hydrologic and hydraulic model results. Study results for floodplain boundary extents, resulting water surface elevations, and peak discharge values were reviewed to verify potential FMPs conform to the no negative impacts requirements. The same studies were used to identify reported flood risk reduction.

A general description of the scope of work and a summary of the expected impacts of the proposed improvements for each potentially feasible FMP is provided in summary Table 5-4 below.

Level of Service (LOS) Evaluation and Benefit Cost Analysis: All the recommended FMPs provide some level of flood reduction benefits which are included based on the available information. When a BCR had been previously calculated in an engineering report or study that was used to create an FMP, the previously calculated BCR value was utilized for the FMP analysis. For any FMP that did not already have a calculated BCR value, the TWDB BCA Input Spreadsheet was utilized in conjunction with the FEMA BCA Toolkit 6.0 to generate BCR values.

Most low water crossing improvements did not include improvements that removed structures from 100-year (1% annual chance) floodplain. For these types of projects, the TWDB BCR spreadsheet does not require structure data to complete a BCR. To calculate a BCR for low water crossings, traffic counts, depth of flooding over the roadway, duration of flooding, and the length of detour were needed. This data was obtained from the entities or extracted from the hydrologic and hydraulic models to incorporate into the TWDB BCA Input spreadsheet.

As stated previously, a BCR greater than 1.0 is not a requirement for inclusion in the Regional Flood Plan. The RFPG can recommend a project with a lower BCR with appropriate justification. The RFPG considered the following projects in Table 5-4 and determined that recommending these

FMPs is consistent with the overarching goal of the Regional Flood Plan "to protect against the loss of life and property".

Figure 5-6. Geographical Distribution of Recommended FMPs

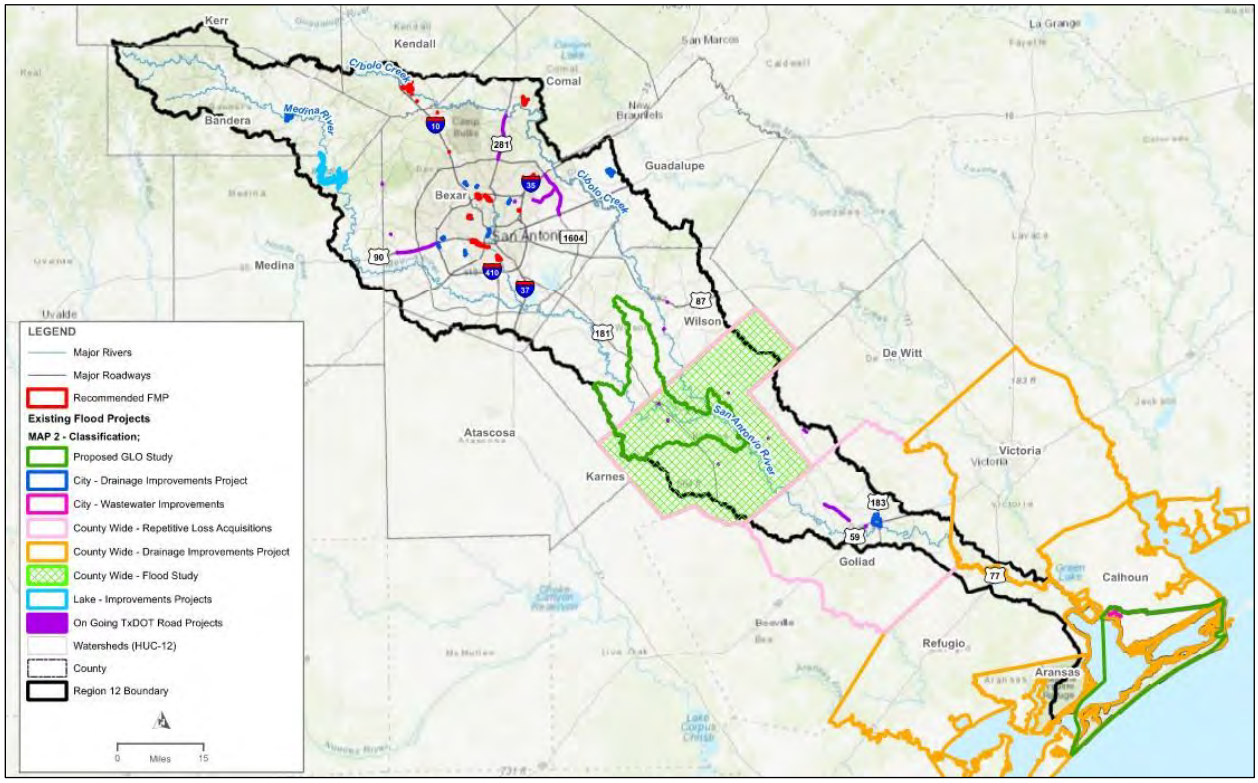


Table 5-5. FMPs recommended by the RFPG

Project Title	Project Description	Community	BCA
Lewis Creek Alternative 1 Phase 1 & 2	Channel improvement, roadway improvement	City of Bulverde	0.11
Lewis Creek Tributary 2 Alternative 1 & 2	Channel widening/lowering, culvert improvement, roadway improvement	City of Bulverde	0.19
Lewis Creek Main	High water detection system. System includes warning signs, with flashers and automatic arm barricade.	City of Bulverde	0
Project 1a - Adler Road At Currey Creek And Unnamed Tributary A	Improve low water crossings along Adler Road, channel regrading, curbs, sidewalks, street reconstruction	City of Boerne	2.5

Project Title	Project Description	Community	BCA
Project 2 - Unnamed Tributary A Regional Detention Facility	Inline detention facility with culvert improvements	City of Boerne	0.54
Project 3 - Currey Creek Regional Detention Facility	Inline detention facility with additional storm drain improvements	City of Boerne	2.79
Project 4 - School Street At Cibolo Creek And Frederick Creek	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways	City of Boerne	0.4
Project 5d - Old San Antonio Street At Menger Creek	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways	City of Boerne	0.5
Project 6 - Johns Road Near Cibolo Crossing Subdivision	Storm drain, channel, increase capacity of existing detention	City of Boerne	0.86
Project 7 - Schweppe And Hickman Street	Storm drain, and channel improvements	City of Boerne	0.82
Project 8 - Johns And Lohmann Street	Storm drain and channel improvements	City of Boerne	5.46
Project 9 - Unnamed Tributary A- Subdivision Flood Protection & Mobility Project	Low water crossing improvements, channel improvements	City of Boerne	0.48
Project 10 - E. Blanco Road At Unnamed Tributary A	Improve low water crossings along Blanco Road, channel regrading, curbs, sidewalks, street reconstruction	City of Boerne	4.1
Project 11 - River Road At Unnamed Tributary A	Improve low water crossings along River Road, channel regrading, curbs, sidewalks, street reconstruction	City of Boerne	3.1

Project Title	Project Description	Community	BCA
Project 13 - Herff And Esser Road Improvements At Currey And Cibolo Creek	Bridge at Currey Creek and Esser Road, Bridge at Cibolo Creek and River Road, Channel grading, Roadway reconstruction	City of Boerne	1.7
Project 12 - Plant Channel Improvement	Channel improvements	City of Boerne	0.4
Project 14 - East Boerne Regional Lid	Proposed inline extended detention facility that provides water quality benefits to the urbanized tributary of Cibolo Creek and properties downstream of Scenic Loop Road	City of Boerne	0.6
Project 15 - North Currey Channel Improvements	Channel regrading, curbs, sidewalks, street reconstruction. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 16 being implemented at the same time as this project to achieve the project benefits.	City of Boerne	1.33
Project 16 - South Currey Creek Channel Improvements	Low water crossing improvements, channel improvements. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 15 being implemented at the same time as this project to achieve the project benefits.	City of Boerne	1.33
29010 Tivoli Way	Utilize existing stormwater infrastructure by regrading the roadway to slope towards existing inlets and open channels on the north and south side of Windermere Dr on the east side of Fair Oaks Parkway. New curb installed along the west side of Fair Oak	City of San Antonio	6.92
Seeling Drainage Improvements	Install box culverts, grass lined channel construction	City of San Antonio	0.62

Project Title	Project Description	Community	BCA
Rock Creek - Alt 1	Reducing the height of the drop structure at the Olmos Creek outfall, Bridge replacements will be required for both the railroad crossing and West Ave.	City of San Antonio	0.1
Judson and Lookout LWC Improvement	Upgrade the low water crossings and the connecting/downstream channel	City of San Antonio	0.9
Symphony Lane Voluntary Property Acquisition	Purchase 32 properties located west of the San Antonio River Symphony Reach, and along Pyron Ave and Symphony Lane.	City of San Antonio	0.4
Holbrook Road Improvements	Offset a portion of the roadway south of Woodburn Rd	City of San Antonio	0.01
Barbara Drive Drainage Improvements	Upsizing the boxes underneath Dellwood Drive and Oblate Drive. The improvements will also include reconstruction of the street and curb for the portion of Dellwood Drive and Oblate Drive within the project boundary	City of San Antonio	0.04
Thames Drainage Channel Replacement - Alt 1	Replace the existing culverts at Blanco Rd., San Pedro Ave, Thames Dr, Private Dr and Dorsets.	City of San Antonio	0.03
Shady Lane Dr. Voluntary Property Acquisition	This project consist primarily of property buy-outs within the floodplain to mitigate structural flooding to those properties.	City of San Antonio	0.2
Concepcion Creek Improvements Project	Ph1. 54-ac detention, property acquisition and 10,000ft of storm drain systems and road reconstruction. Ph2. 1.36mi of Concepcion Creek channel improvements. Ph3. 2,300ft of (3)10x8 MBC systems	City of San Antonio	1

Flood Management Evaluation (FMEs)

In considering potential FMEs for recommendation, the RFPG sought to determine which FMEs would be most likely to result in identification of potentially feasible FMSs and FMPs in future planning cycles. Recommended

FMEs were also required to demonstrate alignment with at least one regional floodplain management and flood mitigation goal developed under Task 3. Finally, each recommended FME should identify and investigate at least one solution to mitigate the 1% annual chance flood. It is the intent that all FMEs with a hydrologic and hydraulic modeling component will evaluate multiple storm events, including the 1% annual chance flood. The potential solutions and level of service that will be identified are unknown; however, it is expected that analyses will evaluate potential negative impacts and potential flood risk reduction for the 1% annual chance flood to help inform recommended alternatives and to define potentially feasible FMPs under this planning framework. Based on these TWDB requirements, the RFPG identified two main reasons for recommending FMEs.

The first subset of recommended FMEs would result in increased flood risk modeling and mapping coverage across the region as they are implemented. These types of FMEs have two major implications for the identification of potentially feasible FMSs and FMPs. First, a current and comprehensive understanding of flood risk across the basin is necessary to identify high-risk areas for evaluation and development of flood risk reduction alternatives. Secondly, FMPs, and in some cases, FMSs, require a demonstrated potential reduction in flood risk to be recommended in the Regional Flood Plan. For this metric to be assessed, hydrologic and hydraulic modeling must be available to compare existing and post-project flood risk.

The second subset of recommended FMEs were project planning type FMEs. These FMEs are generally studies or preliminary designs to address a specific, known flood need. These actions include low water crossing improvements, storm drain or channel projects, city or countywide studies, and evaluations of possible buyouts or elevation. While in many cases a specific location is known, the actions currently lack some or all the detailed technical data necessary for evaluation and recommendation as an FMP. An example would be an existing study that identifies potential drainage construction projects but does not provide a full negative impacts analysis. Completing these components as part of an FME will result in a potentially feasible FMP for consideration during future flood planning efforts.

Sponsor input was a major driver for choosing not to recommend FMEs. FMEs that were indicated by the sponsor as being in progress, completed, or lacking interest to pursue were not recommended. Additionally, some FMEs located near one another were combined into a single FME for recommendation, a process the RFPG plans to continue as it develops the amended plan (due July 2023).

Description and Summary of Recommended FMEs

A total of 165 potential FMEs were identified and evaluated by the RFPG. Of these, all were recommended, representing a combined total of $587,700,000 of flood management evaluation need across the region. The number and types of studies recommended by the RFPG are summarized in Table 5-6. The full list of FMEs and supporting technical data is included in the TWDB required Map 16 and Table 12 within Appendix B. A map and table of recommended FMEs is presented in the TWDB required Map 19 and Table 15. Overall, the recommended FMEs represent over 28,600 square miles of contributing drainage area and provide comprehensive coverage of the Flood Planning Region.

Figure 5-7. Geographical Distribution of Recommended FMEs

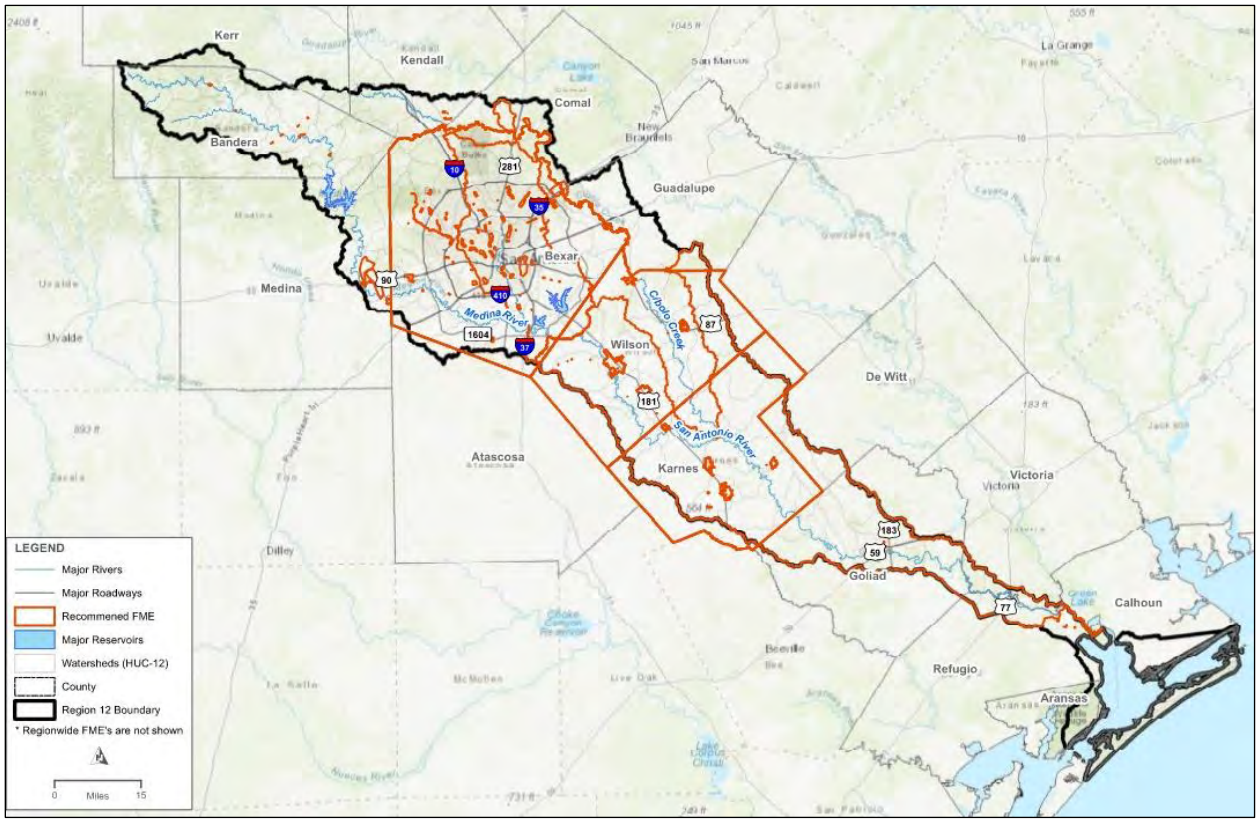


Table 5-6. Summary of FMEs recommended by the RFPG

Type	Total
Project Planning	143
Watershed Planning	20
Flood Readiness and Resilience	2

Flood Management Strategy (FMSs)

The approach for recommending FMSs adheres to similar requirements as the FMP process except, due to the flexibility and varying nature of RFPG's potential utilization of FMSs, some of these requirements may not be applicable to certain types of FMSs. In general, the RFPG must be able to demonstrate that each recommended FMS meets the following TWDB requirements as applicable:

1. The primary purpose is mitigation (response and recovery projects are not eligible for inclusion in the Regional Flood Plan).
2. Supports at least one regional floodplain management and flood mitigation goal.
3. Implementation of the FMS results in:
    a. Quantifiable flood risk reduction benefits
    b. No negative impacts to adjacent or downstream properties (a No Negative Impact certification is required)
    c. No negative impacts to an entities water supply
    d. No overallocation of a water source based on the water availability allocations in the most recently adopted State Water Plan.

In addition, the TWDB recommends that, at a minimum, FMSs should mitigate flood events associated with the 1% annual chance flood (100-yr LOS) and must demonstrate that there would be no negative flood impacts on a neighboring area due to its implementation. There were no structural FMSs identified for this region, and therefore flood mitigation and no adverse impacts from flooding or to the water supply are anticipated. The number and types of studies recommended by the RFPG are summarized in Table 5-6.

Figure 5-8. Geographical Distribution of Recommended FMSs

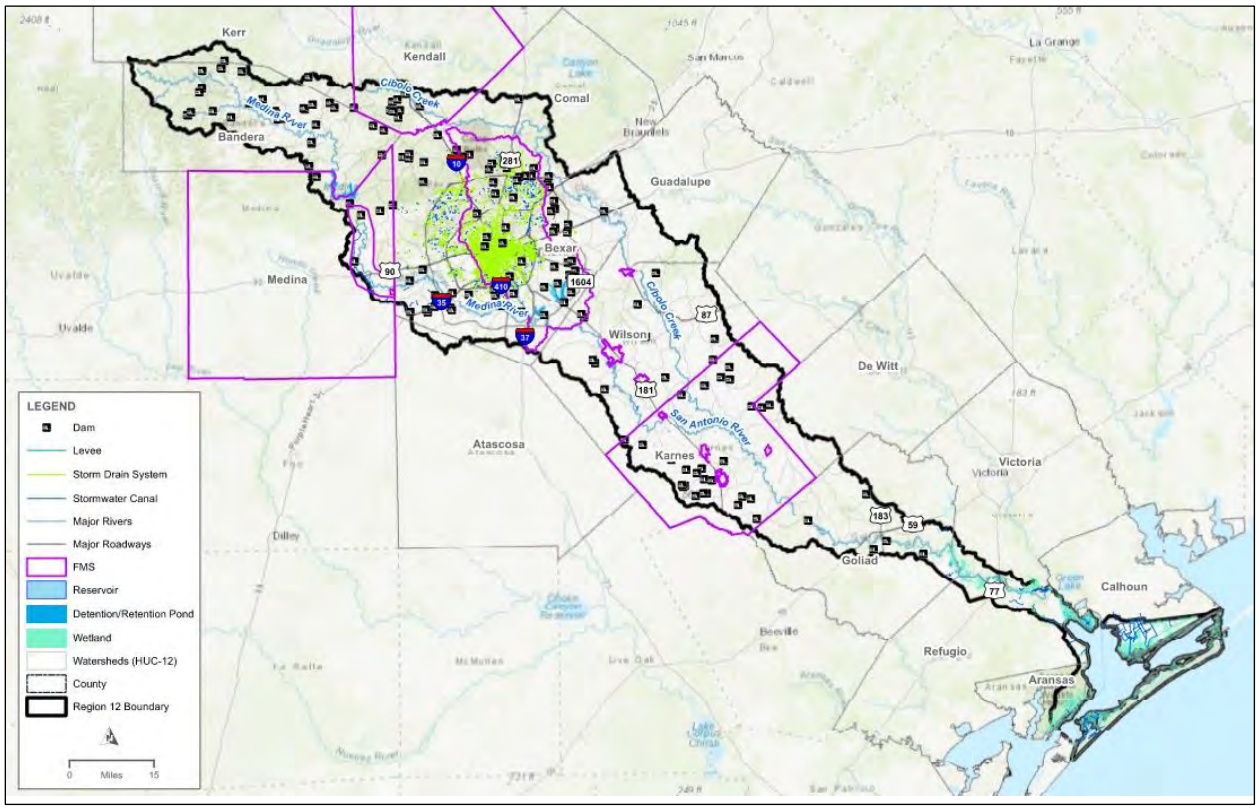
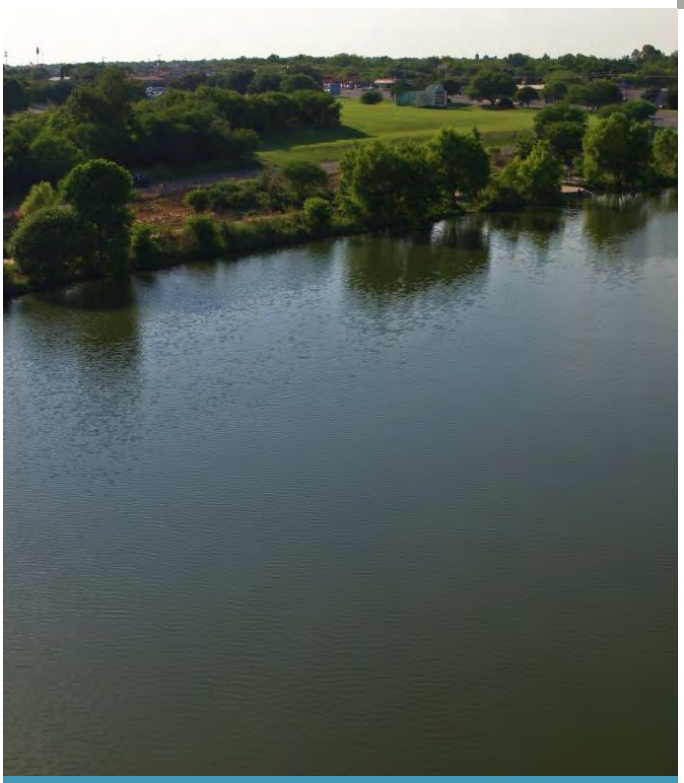


Table 5-7. Summary of FMSs recommended by the RFPG

Type	Total
Education and Outreach	14
Regulatory and Guidance	5
Flood Measurement and Warning	3



6

Impact and Contribution of the Regional Flood Plan

6 Impact and Contribution of the San Antonio Regional Flood Plan

The objective of this task is to assess and summarize the impacts and contributions, in the aggregate, associated with implementation of this San Antonio RFP. In previous chapters, existing flood hazard and exposure conditions were assessed based on the 1.0% and 0.2% annual chance flood events. In addition, an inventory of existing infrastructure and natural features was compiled for use as a baseline. Flood risk reduction or mitigation needs were identified leading to adoption by the San Antonio RFPG of recommendations, presented in the previous chapter, of flood management evaluations and strategies, and flood mitigation projects. This chapter aims to compare those identified risks with the potential estimated positive and negative benefits of implementing the San Antonio RFP. Additionally, in the second part of this chapter potential contributions to and impacts on water supply development and the State Water Plan are assessed.

6.1 Impacts of San Antonio Regional Flood Plan

Implementation of the San Antonio RFP can be expected to provide numerous benefits to the areas served by local Sponsors and will not negatively impact neighboring areas within or outside of the SAFPR. More specifically, the implementation of recommended Flood Mitigation Projects are expected to reduce the number and/or spatial extent of areas with high flood hazard and exposure. For example, implementation of recommended FMPs are expected to remove an estimated 5,720 at-risk structures from flood prone areas. Note however that the benefits will vary greatly across the SAFPR due to the highly variable and local nature of most flood hazard areas, as well as with the types of studies, strategies, and projects that are implemented. Further discussion of the potential benefits of implementing this Plan is provided below.

6.1.1 Floodplain Management and Modeling

Information was compiled during the baseline development of the San Antonio RFP. As part of the compilation, data gaps were identified within the SAFPR. The information and data gaps were found in areas of low to high flood risks that lack floodplain management practices, adequate enforcement of floodplain standards and regulations, detailed hydrologic and hydraulic models, and flood inundation mapping. Combined, these areas cover approximately 1,083 square miles or 25% of SAFPR and include an estimated population of 121,672. The lack of information hinders the ability of

local entities to effectively manage activities in floodplains, adequately assess flood risks and exposure, evaluate potentially feasible flood risk reduction strategies and solutions, and select a preferred option(s) for implementation. Overall, this likely results in population and property exposed unnecessarily to flood risk. As reported in Chapter 5, 165 FMEs are recommended and when implemented will close data and information gaps and set in motion the process of developing and implementing flood risk reduction solutions to ultimately reduce exposure to flood hazards. 20 recommended FMEs are specifically focused on watershed modeling and mapping, and 145 include modeling and mapping to identify flood risk, flood mitigation alternatives analysis and feasibility studies, and preliminary engineering studies among others. The FMEs that are being proposed will cover the whole basin. One FME, in particular, will target the lower basin that has the majority of the data gap described above. The San Antonio River Authority is proposing a lower basin predictive flood model that will reduce the data gap by 100%.

6.1.2 Reduction in Flood Impacted Areas

Existing flood hazard areas were identified and quantified for the 1.0 % annual chance flood events. The table below shows the existing verses proposed flood impacted area in square miles for the recommended FMPs. By implementing the recommended FMPs, these flooded project areas will be reduced by approximately 50 percent or a reduction in approximately 0.5 square miles, removing many structures, population, LWC, and roads.

Table 6-1. Reduction in Existing Flood Impacted Areas

Annual Chance Event	*Project Area in Floodplain (Sq. Mi.)	*Reduction due to the FMP (Sq. Mi.)	Change in Area (Sq. Mi.)	Change in Area
1.0%	1	0.5	0.5	50%

* Quantities might change as more data is collected.

6.2 Benefits to Population and Structures at Risk

With the number of square miles affected by flooding being reduced with the implementation of the FMPs in this Plan, the ultimate beneficiaries are populations residing in those areas as well as public and private assets (e.g., structures, roads, utilities). Since the area of land being impacted will be reduced, the subsequent population benefitting from the Plan within the SAFPR is estimated to be 7,494. The socioeconomic benefits to the population will vary based upon location. Additional descriptions of those benefits will be provided in Project Details Table in Appendix A. The

estimated population removed from the floodplain if these FMPs are implemented is shown in the following table. While the number of potentially avoidable injuries and deaths associated with implementation of this plan is not quantifiable, the expected benefits can be substantial. The benefits will be generated by changing flood characteristics to reduce flood risk to structures, roads, and property (structural flood mitigation projects) and changing the way people interact with flood risk (non-structural flood mitigation projects and strategies) through regulatory improvements, educating people about flood risks, implementing flood early warning and evacuation measures.

Table 6-2. Population Removed from the Floodplain

Annual Chance Risk Flood	Existing Population Impacted	*Estimated Population Removed after Implementation	Decrease in Population Impacted
1.0%	96,157	7,494	8%

* Quantities might change as more data is collected.

Implementing the San Antonio RFP provides additional benefit to the removal of existing structures located within flood hazard areas. Removing structures from flood danger benefits communities who rely on those structures for residences, work, industry, and critical facilities. These include structures that are inundated for short periods to those for extended periods along the flatter topographical areas within the SAFPR. Table 6-3 shows the estimated reduction in the number of structures that will be removed by implementing the Plan.

Table 6-3. Structures Removed from the Floodplain

Annual Chance Risk Flood	Existing Structures Impacted	*Estimated Structures Removed after Implementation	Decrease in Structures Impacted
1.0%	19,100	3582	19%

* Quantities might change as more data is collected.

Critical facilities identified generally as municipal utilities and buildings, hospitals and care facilities, and schools are of special importance that will benefit from the Plan. There are no critical facilities that are being removed with the implementation of the Plan. However, there are multiple studies being recommended for the Plan that will assess floodproofing or removing critical infrastructure from the floodplain.

6.3 Low Water Crossings and Impacted Roadways

Implementing the recommended FMPs across the SAFPR will have a considerable impact on the number of existing low water crossings. As projects are implemented over time the number of low water crossings will be reduced saving life and property. The estimated number of low water crossings being removed due to implementing the San Antonio RFP is shown in Table 6-4.

Table 6-4. Low Water Crossings Removed

Annual Chance Risk Flood	Existing Low Water Crossings	*Low Water Crossings Removed after Implementation	Decrease in Low Water Crossings
1.0%	2733	22	1%

* Quantities might change as more data is collected.

In addition to the number low water crossing being removed, flooded roadways also benefit from the Plan being implemented. Roadways are often closed due to flooding pose risks to life, property, and transportation in general. Information in Table 6-5 shows the benefit to transportation infrastructure by reducing the amount of time a roadway is closed or removing it from flooding altogether.

Table 6-5. Removal of Roads from Flood Risks

Annual Chance Risk Flood	Existing Roads in Floodplain (Mi.)	*Roadways Removed from Floodplain after Implementation	Decrease in Roads in Flood plain
1.0%	753	12	2%

* Quantities might change as more data is collected.

6.4 Socioeconomic and Recreational Impacts

6.4.1 Socioeconomic

Implementing the San Antonio RFP, as shown in the previous sections, provides a benefit to the SAFPR. As part of this effort, socioeconomic impacts were taken into consideration to evenly distribute flood risk reduction benefits among all groups across the SAFPR as much as practical. The SAFPR has a diverse population with wide ranging economic levels requiring extra attention to improve conditions for everyone. Disadvantaged socioeconomic populations have limited access to resources hindering response and

recovery from flood events. Processes in developing the appropriate FMSs, FMPs, and FMEs included reducing impacts to flood events and improving the lives of all socioeconomic groups ensuring the most disadvantaged were well represented. This can be shown in the locations of FMSs, FMPs, and FMEs identified throughout the SAFPR.

6.4.2 Recreation Impacts

There can be many opportunities to benefit recreation through the implementation of the Plan. Many parks located along water fronts are designed to be flooded periodically with infrastructure minimally impacted. Floodplains and wetlands can support recreation and tourism. Although not specifically identified in this Plan, as FMSs and FMPs are implemented removing structures from floodplains and existing floodplains removed, new opportunities become available for local sponsors. These areas are often utilized in cities throughout the state for hiking and biking trails. The San Antonio RFPG will encourage secondary benefits such as recreational opportunities. While the Plan will provide opportunities, it will not negatively impact existing recreation activities located throughout the SAFPR.

6.5 Overall Impacts

Implementing the San Antonio RFP provides numerous benefits associated to the primary purposes of FMSs, FMPs, and FMEs. The benefits, although not readily quantifiable, will protect the health and safety of the SAFPR. This is done by reducing flooding frequency and severity, advanced flood warning systems, removing roads from flooding, and providing officials the tools to properly manage flood prone areas.

6.6 Contributions To and Impacts on Water Supply Development and the State Water Plan

Plans must include a regionwide assessment of the potential contributions and impacts that implementation of Plans can be expected to have on water supplies and the State Water Plan. As part of this analysis, each FMS and FMP was reviewed to determine whether there are potential impacts to existing water supplies or the availability of water supplies. Impacts include potential contributions to, as well as reductions in water supply and availability. These impacts as determined would be placed in one of the following categories:

1. Involves direct impacts to available water supply yield during a drought-of-record, which requires both availability and directly connecting supply to specific water user group(s)

2. Direct benefits (i.e., increases) water availability
3. Indirectly benefits water availability
4. Or has no anticipated impact on water supply

A coordinated effort with representatives from multiple regional water planning groups occurred to identify water management strategies that could be impacted. Those regional water planning groups include Region J (Plateau), Region L (South Central Texas), and Region N (Coastal Bend). The results of those analyses and discussions are provided in the following tables.

It was determined that three FMPs have the potential to add to water supply availability. Quantifying the recharge benefit will require additional effort to be performed at a later date. The table below lists those three identified FMPs.

Table 6-6. FMS/FMP Contributions to Water Supply

Name	FMS/FMP	Volume (AF)	Water Supply	Direct Water Availability	Indirect Water Availability	No Impact
Project 2 - Unnamed Tributary A Regional Detention Facility	FMP	TBD	N/A	N/A	Natural Recharge	N/A
Project 3 - Currey Creek Regional Detention Facility	FMP	TBD	N/A	N/A	Natural Recharge	N/A
Project 14 - East Boerne Regional Lid	FMP	TBD	N/A	N/A	Natural Recharge	N/A

7

Flood Response Information and Activities

7 Flood Response Information and Activities

[31 TAC §361.42]

7.1 Flood response and recovery activities in the San Antonio Flood Planning Region (SAFPR)

This chapter summarizes the flood response preparations using demographic, historical, projected, and statistical data from the previous chapters and further research. The TWDB specifically stated that the San Antonio RFPG "shall not perform analyses or other activities related to planning for disaster response or recovery activities." The focus of this chapter is summarizing the information obtained and providing general recommendations regarding flood response activities.

7.1.1 Types of Flooding in the SAFPR

To better understand how to respond, floods are generally categorized into 5 types: flash floods, coastal floods, urban floods, river floods and pluvial floods.

Flash Floods are floods caused by heavy rainfall over a short period. The flood water can occur quickly and be very powerful, making it extremely dangerous.

Pluvial Floods happen when there is flooding independent from an overflowing body of water due to extreme rain fall. The most common example of this is when an urban drainage system is overwhelmed and the excess water floods into the streets and onto adjacent property.

Riverine Floods occur when excess rainfall causes an overtopping of the riverbank. This overtopping then spills the water onto nearby land.

Urban Flooding is caused by excess runoff water in developed areas where the water does not have anywhere else to go. Urban flooding can be considered a type of pluvial flooding.

Coastal Floods occur when a coastal process such as waves, tide, storm surge or heavy rainfall from coastal storms create a flood where the sea meets land.

The SAFPR is prone to each type with frequency depending on which part of the region it occurs. The region is separated into 4 subregions: *Upper*- north of Loop 1604 from Culebra Road to I-35; *Mid*- south of North loop 1604 to

south of Karnes County; *Coastal*- from south Karnes County to the sea; and *Medina*- the Medina River and its tributaries.

Geography, climate and urbanization merge to create significant flood issues for a band of counties in North-Central, Central, and South-Central Texas. This is one of the most flash-flood prone regions in North America and is often referred to as "Flash Flood Alley."[25] The counties that are most affected by this phenomenon are shown in Figure 7-1, with green representing the boundaries of the SAFPR. The primary feature impacting flooding in the SAFPR is the Balcones Escarpment, a geological fault zone that traps warm weather masses moving in from the coast, resulting in heavy rainfall events, that runoff quickly downhill due to terrain, increasing impervious surfaces, shallow soils and narrow river channels. The result is deep, fast, erosive flood waters with destructive forces that have the potential to penetrate communities downstream. Increased development and impervious surfaces can exacerbate these issues, leading to water running over the banks of rivers and overwhelming drainage systems in urban and non-urban areas.

[25] SARA. The River Basin Report Card Highlights. March 18, 2022. New to San Antonio? Welcome to Flash Flood Alley | San Antonio River Authority (sariverauthority.org)

Figure 7-1. Floodplain Alley in Texas

Source: San Antonio River Authority (SARA) (sariverauthority.org)

When storms fall over the City of San Antonio area, the runoff flows into the river system and arrives in Wilson, Karnes or Goliad counties several days later, providing advance notice of impending flooding. When such flood events occur, it is imperative that plans are in place to combat the effects of the flooding.

7.1.2 The Nature and Types of Flood Responses

Emergency Management is defined by four phases:

- **Flood Mitigation:** The implementation of actions, including both structural and non-structural solutions, to reduce flood risk to protect against the loss of life and property.
- **Flood Preparedness:** Actions, aside from mitigation, that are taken before flood events to prepare for flood response activities.
- **Flood Response:** Actions taken during and immediately following a flood event.
- **Flood Recovery:** Actions taken after a flood event involving repairs or other actions necessary to return to pre-event conditions.

For example, when a severe rain event is projected to occur, steps are taken for preparedness: disaster preparedness plans are in place, drills and exercises are performed, memorandums of understanding are enacted, an essential supply list is created, and potential vulnerabilities are assessed. During the response phase, disaster plans are implemented, search and rescue missions may occur, and low-water crossing signs may be erected. The recovery phase includes evaluation of flood damage, rebuilding damaged structures, and removing debris occurs. The most important step of the four phases of emergency management occurs prior to any of these: mitigation.

Hazard Mitigation is defined as any sustained action taken to reduce or eliminate the lasting risk to life and property from hazard events. It is an on-going process that occurs before, during, and after disasters and seeks to break the cycle of damage and restoration in hazardous areas.

Flood Mitigation is the primary focus of the SAFPR planning process and efforts to identify and recommend Flood Management Evaluations (FMEs), Flood Management Strategies (FMSs), and Flood Mitigation Projects (FMPs) by the San Antonio RFPG. The plan may also include FMEs, FMSs and FMPs related to Flood Preparedness.

Examples of mitigation actions include planning and zoning, floodplain protection, property acquisition and relocation, and public outreach. Examples of preparedness actions include installing disaster warning systems, purchasing radio communications equipment, and conducting emergency response training.

Mitigation actions from Hazard Mitigation Action Plans (HMAP) can include the following efforts:

Figure 7-2. Mitigation Actions from Hazard Mitigation Action Plans

- Buyout/Acquisition/Elevation projects
- Drainage Control & Maintenance
- Education & Awareness for Citizens
- Equipment Procurement for Response
- Erosion Control Measures
- Flood Insurance Education
- Flood Study/Assessment
- Infrastructure Improvement
- Installation/Procurement of Generators
- Natural Planning Improvement
- Outreach and Community Engagement
- Technology Improvement
- Urban Planning and Maintenance

7.1.3 Relevant Entities in the Region

The purpose of flood risk management is to help prevent or reduce flood risk by using structural and/or non-structural means. Responsibility for flood risk management is shared between federal, state, and local government agencies; private-sector stakeholders; dam and levee owners; and the general public. The political subdivisions in the SAFPR with flood-related authority are listed in Table 7-1, Table 7-2, and Table 7-3.

Table 7-1. Counties with flood-related authority in the SAFPR

Aransas County	Calhoun County	Guadalupe County	Medina County
Atascosa County	Comal County	Karnes County	Refugio County
Bandera County	DeWitt County	Kendall County	Victoria County
Bexar County	Goliad County	Kerr County	Wilson County

Table 7-2. Cities with flood-related authority in the SAFPR

City of Alamo Heights	City of Falls City	City of La Coste	City of Santa Clara
City of Austwell	City of Floresville	City of Leon Valley	City of Schertz
City of Balcones Heights	City of Garden Ridge	City of Live Oak	City of Seadrift
City of Bandera	City of Goliad	City of Marion	City of Selma

City of Boerne	City of Grey Forest	City of New Berlin	City of Shavano Park
City of Bulverde	City of Helotes	City of New Braunfels	City of Somerset
City of Castle Hills	City of Hill Country Village	City of Nordheim	City of St. Hedwig
City of Castroville	City of Hollywood Park	City of Olmos Park	City of Stockdale
City of China Grove	City of Karnes City	City of Poth	City of Terrell Hills
City of Cibolo	City of Kenedy	City of Runge	City of Universal City
City of Converse	City of Kirby	City of San Antonio	City of Von Ormy
City of Elmendorf	City of La Vernia	City of Sandy Oaks	City of Windcrest
City of Fair Oaks Ranch			

Table 7-3. Other entities with flood-related authority in the SAFPR

Bandera County River Authority	East Central SUD	La Salle WCID 1-B
Guadalupe-Blanco River Authority	Ecleto Creek Watershed District	Lerin Hills MUD
Nueces River Authority	Escondido Watershed District	Medina County FWSD 1
San Antonio River Authority	Espada Development District	Medina County WCID 1
Upper Guadalupe River Authority	Falcon Point WCID 1	Northeast Medina County WCID 1
Alamo Area Council of Governments	Flying L PUD	Port O'Connor MUD
Bandera County FWSD 1	Golden Crescent Regional Planning Commission	Refugio County Drainage District 1
Bexar-Medina-Atascosa Counties WCID 1	Green Valley SUD	Refugio County Navigation District
Bexar County WCID 10	Hondo Creek Watershed Improvement District	Refugio County WCID 1

Canyon Regional Water Authority	Johnson Ranch MUD	Refugio County WCID 2
Cibolo Canyon Conservation and Improvement District 1	Kendall County WCID 2	San Antonio MUD 1
Cibolo Creek Municipal Authority	Kendall County WCID 2A	Victoria County Navigation District
Coastal Bend Council of Governments	Kendall County WCID 3	West Side Calhoun County Navigation District
Comal County WCID 6	Kendall County WCID 4	Westside 211 Special Improvement District
Crosswinds at South Lake Special Improvement District	La Salle WCID 1-A	Wilson County FWSD 1 of Wilson County Texas

Various stakeholders can play a role in flood preparation and response, including. agriculture, cities, counties, councils of government, districts (e.g., MUDs, FWSDs, etc.), and state and federal agencies. Following are the various contributing entities and partners with a description of their role related to flooding. These include entities listed above, as well as other types of entities not previously mentioned.

Ag Extension agents are employed by land-grant universities and serve the citizens of Texas as experts or teachers on the topic of agriculture. Every county in Texas has an Ag Extension office. Ag Extension agents can provide valuable information about preparing for and recovering from flood events specific to agricultural entities. The SAFPR contains a significant amount of agricultural land, particularly in Wilson, Bexar, Guadalupe, and Medina Counties. This type of land use has a substantial footprint, making working closely with ag extension agents crucial to prevent losses.

Cities and **municipalities** generally take responsibility for parks and recreation services, police and fire departments, housing services, emergency medical services, municipal courts, transportation services (including public transportation), and public works (streets, sewers, snow removal, signage, and so forth), in addition to serving frequently as flood plain managers. There are 49 municipalities within the SAFPR.

The major responsibilities of the 12 SAFPR **county governments** include providing public safety and justice, holding elections at every level of government, maintaining Texans' most important records; building and maintaining roads, bridges, and in some cases, county airports; providing

emergency management services; providing health and safety services; collecting property taxes for the county and sometimes for other taxing entities; issuing vehicle registration and transfers; and registering voters. Counties have substantial unincorporated land under their jurisdiction that is outside the land use regulations of local cities. Many counties have floodplain management authority.

The three SAFPR **COGs** are voluntary associations that represent member local governments, mainly cities and counties, that seek to provide cooperative planning, coordination, and technical assistance on cross-jurisdictional issues of mutual concern. COGs can serve as regional resources for flood data, flood planning, and flood management.

The mission of the **TWDB** is to lead the state's efforts in ensuring a secure water future for Texas and its citizens. The TWDB provides water and flood planning, data collection and dissemination, financial assistance, and technical assistance services to the citizens of Texas.

A **flood control district** is a special purpose district created by the Texas Legislature and governed by County Commissioners Courts. It is a government agency established to provide control of rivers, streams, their tributaries, and related structures within a certain boundary, to reduce the effects of flooding. There are multiple flood control districts within the SAFPR.

Dams and levees are owned and operated by individuals, private and public organizations, soil and water districts(levees), and the government. The responsibility for maintaining a safe dam rests with the owner. Two major dam owners in the region are SARA and NRCS. They work closely with TCEQ to meet dam safety requirements. A dam failure resulting in an uncontrolled release of water can have a devastating effect on persons and property downstream. To ensure the safety of the people and infrastructure downstream from a dam, the owners must create an Emergency Action Plan (EAP) and submitted it for approval to TCEQ. In the SAFPR there are about 269 dams and an estimated 1,865,900 acres at potential risk from potential inundation of at least 1 foot in depth.[26] Dam owners should play a critical role in the flood planning process to ensure collaborative and cohesive flood planning.

The **National Weather Service's (NWS)** mission is to provide weather, water and climate data, forecasts, warnings, and impact-based decision support services for the protection of life and property and enhancement of the

[26] Alamo Area Council of Governments. Regional Mitigation Action Plan Update. April 23, 2012.

national economy. NWS provides flash flood indicators through watches, warnings, and emergency notices.

Flash Flood WATCH is issued when conditions look favorable for flash flooding. A watch usually encompasses several counties. This is the time the public should start thinking about their plan of action and where they would go if water begins to rise.

Flash Flood WARNING is issued when dangerous flash flooding is happening or will happen soon. A warning usually focuses on a smaller, more specific area. A warning can be issued due to excessive heavy rain or a dam/levee failure. This is when the public must act quickly as flash floods are an imminent threat to them and their family. They may only have seconds to move to higher ground.

Flash Flood EMERGENCY is issued for the exceedingly rare situations when extremely heavy rain is leading to a severe threat to human life and catastrophic damage from a flash flood is happening or will happen soon. Typically, emergency officials are reporting life threatening water rises resulting in water rescues/evacuations.

Daily river forecasts are issued by **River Forecast Centers (RFCs)** of the NWS using hydrologic models based on rainfall, soil characteristics, precipitation forecasts, and several other variables. Some RFCs, especially those in mountainous regions, also provide seasonal snowpack and peak flow forecasts. A wide variety of users rely on these forecasts, including those in agriculture, hydroelectric dam operation, and water supply resources. The forecasts can provide essential information on the river levels and conditions.

The **National Oceanic and Atmospheric Administration (NOAA)** is a scientific and regulatory agency within the U.S. Department of Commerce that forecasts weather, monitors oceanic and atmospheric conditions, charts the seas, conducts deep sea exploration, and manages fishing and protection of marine mammals and endangered species in the U.S. exclusive economic zone. NOAA provides historical data that can help communities determine their future probability of flood events and is key in the planning and mitigation process. The NWS is an agency within NOAA.

River authorities or districts in Texas are public agencies established by the state legislature and given authority to develop and manage the waters of the state. SAFPR has four river authorities within its region that each have the power to conserve, store, control, preserve, use, and distribute the waters of a designated geographic region for the benefit of the public.

After multiple flooding events in the late 1990s and early 2000s that resulted in $1 billion in damage, government leaders united to come up with improved flood control, stormwater management and water quality strategies for the region. The **Bexar Regional Watershed Management (BRWN) partnership** was formed between Bexar County Commissioners, San Antonio City Council, and the San Antonio River Authority. BRWN works to prevent the impact that heavy rain and flooding has on Bexar County by coordinating planning and capital improvement programs. Technology is used to aid in analyzing flood and stormwater data to enhance flood warning, water quality, land use planning. This collaboration makes it easier to apply for grants as a region.

The **Texas Division of Emergency Management (TDEM)**, a division of the Texas Department of Public Safety (DPS), is charged with coordinating state and local responses to natural disasters and other emergencies in Texas. TDEM is intended to ensure the state and its local governments respond to and recover from emergencies and disasters and implement plans and programs to help prevent or lessen the impact of emergencies and disasters. There are six TDEM regions in Texas, and in those regions, there are assistant chiefs and district coordinators who serve as TDEM's field response personnel stationed throughout the state. They have a dual role as they carry out emergency preparedness activities and coordinate emergency response operations. In their preparedness role, they assist local officials in carrying out emergency planning, training, and exercises, and developing emergency teams and facilities. They also teach a wide variety of emergency management training courses. In their response role, they deploy to incident sites to assess damages, identify urgent needs, advise local officials regarding state assistance, and coordinate deployment of state emergency resources to assist local emergency responders. The SAFPR falls within **TDEM Region 6**.

The **Texas Department of Transportation (TxDOT)** generally is associated with the construction and maintenance of the state's immense state highway system; however, the agency is also responsible for overseeing aviation, rail, and public transportation systems in the state. TxDOT can provide real-time road closure and low water crossing information in the response and recovery phases of a flood event. Users can access these data through TxDOT's Drive Texas website: https://drivetexas.org.

Texas **Public Works Emergency Response Council** serves as a statewide database of assets available to respond as requested to man-made and natural disasters thru mutual aid. They serve to support and promote

statewide emergency preparedness, disaster response, mutual aid assistance and training for Public Works Agencies and seeks to provide formalized system allowing jurisdictions impacted by disaster to request assistance through a standardized process. They are key figures in all four emergency management phases.

The **General Land Office (GLO)** is the oldest state agency in Texas. The GLO manages state lands, operates the Alamo, helps Texans recovering from natural disasters, helps fund Texas public education through the Permanent School Fund, provides benefits to Texas Veterans, and manages the vast Texas coast. (GLO), through the Community Development and Revitalization division aids communities in rebuilding, restoring critical infrastructure, and mitigating future damage through resilient community planning. The GLO administers both Community Development Block Grant Disaster Recovery (CDBG-DR) and Mitigation (CDBG-MIT) funds from the U.S. Department of Housing and Urban Development (HUD) on behalf of the state of Texas.

Texas Association of Regional Councils assist state and federal partners by coordinating and improving regional homeland security preparedness, planning and response activities across jurisdictional boundaries. The Texas Department of Emergency Management works with the regional councils to ensure that all regional and local emergency plans are up-to-date and compliant with the Texas Government Code. Regional councils also work with TDEM in the event of a disaster within their region to access state resources in a timely manner.

The **U.S. Army Corps of Engineers (USACE)** is an important part of the nation's military. The agency is responsible for a wide range of efforts in the United States including addressing safety issues related to waterways, dams, and canals but also environmental protection, emergency relief, and hydroelectric power. USACE is composed of several divisions with the SAFPR located in the Southwest Division and in the Galveston and the Fort Worth Districts.

The **USACE Flood Risk Management Program (FRMP)** works across the agency to focus the policies, programs and expertise of USACE toward reducing overall flood risk. This includes the appropriate use and resiliency of structures such as levees and floodwalls, as well as promoting alternatives when other approaches (e.g., land acquisition, flood proofing, etc.) reduce the risk of loss of life, reduce long-term economic damages to the public and private sector, and improve the natural environment.

USACE responds to disasters each year by deploying hundreds of trained personnel and providing resources nationwide. USACE works under the direction of FEMA as a member of the federal team to support State and local governments in responding to major disasters.

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

7.1.4 Emergency Information

Flood Warning Systems

There are various means by which data can be collected and disseminated in a flood event. These include gauges to measure the current flood risk and communication systems to alert the public.

Two types of gauges used are rain gages and stream gages. A rain gauge is a meteorological instrument to measure rainfall in a given amount of time. It collects water falling on it and records the change over time in the rainfall depth. Stream gauging is a technique used to measure the discharge, or the volume of water moving through a channel per unit time, of a stream. The height of water in the stream channel, known as a stage or gauge height, can be used to determine the discharge in a stream. Within the SAFPR, there are 56 U.S. Geological Survey (USGS) stream gages that are jointly funded under a cooperative program between the USGS and local cooperators such as river authorities, cities, and the TWDB.

Rain and stream gages are useful for a variety of flood warning systems that cities, counties and region employ to keep citizens informed. San Antonio River Authority’s Predictive Flood Model (PFM) is a continuous simulation software that ingests NexRAD weather radar rainfall estimates, gauged rainfall, gauged stream level, runs VFlo model hydrology and hydraulics to estimate stream flow, depth, velocity, maximum flood inundation, swift-water rescue risk, and produces short-term stream forecasts at selected warning points anywhere within the inundation grid. The recently expanded warning

system covers all of Bexar County with stream-related products. The PFM also provides gauge-adjusted radar rainfall totals and forecasts for the entire San Antonio River basin. The PFM dynamic hydraulic models produce alerts and flood inundation maps every 15 minutes. Results are accessible through the Vieux & Associates' web- based Vieux Information Platform (VIP). Critical information about depth, flow velocity and whether creeks are continuing to rise or have peaked is transmitted to the City's Swift Water Rescue Teams in mobile device formats so they can enhance their situational planning. The San Antonio River Authority performs flood risk studies and uses the results to map flood risk and provide this information to property owners and local governments for planning mitigation action through watershed master planning, and to improve their flood warning systems. As part of their flood warning, the city also developed a public education and flood preparedness program called San Antonio Flood Emergency or SAFE. The goals of this program are; educate the public on flood awareness, preparedness and safety, develop multi-media approach to public education training, and work with first responders, the national weather service, school districts, businesses, media, neighborhood and apartment organizations to reach a wide range of individuals.

In collaboration with the USGS, Bandera County River Authority and Ground Water District (BCRAGD) developed a tool set in 2018 that provides a flood warning system for Bandera County. The tool consists of streamflow-gage monitoring network, a Hydrologic Engineering Center River Analysis System (HEC-RAS) that creates a well calibrated hydraulic model of the Medina River. It has the ability to generate flood inundation maps in the USGS FIM website and a Decision Support System (DSS). The hydraulic model of Medina River at and near Bandera was created using high resolution digital elevation data, aerial photographs, field surveys on structure and channel cross sections, and the stage-discharge rating curve that was established at the Bandera Station. This information was used to develop 29 flood-inundation maps showing potential inundation areas and depths for stages ranging from 10-38 feet. The river is continuously measured at all gages every 15 minutes and transmitted every hour to a satellite. This information is publicly accessible through the USGS Flood Inundation Mapping (FIM) Program[27], seen in Figure 7-3 below.

[27] https://webapps.usgs.gov/infrm/fdst/

Figure 7-3. USGS InFRM Website Interface

Across the region, several jurisdictions have shown an interest in installing more flood warning and readiness systems (gauges, gates, low water crossing barriers, etc.) that provide localized data. The SAFPR is a site where Hill Country rocky terrain and Gulf Coastal Plan converge. These topographic changes cause intense, localized floods. The current system of rain and stream gages is not able to convey data on a granular level to better inform downstream entities so they can act accordingly to protect the loss of life.

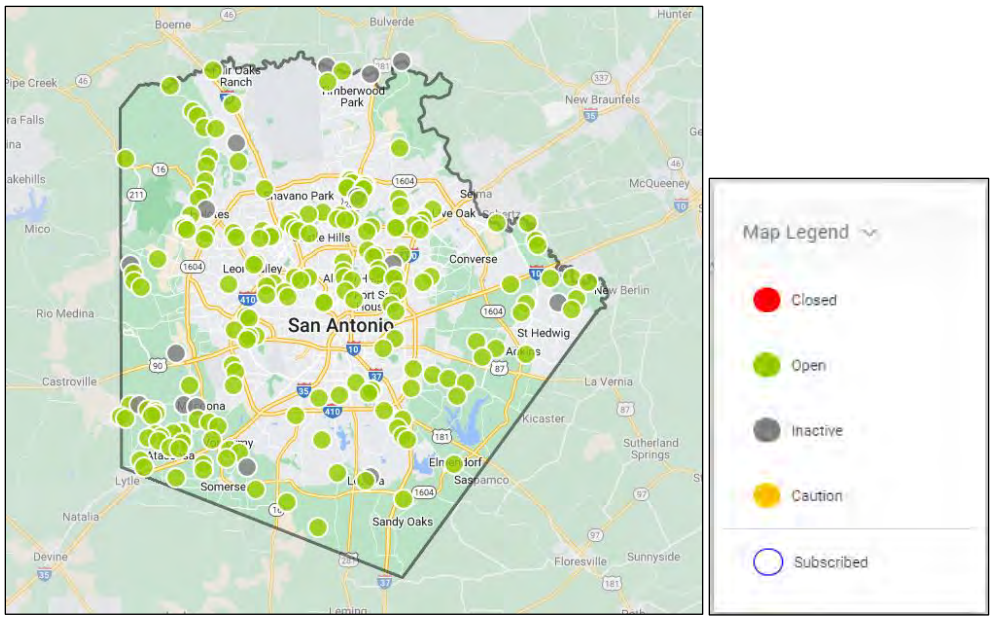
Alert Systems

In addition to the National Weather Service, local news stations or radio stations are vital components in relaying real time information to residents of inclement weather and flooding. They can also alert residents to low water crossing closings, dam or levee breaches, and other potential dangers. They can also issue flood watches, warnings, and emergency notifications. Various entities in the SAFPR maintain websites to provide the public with real time information about flooded streets and places to avoid.

Bexar County has implemented a new system known as High Water Alert Life Saving Technology (HALT) to warn drivers about too much water over the road, creating unsafe conditions. A sensor detects rising water depth, initiating flashing lights or a combination of gates and lights once a certain depth is reached. The county has installed more than 150 HALT systems in the community, monitoring road conditions 24 hours a day, 7 days a week. In addition to lights and gates, the county has set up an interactive website (BEXARflood.org) with information and a map displaying the status of all the

County's low water crossings at any given time. Each dot on the map indicates a location of a Bexar County HALT sensor. The sensors detect rising water and send real time information to this website: green means the road safe, yellow means the water is rising and red means the road is closed.

Figure 7-4. Bexar County HALT Sensor Locations



Image, Source: BEXARflood.org

The City of San Antonio has a similar system called SAFE ROUTE[28] which monitors low water crossings and provides alternative routes to local drivers.

An Emergency Alert System (EAS) is software that provides alert messages during an emergency. Messages can interrupt radio and television programming to broadcast emergency alert information. Messages cover a large geographic footprint. Emergency message audio/text may be repeated twice, but EAS activation interrupts programming only once, then regular programming continues.

A reverse 911 system allows an agency to pull up a map on a computer, define an area and send off a recorded phone message to each business or residence in that area. It can provide data to residents of flood dangers in their area. AlertSA is a program that residents can sign up for to receive alerts about disasters to their home phone, business and/or cell phone. The system is also ADA compliant with options for those that are Deaf and/or Blind to receive alerts tailored to their needs. Bexar, Comal and Guadalupe counties

[28] https://gis.sanantonio.gov/OEM/SAFE/index.html

are all included in the geographical scope. Many counties in the SAFPR have county organized alert systems that residents can sign up for on county websites.

School emergency alert systems allow schools to communicate quickly with staff, students, first responders, and others so that they can take appropriate action in the event of an emergency. Various versions of this tool are used in schools throughout the region from daycares to K-12 grade, as well as universities.

Local Emergency Operations

The four phases of emergency management, mitigation, preparedness, response and recovery are used as guides for action. Community outreach, proper training of staff, crafting agreements with other municipalities and acquiring proper equipment are completed during the mitigation and preparedness phase. Response activities include warning, emergency medical services, law enforcement operations, evacuation, shelter and mass care, emergency public information, and search and rescue. Short term recovery focuses on restoring vital services and addressing public needs. Long-term recovery comprises of applying for funds to upgrade and/or fixed damage infrastructure and homes, debris removal, restoration of utilities, mental health services and supporting businesses that were affected.

The City of San Antonio outlines emergency operations in their recently updated Basic Plan.[29] The city's emergency management program is comprehensive and integrated with resources from government, organized volunteer groups and businesses. COSA employs the Incident Command System to manage emergencies. The major organizational activities include managing the incident, operations, planning, logistics and finance/administration. During major emergencies and disasters, the Emergency Operations Center is activated along with the Incident Command System and responsibilities of informing the public, controlling the scene of the event, making informed decisions about whether to evacuate the public or shelter in-place, implementing traffic controls and requesting assistance if local capacity is overwhelmed, are delegated to various staff. Leadership includes the Mayor, City manager, and Emergency Management Coordinator, which is usually a Judge or Emergency Manager. These individuals are endowed with the authority to provide guidance and direction for the COSA emergency management programs. A county Judge or Mayor has the

[29] City of San Antonio. Basic Plan. Updated September 7, 2021. BasicPlan.pdf (saoemprepare.com)

authority to order evacuation of population from a threatened area. Cities are required to request assistance from the county before requesting assistance from the state. The Disaster District Committee Chairperson located at the Dept of Public Safety District Office in San Antonio makes the request. If a Presidential declaration is made, federal agencies such as FEMA may be employed to the scene.

Bexar County uses a very similar plan structure as COSA. The county employs the six components of NIMS, a standardized framework that guides the county in all phases of emergency management. This includes effectively integrating resources from different agencies into a temporary emergency organization at an incident site referred to as the Incidence Command System. Just as with COSA, the county will activate the Emergency Operations Center for major emergencies and disasters. Division of responsibilities is established and delegated. The site[s] of the emergency or disaster is assessed and managed, warnings are put out to the surrounding residents, the decision of whether or not to order an evacuation is decided and traffic control is arranged. If local capacity is overwhelmed, request for state aid is made by either the County Judge or Mayor of the cities, to the Disaster District 17 committee (DDC) chairperson, located in the City of San Antonio.

Hurricane tracking and Evacuation

NOAA Hurricane Center (NHC) is a component of the National Centers for Environmental prediction located at Florida International University. The NHC issues watches, warnings forecasts and analyses of hazardous tropical weather. The NHC is composed of several units with the goal of understanding tropical storms so they can better inform governments and residents of risk. The San Antonio River Basin has multiple counties within the coastal zone that are at risk of damaging effects from a tropical storm, strong winds and storm surge. Few hurricanes have reached as far inland as Bexar County to cause devastating flooding conditions for residents.

Evacuation routes designated to provide the safest and most timely evacuation of the coastal areas are established by Texas Department of Transportation. During an evacuation, two options may be utilized to help speed up the process, contraflow and evaculanes. Contraflow reverses some or all inbound lanes into outbound lanes on a designated roadway. Evaculanes allows drives to use the should of the road as a transportation lane. Maps of evacuation routes are available on the TXDOT website as well as city and county websites. The northern region of the river basin is typically the location where hurricane refuges go to escape an incoming tropical storm.

Figure 7-5. Hurricane Evacuation Routes

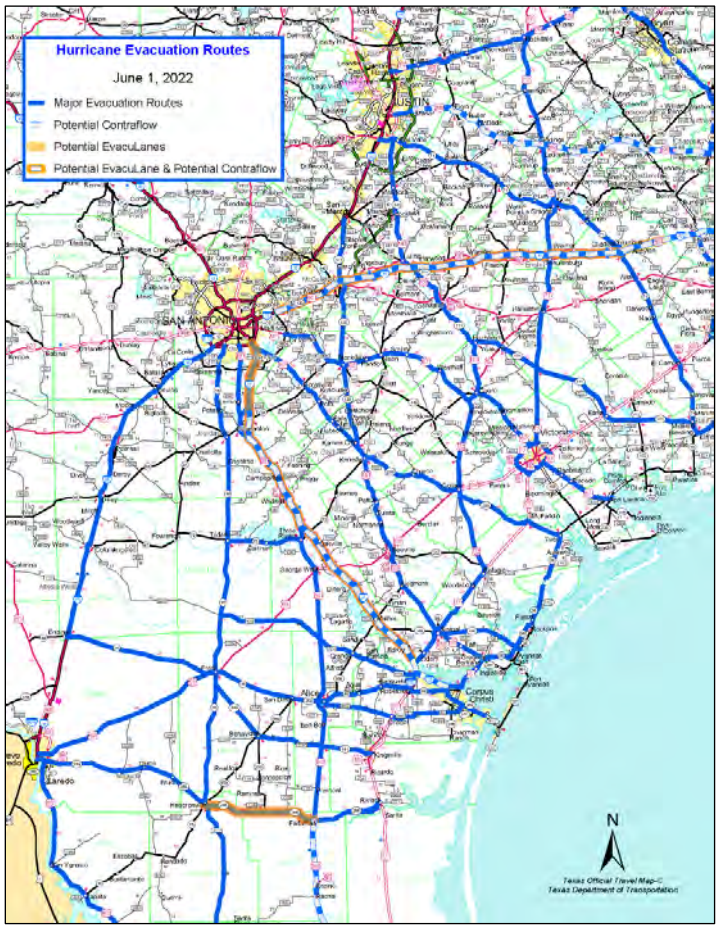


Image Source: Texas Department of Transportation. corpus.pdf (txdot.gov)

7.1.5 Plans to be Considered

State and Regional Plans

The State Hazard Mitigation Plan is an assessment developed by the Texas Department of Emergency Management[30]. It is an effective instrument to reduce losses by reducing the impact of disasters upon people and property. Although mitigation efforts cannot completely eliminate impacts of disastrous events, the plan endeavors to reduce the impacts of hazardous events to the greatest extent possible. The plan evaluates, profiles and ranks natural and human-caused hazards affecting Texas as determined by frequency of event, economic impact, deaths, and injuries. The plan assesses hazard risk, reviews current state and local hazard mitigation and climate adaption

[30] https://www.tdem.texas.gov/mitigation/hazard-mitigation-section

capabilities and develops strategies and identifies state agency (and other entities) potential actions to address needs.

The Regional Emergency Preparedness Program[31] is one of the largest and most effective programs of its kind nationwide. Bringing together urban, suburban, and rural jurisdictions, the program utilizes the guidance of the Homeland Security Exercise and Evaluation Program to facilitate information sharing, training collaboration, and cooperation between jurisdictions in a politically neutral and supportive environment. The Regional Preparedness Program accomplishes this through networking, standardizing policy and procedures, and coordinating efforts with stakeholders. Increased participation in the Regional Emergency Preparedness Program is beneficial for the safety of the region.

Local Plans

To examine the state of its flood preparedness, the San Antonio RFPG obtained emergency management plans, hazard mitigation plans, and other regional and local flood planning studies from county and local jurisdictions.

An emergency management plan is a course of action developed to mitigate the damage of potential events that could endanger an organization's ability to function. Such a plan should include measures that provide for the safety of personnel and, if possible, property and facilities.

The SAFPR has several plans and regulations in place that provide the framework that describes a community's capabilities in implementing mitigation and preparedness actions. These include HMAPs, emergency action plans (EAP), emergency management plans (EMP), floodplain management plans, and watershed master plans. Table 7-4 summarizes existing HMAPs and EMPs adopted in the SAFPR. Figure 7-2 illustrates counties with Flood Hazard Mitigation Plans, and Table 7-5 lists floodplain management plans and drainage master plans developed by communities in the SAFPR.

Table 7-4. Hazard Mitigation Plans and/or Emergency Management Plans adopted in the SAFPR

Jurisdiction	Adoption Date	Status
Aransas County HMAP	2019	Needs Update
Victoria County HMAP	2022	Just Updated

[31] Regional Emergency Preparedness Program: Member Services (nctcog.org)

Jurisdiction	Adoption Date	Status
Refugio County HMAP	2021	Just Updated
DeWitt HMAP	2016	Needs Update
Calhoun County HMAP	2020	Just Updated
Karnes County & Wilson County Multi-Jurisdictional HMAP	2020	Just Updated
Guadalupe County	2020	Just Updated
Comal County HMAP	2018	Needs Update 2023
Bexar County EMP	2017	Needs Update
Kendall County HMAP	2017	Needs Update
Kerr County EMP	2015	Needs Update
Medina County HMAP	2020	Just Updated
City of San Antonio HMP	2021	Just Updated

Figure 7-6. County Hazard Mitigation Action Plans in the SAFPR

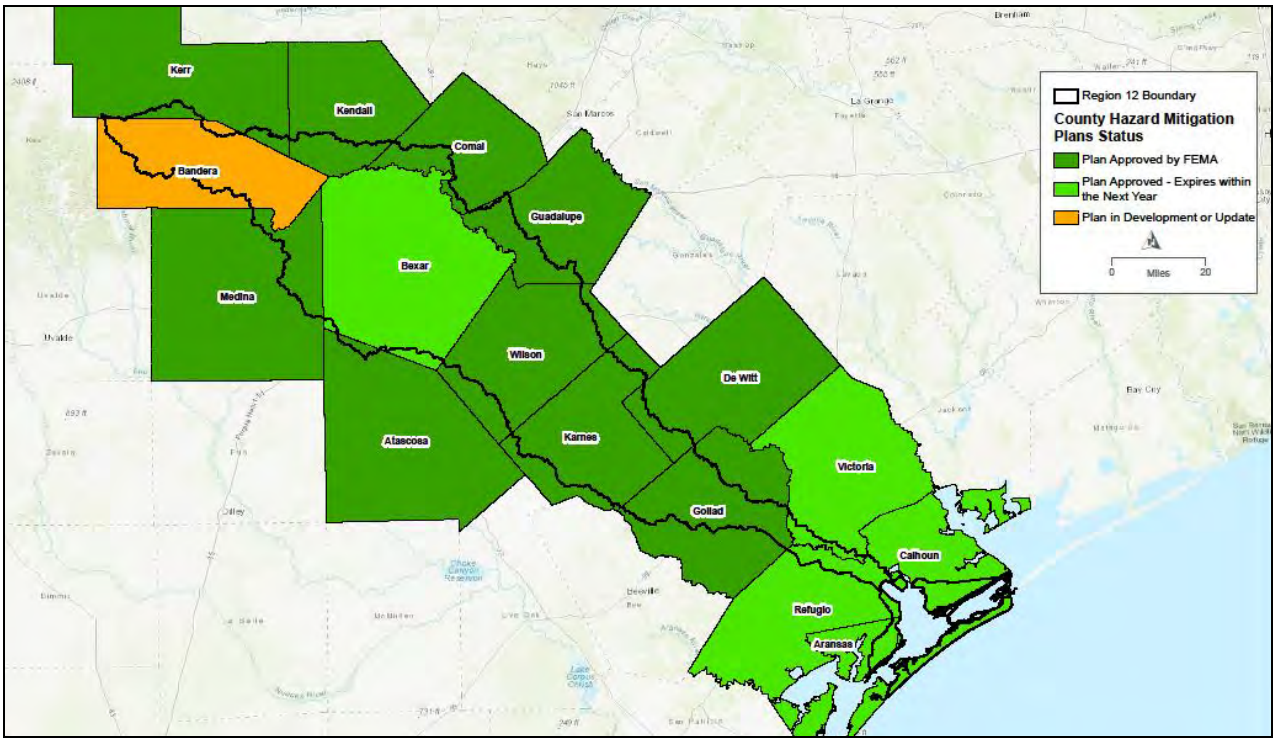


Table 7-5. Floodplain management and drainage master plans by communities in the SAFPR

Jurisdiction	Plan Type	Year
City of Boerne	Drainage Master Plan	2021
Aransas County	Multi-Jurisdictional Floodplain Management Plan	2017
Bandera County	River Authority and Groundwater District Flood Plan	2019
San Antonio	Local Drainage Master Plan	Annual Updates

The San Antonio River Authority has worked with partner agencies to complete Watershed Master Plans since 2009 for watersheds in the San Antonio River Basin. The master plans have two primary objectives:

1. Identify needs and opportunities related to flood risk, water quality issues, low impact development, stream restoration, nature-based park planning, mitigation banking, and conservation easements.
2. Develop and assess proposed projects to address the identified needs and preserve identified opportunities.

Watershed master plans encourage all sectors of the community to work together to create a flood hazard resilient community. A watershed master plan addresses existing flooding, erosion, and water quality problems and can be useful in preparing for future challenges. Watershed master plans provide recommendations, help educate the public and influence decision makers regarding land use changes, investment in capital projects, and modifications to development regulations within a watershed. The developed watershed master plans in the region are shown below in Table 7-6 and are living documents that are updated as needed.

Table 7-6. Watershed master plans developed by SARA and participating local entities

Watershed	Status
Upper San Antonio River	Revised November 2013
Leon Creek	Completed January 2011
Salado Creek	Completed December 2011

Medina River	Completed November 2015
Lower San Antonio River	Completed September 2015
Cibolo Creek	Revised July 2018

Hazard mitigation planning reduces loss of life and property by implementing strategies to minimize the impact of disasters. It begins with state, tribal, and local governments identifying natural disaster risks and vulnerabilities that are common in their area. Table 7-7 illustrates how the Alamo Area Council of Governments assessed risk by hazard type in their HMAP. After identifying risks, plans often locate and assess the level of risk that critical infrastructure and social systems have regarding a certain hazard. They develop long-term strategies for protecting people and property from similar events. Having an up-to-date HMAP is key in assessing risk and in developing mitigation actions. Systems are interconnected and it is also important to incorporate hazard mitigation information into other jurisdictional plans such as master and comprehensive plans.

Table 7-7. Qualitative risk assessment terminology used in the Alamo Area Council of Governments HMAP

Definitions of Risk Assessment Impact Terminology for Qualitative Risk Assessment			
Term	**Potential Impact to People (Life Safety/Livelihood)**	**Potential Impact to Buildings/Critical Facilities**	**Potential Impact to Infrastructure**
Low	Some injuries possible but unlikely	Cosmetic damages to structures Loss of Function for less than 1 day	Some roads/bridges temporarily blocked Temporary power loss
Moderate	Injuries expected, some deaths possible	Some structural damages Loss of function for 1-2 days	Road/bridges closures Power and utility loss
High	Several deaths expected	Some structures irreparably damaged Loss of function for 3-5 days	Long-term road/bridge closures Long-term power and utility loss

The purpose of EAPs is to facilitate and organize employer and employee actions during workplace emergencies. They are an essential element in emergency management for critical facilities. In the private sector, an EAP is a document required by Occupational Safety and Health Administration (OSHA) standards.

As part of the TCEQ Dam Safety Program, owners of significant-hazard and high-hazard dams are required to submit an EAP to the TCEQ. Dam EAPs document responsibilities during flood response and identifies the flood inundation area. Of the 162 dams in the SAFPR, 71 have EAP and are listed in the table below.

Table 7-8. SAFPR Dams with EAPs

Dam Name		
Alkek Lake No 1 Dam	Escondido Creek WS SCS Site 2 Dam	Salado Creek WS SCS Site 1 Dam
Alkek Lake No 2 Dam	Escondido Creek WS SCS Site 3 Dam	Salado Creek WS SCS Site 10 Dam
Armstrong Lake Dam	Escondido Creek WS SCS Site 4 Dam	Salado Creek WS SCS Site 11 Dam
Army Residence Community Dam	Escondido Creek WS SCS Site 5 Dam	Salado Creek WS SCS Site 12 Dam
Brooklyn Street Lock And Dam	Escondido Creek WS SCS Site 6 Dam	Salado Creek WS SCS Site 13a Dam
Calaveras Creek Dam	Escondido Creek WS SCS Site 7 Dam	Salado Creek WS SCS Site 13b Dam
Calaveras Creek WS SCS Site 3 Dam	Escondido Creek WS SCS Site 8 Dam	Salado Creek WS SCS Site 2 Dam
Calaveras Creek WS SCS Site 5 Dam	Escondido Creek WS SCS Site 9 Dam	Salado Creek WS SCS Site 4 Dam
Calaveras Creek WS SCS Site 6 Dam	Garrison Ranch Lake Dam	Salado Creek WS SCS Site 5 Dam
Calaveras Creek WS SCS Site 7 Dam	Love Creek Dam	Salado Creek WS SCS Site 6 Dam
Calaveras Creek WS SCS Site 8 Dam	Martinez Creek WS SCS Site 1 Dam	Salado Creek WS SCS Site 7 Dam
Calaveras Creek WS SCS Site 9 Dam	Martinez Creek WS SCS Site 2 Dam	Salado Creek WS SCS Site 8 Dam

Dam Name		
Calaveras Creek WS SCS Site 10 Dam	Martinez Creek WS SCS Site 3 Dam	Salado Creek WS SCS Site 9 Dam
Circle Dot Dam	Martinez Creek WS SCS Site 4 Dam	Singing Hills Unit 1 Detention Dam
Dawson Ranch Dam No 2	Martinez Creek WS SCS Site 5 Dam	Thompson Lake Dam
Dawson Ranch Dam No 4	Martinez Creek WS SCS Site 6a Dam	Upper Cibolo Creek WS SCS Site 1 Dam
Dawson Ranch Dam No1	Medina Diversion Lake Dam	Upper Cibolo Creek WS SCS Site 2 Dam
Denman Park Dam	Medina Lake Dam	Upper Cibolo Creek WS SCS Site 3 Dam
Elmendorf Lake Dam	Montague Lake Dam	Upper Cibolo WS SCS Site 4 Dam
Escondido Creek WS SCS Site 1 Dam	New Langford Lake Dam	Victor Braunig Dam
Escondido Creek WS SCS Site 10 Dam	Olmos Dam	White Lake Dam
Escondido Creek WS SCS Site 11 Dam	Purple Sage Ranch Lake	Wildlake Dam
Escondido Creek WS SCS Site 12 Dam	Rock Cliff Dam	Woodlawn Lake Dam
Escondido Creek WS SCS Site 13 Dam	Salado Creek WS NRCS Site 15r Dam	

A high hazard classification indicates that if the dam were to fail, there would be large consequences (such as loss of life), not that the dam is in a condition that is more likely to fail. As shown in Table 7-8 below, there are numerous dams located in the SAFPR. While these dams provide major flood mitigation for the region, they also introduce a secondary risk to.

Table 7-9. Counties with dams in the SAFPR

Number of Dams by County in the San Antonio FPR			
Atascosa	19	Wilson	14
Bandera	32	Kendall	15
Bexar	58	De Witt	16
Comal	12	Goliad	6
Guadalupe	16	Aransas	0
Karnes	19	Calhoun	8
Kerr	18	Victoria	4
Medina	28	Refugio	4

The SAFPR's ability to prepare, respond, recover, and mitigate disaster events is determined by several factors. With a clear understanding of the plans that determine a community's capabilities, a recognition of the entities with whom coordination is key, and knowledge of the actions sustained to promote resiliency, the SAFPR will be better equipped to implement sound measures for flood mitigation and preparedness.

8

Administrative, Regulatory, and Legislative Recommendations

8 Administrative, Regulatory and Legislative Recommendations

[31 TAC §361.43]

Part of the San Antonio RFP effort includes proposing changes to administrative practices and existing statutes in order to make floodplain management and flood mitigation planning and implementation throughout the State of Texas more efficient or logical. As set forth in the TWDB rules and guidelines for regional flood planning, the regional flood planning groups (RFPG) may adopt recommendations on policy issues related to floodplain management and flood mitigation planning and implementation. Specifically, the RFPGs may adopt:

- Legislative recommendations considered necessary to facilitate floodplain management and flood mitigation planning and implementation.
- Other regulatory or administrative recommendations considered necessary to facilitate floodplain management and flood mitigation planning and implementation.
- Any other recommendations that the San Antonio RFPG believes are needed and desirable to achieve its regional flood mitigation and floodplain management goals.
- Recommendations regarding potential, new revenue-raising opportunities, including potential new municipal drainage utilities or regional flood authorities, that could fund the development, operation, and maintenance of floodplain management or flood mitigation activities in the region.
- Legislative, regulatory, and administrative recommendations adopted by the San Antonio RFPG are detailed in this chapter.

8.1 Regulatory and Administrative Recommendations

The San Antonio RFPG has also developed recommendations of an administrative or regulatory nature, concerning existing procedures, state entities, or state/regional regulations. Alterations to these procedures could also be proposed to the TWDB for consideration.

Recommendations in Table 8-1 are suggested changes to existing standards, state-controlled entities, or procedures.

Table 8-1. Regulatory and Administrative Recommendations

ID	Recommendation	Rationale for Recommendation
8.1.2	Review and revise as necessary all state infrastructure entities' (i.e., Texas Department of Transportation [TxDOT]) standards and practices for legislative and regulatory compliance with stormwater best practices.	State entities should be aware of the drainage and stormwater standards in the areas where they are active. State entities should be required to comply with local regulations when local regulations are higher than state minimum criteria or entity specific criteria.
8.1.3	TxDOT should employ roadway design criteria to require all new and reconstructed state roadways to be designed and constructed, to the extent practicable, at elevations at or above the 1.0% annual chance event water surface elevation. TxDOT should also consider future conditions, such as urbanization and changing rainfall, in its roadway design criteria for drainage and flood risk reduction.	TxDOT is not a participant in the NFIP and does not, in all cases, design roadways in a manner consistent with minimum NFIP requirements. It is recognized that, by their nature, it is often not feasible or practicable to design and construct roadways to provide a level of flood protection equivalent to or greater than the 1% annual chance storm (100-year) event. However, concerning policy and practice, TxDOT should strive to meet this standard.
8.1.4	Establish programs and funding to evaluate and update development code and educate local and regional officials to the floodplain management tools they have available along with nature-based solutions.	Local and regional officials are often unaware of their authority to establish and enforce stormwater regulations (Texas Local Government Code Title 7, Subtitle B; Texas Water Code Chapter 16, Section 16.315). Flooding and drainage components of local and regional officials' training is often inadequate for their level of responsibility.
8.1.5	Provide measures to allow and encourage jurisdictions to work together towards regional flood mitigation solutions.	Flooding does not recognize jurisdictional boundaries. Allowing and encouraging entities to work together towards common flood mitigation goals would be beneficial to all involved. This should also include state agencies.

ID	Recommendation	Rationale for Recommendation
8.1.6	Develop a publicly available, statewide database and tracking system to document flood-related fatalities and injuries.	In order to more accurately address the health, safety, and welfare of the public, high flood-risk areas should be tracked and reported. Doing so would increase awareness of the area, both so the public could be aware of the risks, and elected officials and decision-makers could institute solutions to reduce the risk in those areas.
8.1.7	Revise the scoring criteria for funding associated with stormwater and flood-related projects that benefit nature based solutions and agricultural activities.	The traditional benefit-cost analysis tools prevent agricultural projects from competing with municipal benefit-cost ratios.
8.1.8	Provide financial or technical assistance and training to smaller/rural jurisdictions to help educate them on implementing flood mitigation policy, practices, and funding opportunities.	The former Office of Rural Affairs/Texas Department of Rural Affairs was intended to assist and work with rural entities. However, the department was disbanded. Actions such as maintaining a department specifically for smaller/rural entities, incentivizing consultants to pursue work for smaller or rural entities or adjusting benefit-cost ratios to rank small/rural entities equally are all ideas towards accomplishing this goal.
8.1.9	Develop a process for state flood planning goal tracking.	A process is needed to document the progress of the short/long term region goals. This process could be similar to the MS4 program and include interim milestones to track progress. Funding also needs to be made available for the regions
8.1.10	Develop a set of minimum standards for regional flood warning and emergency response programs, and provide funding and resources for communities to establish these systems.	Timely warning flood threats and impending danger will aid in the reduction of additional flood risk and flood related deaths. River authorities could serve as the state level agency to implement these efforts.

ID	Recommendation	Rationale for Recommendation
8.1.11	Encourage each entity to adopt a dedicated funding mechanism for floodplain management purposes.	A dedicated funding mechanism will allow entities to study, plan for and construction flood mitigation programs and projects.

8.2 Legislative Recommendations

The San Antonio RFPG, sponsors, and technical consultants have interacted with a wide variety of entities during the flood planning efforts. There are trends and occurrences throughout a large portion of the state. Some of these trends and occurrences are positive and should be encouraged while others may be detrimental to the floodplain and stormwater management of the entities within the region, and/or state.

The San Antonio RFPG understands that flooding does not recognize jurisdictional boundaries. As Texas continues to experience rapid growth in unincorporated areas of counties throughout the State, the San Antonio RFPG encourages the Texas State Legislature to clarify land use authority under the Texas Water Code to address the impacts increased development in unincorporated areas has on flooding. The San Antonio RFPG also recommends the Sate evaluates strategies to help communities become more competitive in acquiring federal funds.

During the flood planning process, the San Antonio RFPG, technical consultants, entities and members of the public have provided input on the function and usefulness of existing legislation related to floodplain and stormwater management.

Table 8-2 presents recommendations related to flood planning, flood risk mitigation, and funding adopted by the San Antonio RFPG that will require legislative action and looking at options (providing entities with more options in unincorporated areas).

Table 8-2. Legislative Recommendations

ID	Recommendation	Rationale for Recommendation
8.2.1	Direct state funding to counties to maintain drainage and stormwater infrastructure in unincorporated areas.	Counties have floodplain and drainage related responsibilities in Texas without a consistent way to fund projects.

ID	Recommendation	Rationale for Recommendation
8.2.2	Provide funding and/or technical assistance to develop regulatory floodplain maps.	Several entities who have outdated maps or no mapping at all are not able to fund the projects necessary to update or create accurate depictions of flood risk.
8.2.3	Provide funding and/or technical assistance to update drainage criteria and development standards that prevents development in or impacts to the Effective FEMA floodplain.	Up-to-date drainage criteria and development standards at the county level improve resiliency and prevent additional flood risk. However, many entities do not have the funding to update criteria and standards.
8.2.4	Provide funding and/or technical assistance to update or perform flood planning and/or master drainage planning studies.	Many communities and entities do not have up-to-date studies or plans that are reflective of growth or updated rainfall data.
8.2.5	Expand eligibility for and use of funding for stormwater and flood mitigation solutions (local, state, federal, public/private partnerships, etc.)	Flood mitigation studies/projects do not generate revenue, which makes them more challenging to fund at the local level. Funding sources could utilize different financial/economic benefit metrics for projects that do not generate revenue.
8.2.6	Provide additional funding to enable the continued function of regional flood planning groups during the time between planning cycles.	In the time between planning cycles, not only could the RFPGs continue adding FMEs, FMSs, and FMPs to the regional flood plan, but they could also implement planning group-sponsored flood management activities and outreach, and stay informed on regional flood-related events.

ID	Recommendation	Rationale for Recommendation
8.2.7	Establish and fund a state program to assist counties and cities with the assessment and prioritization of low-water crossings. Funding should also be provided on a cost-sharing basis for implementation of structural and/or non-structural flood risk reduction measures at high-risk low-water crossings.	Many low-water crossings experience frequent flooding but may have relatively minor flood risk in terms of public safety and/or the integrity of the roadway. Others, however, are at high-risk and experience flood depths and velocities that do pose a significant risk. The cost to mitigate flood risk at high-risk low-water crossings with structural solutions (e.g., bridges) is typically cost-prohibitive. Flood risk at low-water crossings should be systematically and fully evaluated to prioritize those crossings in need of mitigation, either through structural measures or non-structural (e.g., closures, reverse 911 notifications, etc.) measures.
8.2.8	Encourage dedicated funding provided to TxDOT for upgrading critical Low-water crossings on TxDOT facilities that are identified as critical in the regional flood plan.	Low-water crossing can be expensive and complicated projects. A dedicated funding source for TxDOT to upgrade critical crossings, provides a mechanism for rural counties and/or small cities to implement these projects without having to apply for a grant and add staff or hire consultants.
8.2.9	Establish perpetual and dedicated funding to implement projects identified in the state flood plan.	A reliable funding source is needed to implement the legislative recommendations across the states. Funding needs to be made available to the state agencies that will be required to implement the adopted recommendations.
8.2.10	Provide financial assistance to increase the amount of stream gauges and flood warning systems in the region.	An increase in stream gauges and flood warning systems throughout the region will reduce flood risk.

8.3 Flood Planning Recommendations

The San Antonio RFPG has identified several improvements to streamline the planning process and make it more effective. Recommendations in Table 8-3 should be considered to improve the regional flood planning process for future planning cycles.

Table 8-3. Regional Flood Planning Process Recommendations

ID	Recommendation	Rationale for Recommendation
8.3.1	Update the scope of work, guidance documents, rules, checklists, etc., based on the adjustments and lessons learned made to these planning documents during the first cycle of planning.	During the first cycle of regional flood planning, multiple amendments and additions to the TWDB documents and the TWDB's interpretation of its documents occurred. Moving forward, the TWDB documents provided at the onset of each new planning cycle should reflect what is ultimately required of the San Antonio RFPG.
8.3.2	Develop a fact sheet and/or other publicity measures to encourage entities to participate in the SAFPR effort.	Many entities were unaware of the regional and state flood planning efforts despite the San Antonio RFPG's outreach efforts.
8.3.3	Host "lessons learned" discussions with TWDB staff, San Antonio RFPG members, sponsors and technical consultants following the submittal of the final regional plans.	Opening dialogue among these participants to discuss proposed improvements to the regional flood planning process will streamline and improve future regional flood planning efforts.
8.3.4	Develop a process to efficiently amend approved regional flood plans to incorporate additional recommended FMEs, FMSs, and FMPs, and to allow the San Antonio RFPG to advance the recommended FMEs to FMPs.	Amending the San Antonio RFP is anticipated to be an intensive process. Amendments to move FMEs to FMPs and incorporate new flood management solutions should have a quick turn-around time to efficiently include them in the adopted Plan.

ID	Recommendation	Rationale for Recommendation
8.3.5	Reduce the amount of information required to escalate potentially feasible FMEs to FMPs. Align required information to be similar to what is required for design/construction funding.	Some of the data currently requested for FMPs is more detailed than traditional planning level data. Therefore, certain FMPs had to be submitted as FMEs or FMSs despite having sufficient data to produce a project. The RFPs should focus on meeting the minimum requirement to produce funding, rather than spending time and money more appropriately spent during a project's design phase.
8.3.6	Revise the criteria for the "No Adverse Impact" certification required for FMPs.	The current criteria give thresholds for increases in flow, water surface elevation, and inundation extents. Though useful, the current criteria do not allow for consideration of projects that exceed these thresholds but address the impact during final design or downstream accommodations.
8.3.7	Streamline the data collection requirements, specifically those identified in Task 1. Focus on collecting the data that was most useful to the regional flood plan development.	This first round of regional flood planning revealed that very few local entities collect and maintain data and information prescribed by TWDB for use in the planning process. This is particularly the case with data available in a digital geospatial format. Also, some required data (e.g., drainage infrastructure) is of questionable value in the planning process and is generally unavailable. As noted in the previous recommendation, most problems associated with drainage infrastructure do not present significant flood risk and are best characterized as nuisance flooding.

ID	Recommendation	Rationale for Recommendation
8.3.8	Provide statewide data and a methodology to determine infrastructure functionality and deficiencies in the next cycle of the flood planning process. Consider the lack of readily available local data when developing the methodology.	Most entities do not have information regarding the functionality and deficiency of their infrastructure. Some fields required by the TWDB-required tables in the San Antonio RFP are based on data that are not available to entities without extensive field work. A statewide database with this information would be useful to all entities.
8.3.9	Review and revise the geodatabase submittal attributes and elements.	Normalizing the geodatabase with relationships would allow for cross-referencing of data elements and attributes. More domains for attributes need to be developed.
8.3.10	Use the FEMA Social Vulnerability Index (SVI) when available instead of the Centers for Disease Control and Prevention (CDC) SVI in future planning cycles.	FEMA's SVI is considered to be more relevant to flood resiliency and risk than the CDC's SVI.
8.3.11	Use consistent hydrologic unit code (HUC) reporting requirements throughout the TWDB-required tables.	The RFPG Guidance requires HUC-8 in some tables, HUC-10 in other tables, and HUC-12 in other tables. Some tables require multiple HUCs to be provided. The RFPG recommends that the TWDB require HUC-8 in all TWDB-required tables for consistency and to correspond to FEMA's base level watershed planning granularity.

ID	Recommendation	Rationale for Recommendation
8.3.12	Improve upon the flood risk identification and exposure process with regards to building footprints and population at risk by including first-floor elevations of structures.	While the building footprints are helpful, without the first-floor elevations of each structure, it is difficult to determine the actual flood risk to each structure. If a structure is sufficiently elevated above the base flood elevation, for example, the footprint still shows the structure in the floodplain and the corresponding population is considered “at risk” even though the structure meets NFIP standards, This likely overestimates the population at risk.
8.3.13	Clarify the distinction between flood mitigation and flood infrastructure and what is more commonly considered drainage infrastructure.	Many local entities, for example, municipal utility districts, have drainage responsibilities, particularly with respect to the development of land within their jurisdictions and the maintenance of drainage infrastructure. These entities may or may not also develop what might be considered flood risk reduction infrastructure. Also, most local drainage problems and deficiencies in local drainage infrastructure are localized and sometimes cause “nuisance” flooding rather than posing significant risk and exposure to people and property. It would be helpful to delineate this distinction as best as possible. For example, the TWDB guidance regarding flood exposure and vulnerability could be refined to better emphasize identifying and mitigating significant risks to public safety, property, and public infrastructure.

ID	Recommendation	Rationale for Recommendation
8.3.14	Develop guidance and a standardized evaluation criteria for the benefits of nature-based solutions.	Including multi-benefit improvements for nature-based solutions criteria for entities in the SAFPR will allow a full life-cycle analysis and holistic cost-benefit comparisons between alternatives.
8.3.15	Define the phrase “flood-related authorities or entities,” to clarify what local and regional governmental entities are included, and which are not.	The phrase is used in the TWDB planning documents multiple times and is a central part of Tasks 1 and 10. The TWDB originally provided the San Antonio RFPG with a list of entities that were thought to have flood-related responsibilities. During the outreach efforts, many of those entities communicated they did not have flood responsibilities and did not believe they should be included in the regional flood planning effort. Clarification is requested regarding the intent of this phrase. Note however, that some political subdivisions of the state such as water control and improvement districts or municipal utility districts, do have authority to develop and maintain drainage and other related infrastructure, such as stormwater conveyance systems and detention facilities, but not all exercise that authority.
8.3.16	Provide more flexibility to the RFPG in making recommendations for the regional flood plan.	The RFPG believes that more flexibility would allow the San Antonio region to create a more tailored region flood plan that best reduces risk in the region.
8.3.17	Provide additional knowledge to the planning groups about scoring and ranking prior to development of the plans.	Additional knowledge of the scoring and ranking allows the planning groups to make better informed decisions when making recommendations.

8.4 Summary of Recommendations

The administrative, regulatory, legislative, and flood planning recommendations have been selected and proposed by the San Antonio RFPG to make floodplain management and flood mitigation planning and implementation throughout Texas more efficient and logical. From a legislative perspective, funding is one of the greatest challenges. Providing more state legislature backed funding will allow entities to minimize additional flood risks and protect life and property. The administrative recommendations have been proposed to aid entities in their floodplain and stormwater management practices. Many communities are hesitant to enact higher standards over the concern that future legislative acts will limit their ability to regulate. For future flood planning, recommendations were made to improve future SAFPR efforts. Clarifying and editing current requirements will improve the overall flood planning process and reduce future costs to taxpayers. These recommendations will aid in fulfilling the SAFPR goals discussed in Chapter 3.

9

Flood Infrastructure Financing Analysis

9 Flood Infrastructure Financing Analysis

[31 TAC §361.44]

The TWDB requires that each RFPG assess and report on how sponsors propose to finance recommended FMEs, FMSs, and FMPs**. A primary aim of this survey effort is to understand the funding needs of local sponsors and propose what role the state should have in financing the recommended FMEs, FMSs, and FMPs.**

Chapter 9 is an analysis of the funding for flood related issues in the SAFPR. Communities in the region were surveyed to determine the needs, costs, and proposed methods of funding to address current flood related issues. Section 9.1 presents an overview of common sources of funding for flood mitigation, planning, projects, and other flood management efforts. The methodology, results of the financing survey, and comments regarding the state's role in financing are presented in Section 9.2 through Section 9.4.

9.1 Sources of Funding for Flood Management Activities

Communities across the state utilize a variety of funding sources for their flood management efforts, including local, state, and federal sources. This section discusses some of the most common avenues of generating local funding and various state and federal financial assistance programs available to communities. *Table 9-1* summarizes the local, state, and federal sources discussed in this chapter, and characterizes each by the following three key parameters: first, which state and federal agencies are involved, if applicable; second, whether they offer grants, loans, or both; and third, whether they are classified as regularly occurring opportunities or are only available after a disaster.

Table 9-1. Common Sources of Flood Funding in Texas

Source	Federal Agency	State Agency	Program Name	Grant (G)	Loan (L)	Post-Disaster (D)
Federal	FEMA	TWDB	Flood Mitigation Assistance (FMA)	G	-	-
	FEMA	TDEM	Building Resilient Infrastructure and Communities (BRIC)	G	-	-

Source	Federal Agency	State Agency	Program Name	Grant (G)	Loan (L)	Post-Disaster (D)
	FEMA	TCEQ	Rehabilitation of High Hazard Potential Dam Grant Program (HHPD)	G	-	-
	FEMA	*TBD*	Safeguarding Tomorrow through Ongoing Risk Mitigation (STORM)	-	L	-
	FEMA	TDEM	Hazard Mitigation Grant Program (HMGP)	G	-	D
	FEMA	TDEM	Public Assistance (PA)	G	-	D
	HUD	GLO	Community Development Block Grant – Mitigation (CDBG-MIT)	G	-	D
	HUD	GLO	Community Development Block Grant Disaster Recovery Funds (CDBG-DR)	G	-	D
	HUD	GLO	HUD GLO Resilient Communities Program (RCP)	G	-	-
	HUD	GLO	HUD GLO CDBG-MIT Local Hazard Mitigation Plans Program (LHMPP)	G	-	-
	HUD	TDA	Community Development Block Grant (TxCDBG) Program for Rural Texas	G	-	-
	USACE		Partnerships with USACE, funded through Continuing Authorities Program (CAP), Water Resources Development Acts (WRDA), or other legislative vehicles*	-	-	-
	EPA	TWDB	Clean Water State Revolving Fund (CWSRF)	G**	L	-
State		TWDB	Flood Infrastructure Fund (FIF)	G	L	-
		TWDB	Texas Water Development Fund (Dfund)	-	L	-
		TSSWCB	Structural Dam Repair Grant Program	G	-	-

Source	Federal Agency	State Agency	Program Name	Grant (G)	Loan (L)	Post-Disaster (D)
		TSSWCB	Operation and Maintenance (O&M) Grant Program	G	-	-
		TSSWCB	Flood Control Dam Infrastructure Projects - Supplemental Funding	G	-	-
Local			General fund	-	-	-
			Bonds	-	-	-
			Stormwater or drainage utility fee	-	-	-
			Special-purpose district taxes and fees	-	-	-

*Opportunities to partner with USACE are not considered grant or loan opportunities, but shared
participation projects where USACE performs planning work and shares in the cost of construction.
**The CWSRF program offers principal forgiveness, which is similar to grant funding.

A combination of increased local capabilities and increased funding amounts and opportunities from the state and federal government will be required to meet the flood risk study and mitigation needs identified through this planning process. State funding particularly will be needed to provide access to funding for small, rural communities, incentivizing high-priority projects and project types, and improving access to and leveraging federal funding sources.

9.1.1 Local Funding

Overall, larger urban communities typically bear a greater percentage of the burden for funding flood and stormwater-related activities in their jurisdictions than the smaller, more resource-limited communities who are often unable to generate a significant amount of funding for these activities.

This section primarily focuses on the funding mechanisms available to municipalities and counties, as a large majority of the FME, FMS, and FMP sponsors are these types of entities. Special purpose districts are briefly discussed as there may be opportunities to create more of these types of districts in the region.

A community's general fund revenue (for cities[32] or counties[33]) stems from sales, property, and other taxes and is typically the primary fund used by a government entity to support most departments and services such as police, fire, parks, trash collection, and local government administration. Due to the high demands on the general fund for many local needs, there is often not a significant amount available for funding flood projects.

Many entities may be able to receive funding from the various programs listed in Table 9.1. But each entity and each program must be closely evaluated to determine applicability, available financing, and ability to collect revenue to support debt and infrastructure.

As noted in the Texas Flood Information Clearinghouse information included in the TWDB "Community Official Flood Resource Guide, Volume 1: February 2022", some of the entity types include:

> City, council of government, county, drainage district, groundwater conservation district, hospital district ,irrigation district, levee Improvement district, local government corporation, municipal management district, municipal utility district, navigation district, private entities, regional district, school district, soil conservation district, special law district, state agency, stormwater control district, tribal organizations, water control and improvement district, water improvement district, and non-profit water supply corporation

Dedicated fees such as stormwater or drainage fees are an increasingly popular tool for local flood-related funding, primarily in more urban areas. Municipalities can establish a stormwater utility (sometimes called a drainage utility), which is a legal mechanism used to generate revenue to finance a city's cost to provide and manage stormwater services. To provide these services, municipalities assess fees from users of the stormwater utility system. Impact fees can be collected from developers to cover a portion of the expense to expand storm water systems necessitated by new development.

Another source for local funding to support flood management efforts includes special districts. A special district is a political subdivision established to provide a single public service (such as water supply, drainage, or sanitation) within a specific geographic area. Examples of these special districts include Water Control and Improvement Districts (WCID), Municipal Utility Districts

[32] https://comptroller.texas.gov/transparency/local/cities.php

[33] https://comptroller.texas.gov/transparency/local/counties.php

(MUD), Drainage Districts (DD), and Flood Control Districts (FCD). Each of the different types of districts are governed by different state laws, which specify the authorities and process for creation of a district. Districts can be created by various entities, including the Texas Legislature, the TCEQ, county commissioners' courts, and city councils. Depending on the type of district, a district may have the ability to raise revenue through taxes, fees, or issuing bonds to fund flood and drainage-related improvements within the district's area.

Lastly, municipalities and counties have the option to issue debt[34] through general obligation bonds, revenue bonds, or certificates of obligation[35], which are typically paid back using any of the previously mentioned local revenue raising mechanisms.

The communities in the SAFPR are impacted by flooding issues and have been proactively addressing many of these issues to the best of their funding ability. Flood studies and projects have been typically funded by individual communities as they apply for the available funding through the various state and federal programs (See 9.1.1 below) and through their own financial resources via fees, taxes, and bonds. These efforts are intended to address local flooding issues in a smaller scale typically for smaller communities and in a larger scale typically for larger communities.

For example, smaller communities such as Castroville, La Vernia and Floresville have been diligently funding projects with their own funds and with as much state and federal funding that can be obtained. The City of San Antonio's Proposition B in May of 2022 was passed to apply $169,873,000 in bonds toward flood control and drainage projects. This was preceded in the City's 2017-2022 Bond Program by an investment that was approximately equal to that amount for flood control and drainage projects. In 2007 Bexar County embarked on a 10-year $500M Flood Control Program that constructed over 50 flood mitigation projects to alleviate some of the area's most pressing flood concerns. Wilson and Karnes Counties received a FEMA Hazard Mitigation Multi-Jurisdictional Assistance grant for planning to reduce long-term risk from natural hazards and disasters. Participants included Falls City, Karnes City, Kenedy, Runge, Floresville, La Vernia, Poth, Stockdale, various school districts, SARA, water districts, and local stakeholders. And, as a final example, SARA has provided funding for studies through grants and its

34 https://www.county.org/TAC/media/TACMedia/Legal/Legal%20Publications%20Documents/2017_Public _Finance_Final.pdf

35 https://comptroller.texas.gov/economy/fiscal-notes/2017/january/co.php

own general fund investments for flood issues throughout the San Antonio River Basin, such as the 2019 U.S. Department of Homeland Security's FEMA Cooperative Technical Partnership (CTP) Program Cooperative Agreement grant for $1,365,400 for flood prevention, mitigation, and protection through mapping updates throughout the basin. Also, SARA was cited by the TWDB in its, "Community Official Flood Resource Guide, Volume 1: February 2022", as an example of best practice for flood outreach and education.

These examples show some of the ways that the communities in the SAFPR have proactively and cooperatively pursued solutions to their flooding needs. The basin should be viewed as a leader and be applauded for its efforts. The survey discussed in this chapter shows that much more funding is needed in the basin, and clearly much more will be needed in the future as Texas and the SAFPR grow.

Overall, local governments have various options for raising revenue to support local flood-related efforts; however, each avenue presents its own unique challenges and considerations. It is important to note that municipalities have more authority to establish various revenue raising options in comparison to counties. Of the communities that do have access to local funding, the amount available is generally much lower than the total need, leading local communities to seek out state and federal financial assistance programs.

9.1.2 State Funding

Today, communities have a broader range of state funding sources and programs available due to new grant and loan programs that didn't exist as recently as five years ago. It is important to note that state financial assistance programs discussed herein are not directly available to homeowners and the general public. Local governments apply on behalf of their communities to receive and implement funding for flood projects in their jurisdiction.

The TWDB's Flood Infrastructure Fund (FIF)[36] is a new funding program passed by the Texas Legislature and approved by Texas voters through a constitutional amendment in 2019. The program provides financial assistance in the form of low or no interest loans and grants (cost match varies) to eligible political subdivisions for flood control, flood mitigation, and drainage projects. FIF rules allow for a wide range of flood projects, including structural and nonstructural projects, planning studies, and preparedness efforts such

[36] http://www.twdb.texas.gov/financial/programs/FIF/index.asp

as flood early warning systems. After the first State Flood Plan is adopted, only projects included in the most recently adopted state plan will be eligible for funding from the FIF. FMEs, FMSs, and FMPs recommended in this regional flood plan will be included in the overall state flood plan and will thus be eligible for this funding source.

The TWDB also manages the Texas Water Development Fund (Dfund)[37] program, which is a state-funded streamlined loan program that provides financing for several types of infrastructure projects to eligible political subdivisions. This program enables the TWDB to fund projects with multiple eligible components (water supply, wastewater, or flood control) in one loan at low market rates. Financial assistance for flood control may include structural and nonstructural projects, planning efforts, and flood warning systems. The TWDB Clean Water State Revolving Fund (CWSRF)[38] program can also be used to fund flood improvements which may be related to wastewater infrastructure, which is the focus of the program.

The Texas State Soil & Water (TSSWCB)[39] has three state-funded programs specifically for flood control dams: the Operation and Maintenance (O&M) Grant Program; the Flood Control Dam Infrastructure Projects - Supplemental Funding Program; and the Structural Repair Grant Program. The O&M Grant Program is a grant program for local soil and water conservation districts (SWCD) and certain co-sponsors of flood control dams. This program reimburses SWCDs 90 percent of the cost of an eligible operation and maintenance activity as defined by the program rules; the remaining 10 percent must be paid with non-state funding. The Flood Control Dam Infrastructure Projects - Supplemental Funding program was newly created and funded in 2019 by the Texas Legislature. Grants are provided to local sponsors of flood control dams, including SWCDs, to fund the repair and rehabilitation of the flood control structures, to ensure dams meet safety criteria to adequately protect lives downstream. The Structural Repair Grant Program provides state grant funds to provide 95 percent of the cost of allowable repair activities on dams constructed by the NRCS, including match funding for federal projects through the Dam Rehabilitation Program and the Emergency Watershed Protection (EWP) Program of the Texas section of the NRCS.

[37] http://www.twdb.texas.gov/financial/programs/TWDF/index.asp

[38] https://www.twdb.texas.gov/financial/programs/CWSRF/index.asp

[39] https://www.tsswcb.texas.gov/index.php/programs/flood-control-program

9.1.3 Federal Funding

The federal government plays an important, sometimes critical role, particularly in the financing of large-scale flood mitigation projects and studies that would otherwise be beyond the capabilities of the state and local governments. Commonly utilized funding programs administered by seven different federal agencies are discussed in this section. The funding for these programs originates from the federal government but for many of the programs, a state agency partner plays a key role in the management of the program. Each funding program has its own unique eligible applicants, eligible project types, requirements, and application and award timelines. A few examples of eligibility requirements for some of the federal grant programs are: requiring recipients of funding to participate in the National Flood Insurance Program (NFIP), requiring recipients to have an approved Hazard Mitigation Plan, or requiring a project to have a benefit cost ratio of 1.0 or greater. More information regarding each program and their unique eligibility requirements and award processes can be found at the links in this section.

Federal Emergency Management Agency (FEMA)

Common FEMA-administered federal flood-related funding programs include Flood Mitigation Assistance (FMA), Building Resilient Infrastructure and Communities (BRIC), Safeguarding Tomorrow through Ongoing Risk Mitigation (STORM), Rehabilitation of High Hazard Potential Dam (HHPD) Grant Program, Hazard Mitigation Grant Program (HMGP), the Public Assistance (PA) program, and the Cooperating Technical Partners (CTP) Program.

Flood Mitigation Assistance[40] (FMA) is a nationally competitive annual grant program that provides funding to states, local communities, federally recognized tribes, and territories. FMA is administered in Texas by the TWDB[41]. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the NFIP. Funding is typically a 75 percent federal grant with a 25 percent local match. Projects mitigating repetitive loss and severe repetitive loss properties may be funded through a 90 percent federal grant and 100 percent federal grant, respectively. FEMA's FMA program now includes a disaster initiative called Swift Current. The program was released as a pilot initiative in 2022 and explored ways to make flood mitigation assistance more readily available during disaster recovery.

[40] https://www.fema.gov/grants/mitigation/floods

[41] https://www.twdb.texas.gov/flood/grant/fma.asp

Similar to traditional FMA, the program mitigates repetitive losses and substantially damaged buildings insured under the NFIP.

The Building Resilient Infrastructure and Communities (BRIC)[42] is a new nationally competitive non-disaster annual grant program implemented in 2020. The program supports states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. BRIC is administered in Texas by the TDEM[43]. Funding is typically a 75 percent federal grant with a 25 percent local match. Small, impoverished communities may be funded through grants ranging from 90 percent to 100 percent. Texas communities are at a disadvantage competing for these funds because points are awarded to communities for state-wide building codes which are not adopted in Texas.

Safeguarding Tomorrow through Ongoing Risk Mitigation (STORM)[44] is a new revolving loan program enacted through federal legislation in 2021 to provide needed and sustainable funding for hazard mitigation projects. The program is designed to provide capitalization grants to states to establish revolving loan funds for projects to reduce risks from disaster, natural hazards, and other related environmental harm. At the time of the publication of this plan, the program does not yet appear to be operational and has not yet been implemented in Texas.

FEMA's Rehabilitation of High Hazard Potential Dam (HHPD)[45] Grant Program, administered in Texas by the TCEQ, provides technical, planning, design, and construction assistance in the form of grants for rehabilitation of eligible high hazard potential dams. The cost share requirement is typically no less than 35 percent state or local share.

Under the Hazard Mitigation Grant Program (HMGP)[46], FEMA provides funding to state, local, tribal, and territorial governments so they can rebuild from a recent disaster in a way that reduces, or mitigates, future disaster losses in their communities. The program is administered in Texas by TDEM[47]. Funding is typically a 75 percent federal grant with a 25 percent

[42] https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities

[43] https://www.tdem.texas.gov/bric

[44] https://www.congress.gov/bill/116th-congress/senate-bill/3418/all-info

[45] https://www.fema.gov/emergency-managers/risk-management/dam-safety/rehabilitation-high-hazard-potential-dams

[46] https://www.fema.gov/emergency-managers/risk-management/dam-safety/rehabilitation-high-hazard-potential-dams

[47] https://www.tdem.texas.gov/mitigation

local match. While the program is associated with Presidential Disaster Declarations, the HMGP is not a disaster relief program for individual disaster victims or a recovery program that funds repairs to public property damaged during a disaster. The key purpose of HMGP is to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster.

FEMA's Public Assistance (PA)[48] program provides supplemental grants to state, tribal, territorial, and local governments, and certain types of private non-profits following a declared disaster so communities can quickly respond to and recover from major disasters or emergencies through actions such as debris removal, life-saving emergency protective measures, and restoring public infrastructure. Funding cost share levels are determined for each disaster and are typically not less than 75 percent federal grant (25 percent local match) and typically not more than 90 percent federal grant (10 percent local match). In Texas, FEMA PA is administered by TDEM. In some situations, FEMA may fund mitigation measures as part of the repair of damaged infrastructure. Generally, mitigation measures are eligible if they directly reduce future hazard impacts on damaged infrastructure and are cost-effective. Funding is limited to eligible damaged facilities located within PA-declared counties.

The Cooperating Technical Partners (CTP)[49] program is an effort launched by FEMA in 1999 to increase local involvement in developing and updating FIRMs, FIS reports, and associated geospatial data in support of FEMA's Risk Mapping, Assessment and Planning (Risk MAP) Program. To participate in the program, interested NFIP-participating communities, state or regional agencies, universities, territories, tribes, or nonprofits must complete training and execute a partnership agreement. Working with the FEMA regions, a program participant can develop business plans and apply for grants to perform eligible activities.

Housing and Urban Development (HUD)

HUD administers the following federal funding programs: Community Development Block Grant – Disaster Recovery (CDBG-DR), Community Development Block Grant – Mitigation (CDBG-MIT), the Resilient Communities Program (RCP), the CDBG-MIT Local Hazard Mitigation Plans

[48] https://www.fema.gov/assistance/public

[49] https://www.fema.gov/flood-maps/cooperating-technical-partners

Program (LHMPP), and Community Development Block Grant (TxCDBG) for rural Texas.

Following a major disaster, Congress may appropriate funds to HUD under the Community Development Block Grant – Disaster Recovery (CDBG-DR)[50] program when there are significant unmet needs for long-term recovery. Appropriations for CDBG-DR are frequently very large, and the program provides 100 percent grants in most cases. The CDBG-DR is administered in Texas by the Texas General Land Office (GLO)[51]. The special appropriation provides funds to the most impacted and distressed areas for disaster relief, long term-recovery, restoration of infrastructure, housing, and economic revitalization.

The Community Development Block Grant – Mitigation (CDBG-MIT)[52] is administered in Texas by the GLO. Eligible grantees can use CDBG Mitigation (CDBG-MIT) assistance in areas impacted by recent disasters to carry out strategic and high-impact activities to mitigate disaster risks with typically 100% grants. The primary feature differentiating CDBG-MIT from CDBG-DR is that unlike CDBG-DR which funds recovery from a recent disaster to retore damaged services, systems, and infrastructure, CDBG-MIT funds are intended to support mitigation efforts to rebuild in a way which will lessen the impact of future disasters.

The Resilient Communities Program (RCP)[53] provides grant funding for the development, adoptions, and implementation of modern and resilient building codes and flood damage prevention ordinances to ensure that structures built within the community can withstand future hazards. This is a new program that began taking applications starting June 1, 2022 on a first-come, first serve basis.

The CDBG-MIT Local Hazard Mitigation Plans Program (LHMPP)[54] assists eligible entities through providing grants to develop or update local hazard mitigation plans, or to provide cost share for hazard mitigation planning activities funded through other federal sources.

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[50] https://www.hudexchange.info/programs/cdbg-dr/

[51] https://recovery.texas.gov/disasters/index.html

[52] https://www.hudexchange.info/programs/cdbg-mit/overview/

[53] https://recovery.texas.gov/mitigation/programs/resilient-communities-program/index.html

[54] https://recovery.texas.gov/mitigation/programs/local-hazard-mitigation-plans/index.html

The Community Development Block Grant (CDBG)[55] program provides annual grants on a formula basis to small, rural cities and to counties to develop viable communities by providing decent housing and suitable living environments, and expanding economic opportunities principally for persons of low- to moderate-income. Funds can be used for public facilities such as water and wastewater infrastructure, street and drainage improvements, and housing. In Texas, the CDBG program is administered by the Texas Department of Agriculture (TDA)[56].

U.S. Army Corps of Engineers (USACE)

The USACE[57] works with non-Federal partners (states, tribes, counties, or local governments) throughout the country to investigate water resources and related land problems and opportunities and, if warranted, develop civil works projects that would otherwise be beyond the sole capability of the non-Federal partner(s). Partnerships are typically initiated or requested by the local community to their local USACE District office. Before any project or study can begin, USACE determines whether there is an existing authority under which the project could be considered, such as the US Army Corps of Engineers Continuing Authorities Program (CAP)[58], or whether Congress must establish study or project authority and appropriate specific funding for the activity. New study or project authorizations are typically provided through periodic Water Resource Development Acts (WRDA) or via another legislative vehicle. Congress will not provide project authority until a completed study results in a recommendation to Congress of a water resources project, conveyed via a Report of the Chief of Engineers (Chief's Report) or Report of the Director of Civil Works (Director's Report). Opportunities to partner with USACE are not considered grant or loan opportunities, but shared participation projects where USACE performs planning work and shares in the cost of construction. USACE also has technical assistance opportunities, including Floodplain Management Services and the Planning Assistance to States program, available to local communities.

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[55] https://www.hud.gov/program_offices/comm_planning/cdbg

[56] https://texasagriculture.gov/GrantsServices/RuralEconomicDevelopment/RuralCommunityDevelopment BlockGrant(CDBG)/About.aspx

[57] https://planning.erdc.dren.mil/toolbox/library/IWRServer/2019-R-02.pdf

[58] https://www.swd.usace.army.mil/About/Directorates-Offices/Programs-Directorate/Planning-Division/CAP/

U.S. Environmental Protection Agency (EPA)

The Clean Water State Revolving Fund (CWSRF)[59] provides financial assistance in the form of loans with subsidized interest rates and opportunities for partial principal forgiveness for planning, acquisition, design, and construction of wastewater, reuse, and stormwater mitigation infrastructure projects. Projects can be structural or non-structural. Low Impact Development (LID) projects are also eligible. The CWSRF is administered in Texas by the TWDB.

U.S. Department of Agriculture (USDA)

The USDA's NRCS provides technical and financial assistance to local government agencies through the following programs: Emergency Watershed Protection Program, Watershed Protection and Flood Prevention Program, Watershed Surveys and Planning, and Watershed Rehabilitation. The Emergency Watershed Protection (EWP)[60] program, a federal emergency recovery program, helps local communities recover after a natural disaster by offering technical and financial assistance to relieve imminent threats to life and property caused by floods and other natural disasters that impair a watershed. The Watershed Protection and Flood Prevention Program[61] helps federal, state, local and tribal governments protect and restore watersheds; to prevent erosion, floodwater, and sediment damage; to further the conservation development, use and disposal of water; and to further the conservation and proper use of land in authorized watersheds. The focus of the Watershed Surveys and Planning[62] program is funding watershed plans, river basin surveys and studies, flood hazard analyses, and floodplain management assistance aimed at identifying solutions that use land treatment and nonstructural measures to solve resource problems. Lastly, the Watershed Rehabilitation Program[63] helps project sponsors rehabilitate aging dams that are reaching the end of their design lives. This rehabilitation addresses critical public health and safety concerns. The USDA also offers various Water and Environmental grant and loan funding programs[64], which can be used for water and waste facilities, including stormwater facilities, in rural communities.

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[59] http://www.twdb.texas.gov/financial/programs/CWSRF/index.asp

[60] https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/

[61] https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wfpo/

[62] https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wsp/

[63] https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wr/

[64] https://www.rd.usda.gov/programs-services/water-environmental-programs

Special Appropriations

On occasion and when the need is large enough, Congress may appropriate funds for special circumstances such natural disasters or pandemics such as COVID-19. A few examples of recent special appropriations from the federal government that can be used to fund flood-related activities are discussed in this section.

In 2021, the American Rescue Plan Act (ARPA) provided for a substantial infusion of resources to eligible state, local, territorial, and tribal governments to support their response to and recovery from the COVID-19 pandemic. Coronavirus State and Local Fiscal Recovery Funds (SLFRF), a part of ARPA, delivers $350 billion directly to state, local, and tribal governments across the country. Communities have significant flexibility to meet local needs within the eligible use categories, one of which includes improving stormwater facilities and infrastructure. Eligible entities may request their allocation of Coronavirus State and Local Fiscal Recovery Funds directly from the U.S. Department of Treasury.

Although not a direct appropriation to local governments like ARPA, the 2021 Infrastructure Investment and Jobs Act (IIJA), also called the Bipartisan Infrastructure Law (BIL), authorizes over $1 trillion for infrastructure spending across the U.S. and provides for a significant infusion of resources over the next several years into existing federal financial assistance programs, including several of the flood funding programs discussed in this Chapter, as well as creating new programs.

9.2 Barriers to Funding

Local communities encounter barriers to accessing or seeking funding for flood management activities, including lack of knowledge of funding sources, lack of expertise and staff time to apply for funding, and limited local funds available for local match requirements. The available funding programs operate independently, each with its own requirements, schedules, and financial offers. This alone constitutes a barrier to funding.

As opposed to some other types of infrastructure, flood projects do not typically generate revenue and many communities do not have steady revenue streams to fund flood projects, as discussed in Section 9.1.1. Consequently, communities struggle to generate funds for local match requirements or loan repayment. Complex or burdensome application or program requirements as well as prolonged timelines also act as barriers to accessing state and federal financial assistance programs. Of those communities able to overcome these barriers, apply for funding, and generate local resources for match requirements, the high demand for state and federal

funding, particularly for grant opportunities, means that need outstrips supply, leaving many local communities without the resources they need to address flood risks.

9.3 Flood Infrastructure Financing Survey

The San Antonio RFPG surveyed sponsors of the recommended FMEs, FMSs, and FMPs that have capital costs in the form of a mailed survey or other means of collecting the required information. The primary aim of this survey effort was to understand the funding needs of local sponsors and then propose what role the state should have in financing the recommended FMEs, FMSs, and FMPs**.** For the SAFPR, a first round of targeted outreach via in person meetings, phone calls and emails to sponsors was used to gather preliminary information on funding needs for recommended FMEs, FMSs, and FMPs. If the entity did not meet to discuss the project, further contact was made via meetings, calls, and emails to gather information.

To gather specific results related to financing, follow-up calls were made to sponsors to clarify questions such as the following:

- How much funding is needed for the listed FMEs, FMSs, and FMPs?
- How much of this funding by percentage will be sought as grant and how much will be sought as a loan?
- Have you ever received a designation from a state or local funding program that recognized some or all of your community as having fewer financial resources (such as “low to mod” from the CDBG program or “Disadvantaged” from the TWDB)?
- How will the loan portion of any proposed funding package be supported (fees, and/or taxes)?

In general, Sponsors that were smaller and/or considered to have fewer financial resources were noted as needing a 75 percent or greater grant. Conversely, sponsors that were larger and/or considered to have more financial resources were noted as needing a 50 percent or smaller grant.

9.4 Summary of Survey Results and Funding Needs

A total of 28 entities in the SAFPR sponsored the FMEs, FMSs, and FMPs that are recommended by the planning group. These 28 sponsors were contacted about funding needs to implement these projects, and to date 15 have responded, which represents a response rate of 54 percent. Appendix A presents the results of the survey for each FME, FMS, and FMP in TWDB Table 19. We have left these blank in the table and will continue to reach out

to those that have not responded as the San Antonio RFP moves toward completion.

The total cost for all of the FMP, FMS, and FME projects recommended in the Plan is $1,264,439,000. The total cost of projects from just the 15 sponsors that responded to the funding survey is $1,184,840,000. which equates to 94 percent of the total cost of all recommended projects. Of this $1,184,840,000 it is projected that $1,005,017,000 in state and federal grant funding is needed for implementation of these projects.

The basic three sources of funding included federal and state grants, federal and state loans with favorable loan terms, and local financing through private sources of funds and bond issues. As noted in Section 9.1.1, smaller communities are often resource-limited and unable to generate funding for flood-related projects and activities. Discussions with stakeholders during outreach efforts, confirmed that many communities, particularly smaller and more rural communities, do not have local funding available for flood management activities and larger communities that did report having local funding indicated relatively little local funding available in relation to overall need.

Since most federal funding programs are dependent upon availability or upon project selection in a nationally competitive grant program, it is difficult to estimate how much federal funding may be available to implement these studies, strategies, and projects. It is conservatively estimated that as much as the full amount may be needed from state sources. This number does not represent the amount of funding needed to mitigate all risks in the region and solve flooding problems in their totality. This number simply represents the funding needs for the specific, identified studies, strategies, and projects in this cycle of regional flood planning. Future cycles of regional flood planning will continue to identify more projects and studies needed to further flood mitigation efforts in the San Antonio River Basin.

9.5 Proposed Role for the State in Funding Needs

As noted in Section 9.1.1, the state currently provides some of the existing funding programs that sponsors are using to finance FMEs, FMSs, and FMPs. This is a critical source of funding to communities given the limited local financial resources. The large demand for funding and limited local resources, however, necessitate a critical look at the available federal and state funding programs. What improvements need to be made to the programs? How can an increase in funding be provided? How can grant funding be increased? How can favorable loan terms and conditions be used? What new funding mechanisms should be developed? This paragraph will

comment briefly on the potential role of the state as it relates to these questions.

The following state agencies provide funding for flood needs:

- Texas Water Development Board (TWDB)
- Texas Department of Emergency Management (TDEM)
- General Land Office (GLO)
- Texas Department of Agriculture (TDA)
- Texas State Soil and Water Conservation Board (TSSWCB)
- Texas Commission on Environmental Quality (TCEQ)

The sources of funding for these programs are eclectic. The state agencies receive some state money for these programs, but they also receive federal funds from agencies which include FEMA, HUD, EPA, USDA, NRCS, USACE, and federal special appropriations. Each of these state and federal programs come with individual program requirements and specific funding terms, limits, and applicability. In addition, there is a large list of entities which may be able to access funding for flood related purposes. The San Antonio RFPG offers the suggestions regarding funding for flood-related projects. These suggestions are closely related to several of the administrative, regulatory, and legislative recommendations described in Chapter 8.

9.1.4 Suggestion #1:

The State should establish a perpetual source of funding that is dedicated to the implementation of recommendations in the regional flood plan

The intent is to provide a constant, sustainable source of funding for flood issues tailored to addressing flood issues.

9.1.5 Suggestion #2

The State should simplify access to its funding programs

Items to consider would be to develop a common application for all state funding programs, consolidate state funding programs, reduce programmatic requirements, and accept studies and reports already performed to meet federal program requirements (particularly applicable to the use of state funding programs that are not solely targeted for flood needs such as CWSRF, Dfund, and TxCDBG, for example).

9.1.6 Suggestion #3

The State should increase rant funding and establish favorable loan terms for any loan share in its funding program

The survey demonstrated a need for an increase in grant funding. In addition, favorable loan terms can be equated as a means of providing a subsidy to borrowers.

Items to consider related to grants would be to increase the total amount of grant money provided by the state, increase the grant portion that is offered by the state in the funding packages, limit restrictions on the use of grant funding and allow the RFPG to establish criteria for its own basin.

Items to consider related to loans would be to provide principal forgiveness, defer principal and interest in the debt/service schedule, offer longer loan terms, reduce required debt coverage ratios where possible, accept inferior lien positions to enable coordination with other funding programs, offer guaranteed subsidized low interest rates that are not tied to the market.

9.1.7 Suggestion #4

The State should allow the RFPG to establish funding priorities in its basin

RFPGs should be allowed to identify priority FMEs, FMSs, and FMPs in its basin. This would enable the implementation of the grassroots, “bottom-up” planning that was established for the statewide flood planning process.

Items to consider would be to allow RFPGs to develop funding studies and projects, guide the development of cooperative agreements in the basin, facilitate basin-wide efforts, equip the region to develop funding packages between the available funding programs, apply for federal funding, and apply funding to special financial needs in the region.

10

Public Participation and Adoption of Plan

10 Public Participation and Adoption of Plan

[31 TAC §361.30-32]

10.1 Introduction

The San Antonio RFPG encouraged public participation through public meetings and online tools throughout the flood planning process and completed all activities necessary to complete and submit the draft and final San Antonio RFP and to obtain TWDB approval of the Plan.

The San Antonio RFP satisfies the requirements of each of the 39 guidance principles identified in 31 TAC §362.3, as shown in Table 10-1.The San Antonio RFPG also certifies that the Plan will not negatively affect a neighboring area.

Table 10-1. Title 31 TAC §362.3 Guidance Principles and the Means by which each Requirement is Met in the SARFP

Guidance Principle	Means by which Requirement is Met in Regional Flood Plan (RFP)
(1) shall be a guide to state, regional, and local flood risk management policy;	The RFP is a guide with management goals in Chapter 3, management strategies in Chapter 5, and management and policy recommendations in Chapter 8.
(2) shall be based on the best available science, data, models, and flood risk mapping;	Best available information from a quality, coverage, and contemporary perspective were used in RFP, for example in Chapter 2 analyses.
(3) shall focus on identifying both current and future flood risks, including hazard, exposure, vulnerability and residual risks; selecting achievable flood mitigation goals, as determined by each RFPG for their region; and incorporating strategies and projects to reduce the identified risks accordingly;	The RFP examines current and future flood risk in Chapter 2, mitigation goals in Chapter 3, and strategies in Chapter 5. Maps show the areas of flood risks.

Guidance Principle	Means by which Requirement is Met in Regional Flood Plan (RFP)
(4) shall, at a minimum, evaluate flood hazard exposure to life and property associated with 0.2 percent annual chance flood event (the 500-year flood) and, in these efforts, shall not be limited to consideration of historic flood events;	Flood hazard exposure is evaluated and presented in Chapter 2. Maps show the areas of flood risks associated with different percent annual chance flood event.
(5) shall, when possible and at a minimum, evaluate flood risk to life and property associated with 1.0 percent annual chance flood event (the 100-year flood) and address, through recommended strategies and projects, the flood mitigation goals of the RFPG (per item 2 above) to address flood events associated with a 1.0 percent annual chance flood event (the 100-year flood); and, in these efforts, shall not be limited to consideration of historic flood events;	Flood risks are evaluated and presented in Chapter 2, with recommended strategies and projects provided in Chapter 7 and Chapter 8.
(6) shall consider the extent to which current floodplain management, land use regulations, and economic development practices increase future flood risks to life and property and consider recommending adoption of floodplain management, land use regulations, and economic development practices to reduce future flood risk;	Floodplain management practices throughout the SAFPR are mostly low and could be expanded as described in Chapter 3. Increased recognition of floodplains and flood risk is needed for most of the SAFPR.
(7) shall consider future development within the SAFPR and its potential to impact the benefits of flood management strategies (and associated projects) recommended in the plan;	Future development is considered in Chapter 2 and Chapter 3.
(8) shall consider various types of flooding risks that pose a threat to life and property, including, but not limited to, riverine flooding, urban flooding, engineered structure failures, slow rise flooding, ponding, flash flooding, and coastal flooding, including relative sea level change and storm surge;	Various types of flooding risks that pose a threat to life and property, including but not limited to, riverine flooding, pluvial flooding, coastal flooding and playa flooding, which are considered in Chapter 2.

Guidance Principle	Means by which Requirement is Met in Regional Flood Plan (RFP)
(9) shall focus primarily on flood management strategies and projects with a contributing drainage area greater than or equal to 1.0 (one) square miles except in instances of flooding of critical facilities or transportation routes or for other reasons, including levels of risk or project size, determined by the RFPG;	Chapter 4 and Chapter 5 focus on flood management strategies and projects.
(10) shall consider the potential upstream and downstream effects, including environmental, of potential flood management strategies (and associated projects) on neighboring areas. In recommending strategies, RFPGs shall ensure that no neighboring area is negatively affected by the regional flood plan;	Consideration of neighboring area is described in Chapter 4 and Chapter 5. Strategies and projects are assessed to confirm negative impacts to surrounding areas would not occur.
(11) shall include an assessment of existing, major flood mitigation infrastructure and will recommend both new strategies and projects that will further reduce risk, beyond what existing flood strategies and projects were designed to provide, and make recommendations regarding required expenditures to address deferred maintenance on or repairs to existing flood infrastructure;	Infrastructure is evaluated in Chapter 4 and Chapter 5. The strategies and projects include many related to infrastructure. Chapter 9 examines the financing aspects.
(12) shall include the estimate of costs and benefits at a level of detail sufficient for RFPGs and sponsors of flood mitigation projects to understand project benefits and, when applicable, compare the relative benefits and costs, including environmental and social benefits and costs, between feasible options;	Costs drive most decision making and are discussed in most chapters, although Chapter 4, Chapter 5, and Chapter 9 present the most information on costs.
(13) shall provide for the orderly preparation for and response to flood conditions to protect against the loss of life and property and reduce injuries and other flood-related human suffering;	Preparation and response are described in Chapter 7.

Guidance Principle	Means by which Requirement is Met in Regional Flood Plan (RFP)
(14) shall provide for an achievable reduction in flood risk at a reasonable cost to protect against the loss of life and property from flooding;	Like costs and benefits in Chapter 4 and Chapter 5, reasonable costs to achievable reduction in flood risk is considered.
(15) shall be supported by state agencies, including the TWDB, General Land Office, Texas Commission on Environmental Quality, Texas State Soil and Water Conservation Board, Texas Parks and Wildlife Department, and the Texas Department of Agriculture, working cooperatively to avoid duplication of effort and to make the best and most efficient use of state and federal resources;	Agency representation is addressed in Chapter 10, Public Participation.
(16) shall include recommended strategies and projects that minimize residual flood risk and provide effective and economical management of flood risk to people, properties, and communities, and associated environmental benefits;	Chapter 5 includes recommended strategies and projects.
(17) shall include strategies and projects that provide for a balance of structural and nonstructural flood mitigation measures, including projects that use nature-based features, that lead to long-term mitigation of flood risk;	Chapter 4 and Chapter 5 include strategies and projects that are labeled as other, which includes nature-based solutions. A variety of strategies and projects are included but balance could be improved in future planning.
(18) shall contribute to water supply development where possible;	Contributions and impacts to water supply development are assessed in Chapter 6.
(19) shall also follow all regional and state water planning guidance principles (31 TAC 358.3) in instances where recommended flood projects also include a water supply component;	Contributions and impacts to water supply development are assessed in Chapter 6.
(20) shall be based on decision-making that is open to, understandable for, and accountable to the public with full dissemination of planning results except for those matters made confidential by law;	The RFP is based on the requirements of the TAC and the associated TWDB technical guidance documents.

Guidance Principle	Means by which Requirement is Met in Regional Flood Plan (RFP)
(21) shall be based on established terms of participation that shall be equitable and shall not unduly hinder participation;	The RFP is based on the requirements of the TAC and the associated TWDB technical guidance documents. Chapter 10 directly addressed public participation.
(22) shall include flood management strategies and projects recommended by the RFPGs that are based upon identification, analysis, and comparison of all flood management strategies the RFPGs determine to be potentially feasible to meet flood mitigation and floodplain management goals;	The RFPGs worked directly with the technical consultant in the development of the RFP as described in Chapter 1.
(23) shall consider land-use and floodplain management policies and approaches that support short- and long-term flood mitigation and floodplain management goals;	Land-use and floodplain management policies and approaches that support short- and long-term flood mitigation and floodplain management goals are addressed in Chapter 3
(24) shall consider natural systems and beneficial functions of floodplains, including flood peak attenuation and ecosystem services;	Chapter 3 includes natured-based goals like attenuation and ecosystem services within the category of environmental stewardship.
(25) shall be consistent with the National Flood Insurance Program (NFIP) and shall not undermine participation in nor the incentives or benefits associated with the NFIP;	This is a primary aspect of the goals and purpose of the RFP as stated in Chapter 1. The RFP is consistent with the NFIP.
(26) shall emphasize the fundamental importance of floodplain management policies that reduce flood risk;	Policies that reduce flood risk are a fundamental importance of the RFP and is specifically emphasize in Chapter 2.
(27) shall encourage flood mitigation design approaches that work with, rather than against, natural patterns and conditions of floodplains;	Chapter 3 includes natured-based goals to work with natural patterns and conditions within the category of environmental stewardship.
(28) shall not cause long-term impairment to the designated water quality as shown in the state water quality management plan as a result of a recommended flood management strategy or project;	The conclusion of Chapter 6 states there are no anticipated impacts to the State Water Quality Management Plan.

Guidance Principle	Means by which Requirement is Met in Regional Flood Plan (RFP)
(29) shall be based on identifying common needs, issues, and challenges; achieving efficiencies; fostering cooperative planning with local, state, and federal partners; and resolving conflicts in a fair, equitable, and efficient manner;	These are part of the process for identifying the FME, FMS, and FMP lists as described in Chapter 5.
(30) shall include recommended strategies and projects that are described in sufficient detail to allow a state agency making a financial or regulatory decision to determine if a proposed action before the state agency is consistent with an approved regional flood plan;	Chapter 5 includes recommended strategies and projects.
(31) shall include ongoing flood projects that are in the planning stage, have been permitted, or are under construction;	Chapter 1 includes discussion about proposed and ongoing flood mitigation projects.
(32) shall include legislative recommendations that are considered necessary and desirable to facilitate flood management planning and implementation to protect life and property;	Legislative recommendations along with rationale are provided in Chapter 8.
(33) shall be based on coordination of flood management planning, strategies, and mitigation projects with local, regional, state, and federal agencies projects and goals;	These are part of the process for identifying the FME, FMS, and FMP lists with the SARFPG providing the coordination as described in Chapter 5.
(34) shall be in accordance with all existing water rights laws, including but not limited to, Texas statutes and rules, federal statutes and rules, interstate compacts, and international treaties;	The conclusion of Chapter 6 states there are no anticipated impacts to water rights.
(35) shall consider protection of vulnerable populations;	Flood risks to vulnerable populations are evaluated in Chapter 2 using the social vulnerability index. Vulnerability was then carried forward to the process for identifying FME, FMS, and FMP lists in Chapter 5.

Guidance Principle	Means by which Requirement is Met in Regional Flood Plan (RFP)
(36) shall consider benefits of flood management strategies to water quality, fish and wildlife, ecosystem function, and recreation, as appropriate;	Chapter 4 recognizes the consideration of these additional benefits alongside the needs analysis results for developing strategies and projects.
(37) shall minimize adverse environmental impacts and be in accordance with adopted environmental flow standards;	Chapter 6 addresses minimizing adverse environmental impacts and meeting adopted environmental flow standards in the recommendations.
(38) shall consider how long-term maintenance and operation of flood strategies will be conducted and funded; and	Chapter 9 includes the consideration of conducting and funding O&M.
(39) shall consider multi-use opportunities such as green space, parks, water quality, or recreation, portions of which could be funded, constructed, and or maintained by additional, third-party project participants.	Chapter 4 recognizes the consideration of these additional opportunities alongside the needs analysis results for developing strategies and projects.

10.2 Public Participation

Stakeholder outreach and public participation are an important part of any planning process. Public participation has aided every aspect of the San Antonio RFP development – from the identification of flood risks and management and mitigation project needs to the formation of legislative and policy recommendations specific to the SAFPR.

The San Antonio RFPG provided opportunity for the public to participate in the regional flood planning process and met all requirements under the Texas Open Meetings Act and Public Information Act in accordance with 31 TAC Chapters 357.12, 357.21, and 357.50(f) during development of the *Draft* 2023 *San Antonio Regional Flood Plan*. San Antonio RFPG meeting agendas and other meeting materials were posted on the SAFPR website[65] prior to each meeting. The public was invited to speak during public comment periods during each meeting.

Non-voting members of the San Antonio RFPG included representatives from the following state agencies: Texas Parks and Wildlife Department, Texas Division of Emergency Management, Texas Department of Agriculture, Texas

[65] https://www.region12texas.org/

State Soil and Water Conservation Board, General Land Office, Texas Water Development Board, and Texas Commission on Environmental Quality. The representatives provided input to the San Antonio RFPG and worked cooperatively to avoid duplication of effort and to make the best and most efficient use of state and federal resources.

The San Antonio RFPG held a "pre-planning" meeting on April 20, 2021, to obtain input on development of the RFP, determine flood mitigation and floodplain management goals, and develop the process for identifying potential flood management evaluations (FMEs), and potentially feasible flood management strategies (FMSs) and flood management projects (FMPs). In compliance with the TWDB Regional Flood Planning Rules [31 TAC Section 361.21(h)(2)], written comments from the public were accepted for a period of 14 days prior to and 14 days after the pre-planning meeting. Public comments were also accepted at the January 4, 2022, meeting and the March 3, 2022, meeting where the San Antonio RFPG considered approval of the Technical Memorandum, which was an interim deliverable requirement.

10.2.1 Public and Stakeholder Meetings

Per TWDB guidelines, two public meetings were required as part of the regional flood planning Process. The first group of meetings held were to identify flood risk in the region. This was done once identification of existing information on flood risk was complete and summarized on a map. The flood risk map was shared at these public meetings to allow members of the public to identify flood risk that was not captured. This meeting was also used to receive preliminary feedback and gather general suggestions and recommendations that should be considered and potentially included during that regional flood planning cycle. Detailed information on the meeting content and data collected can be found in the public meeting summary reports, included in Appendix C. The dates and locations of the first group of meetings are listed below.

- December 9, 2021 – Bandera, TX
- January 11, 2022 – St. Hedwig, TX
- February 7, 2022 – Virtual Meeting

The second group of meetings were held to receive feedback and to gather general suggestions and recommendations from the public as to issues, provisions, and types of FMSs, FMPs, and FMEs that should be considered or addressed during that regional flood planning cycle. Detailed information on the meeting content and data collected can be found in the public meeting

summary reports, included in Appendix C. The dates and locations of the first group of meetings are listed below.

- June 6, 2022 – San Antonio, TX
- June 7, 2022 – Schertz, TX
- June 16, 2022 – Floresville, TX

10.3 San Antonio RFPG Communications

10.3.1 Regional Website and Email Address

To communicate the activities of the San Antonio RFPG and receive input from the public and stakeholders, the San Antonio RFPG created a website[66] for the public to access. The website has been used to convey the following information.

- General SAFPR information;
- Contact information for members of the San Antonio RFPG;
- Notifications of upcoming San Antonio RFPG meetings, including a virtual meeting option using GoToMeeting software;
- Meeting archives containing past meeting agendas, supporting documentation, and meeting minutes;
- A link to a community survey to poll the level of community support for the goal statements of the San Antonio RFPG;
- Links to additional flood planning resources, including the TNRIS Flood Planning Regions Map Collection;
- Phone number and address to submit public comments for a particular agenda item and/or submit questions to the San Antonio RFPG; and
- A link to an interactive map, which citizens used to confirm the benefitted area of proposed projects as well as indicate areas with flooding issues.

10.3.2 ArcGIS StoryMap

An ArcGIS StoryMap was created to help the citizens of the SAFPR visually understand the purpose of the San Antonio RFP and the work being completed by the technical consultants. As of March 2022, the StoryMap was located at the following link:

[66] https://www.region12texas.org

https://hdr.maps.arcgis.com/apps/MapSeries/index.html?appid=4bf56a7abed44fe9b07a450d1f95404b

10.4 Coordination with Other Planning Regions

Coordination with other planning regions was accomplished primarily through the technical consultants, who coordinated data and shared information that were then reported to the planning groups. Coordination was accomplished with adjacent RFPGs, including Regions 10,11 and 13. Other coordination was accomplished through the participation of San Antonio RFPG members and liaisons with adjacent planning groups.

10.5 San Antonio Regional Flood Planning Group Meetings

The San Antonio RFPG and the Outreach Committee of the planning group met regularly in accordance with TWDB requirements and the approved bylaws. The purpose of the outreach committee was to facilitate public involvement in the planning process. The Group and Committee met on a more frequent basis as needed in order to facilitate and direct the flood planning of the region. The following is a summary of the meetings;

Planning Group Meetings

July 25, 2022
June 27, 2022
May 26, 2022
April 7, 2022
March 3, 2022
January 4, 2022
December 16, 2021
November 16, 2021
September 21, 2021
August 17, 2021
June 15, 2021
May 14, 2021
April 20, 2021
February 9, 2021
December 1, 2020
November 2, 2020

Outreach Committee Meetings

July 14, 2022
June 22, 2022
May 19, 2022
April 22, 2022
March 25, 2022
January 14, 2022
November 3, 2021
October 26, 2021
October 13, 2021

10.6 Public Hearing and Responses to Public Comments on the Draft Plan

The San Antonio RFPG approved the *Draft 2023 San Antonio Regional Flood Plan* for submittal to the TWDB on July 25, 2022. The *Draft 2023 San Antonio Regional Flood Plan* will be submitted to the TWDB by August 1, 2022. The public hearing to receive comments on the *Draft 2023 San Antonio Regional Flood Plan* will be held in September 2022, providing sufficient time to accept public comments according to statute to meet the January 10, 2023, deadline for submission of the adopted Final 2023 San Antonio RFP. Hard copies of the *Draft 2023 San Antonio Regional Flood Plan* will be provided as required and the Plan will be posted on the SAFPR website for public review and comment. The comments received on the *Draft 2023 San Antonio Regional Flood Plan* with responses will be included as an appendix in the *Final 2023 San Antonio Regional Flood Plan*.

10.7 Plan Adoption

The *Draft 2023 San Antonio Regional Flood Plan* was developed and adopted in accordance with 31 TAC §361.50 and §361.60–.61. The San Antonio RFPG will approve and adopt the *Final 2023 San Antonio Regional Flood Plan* in late 2022 and will direct the San Antonio River Authority and the Technical Consultant Team to submit the *Final 2023 San Antonio Regional Flood Plan* to the TWDB on or before the January 10, 2023, deadline.

Appendix A. Tables

TABLE 1. Existing Infrastructure

PLEASE SEE DIGITAL SUBMITTAL FOR COMPLETE LIST

Table 2. Summary of Proposed or Ongoing Flood Mitigation Projects

Existing Project ID	RFPG No.	RFPG Name	Project Name	Description	Counties	HUC8s	HUC12s	Watersheds	Project Status	Project Cost	Source of Funding	Dedicated Funding for Construction (Y/N)	Expected Year of Completion	Anticipated Benefit
12000001	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 155201011	Karnes	12100303	121003030404	12000023	Ongoing	932474	TXDOT	Y	2022	BRIDGE REPLACEMENT
12000002	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 142201009	Karnes	12100303	121003030304	12000041	Ongoing	1326778	TXDOT	Y	2021	BRIDGE REPLACEMENT
12000003	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 099102013	Karnes	12100303	121003030205	12000034	Proposed	402500	TXDOT	Y		BRIDGE REPLACEMENT
12000004	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 008802062	Goliad	12100303	121003030604	12000049	Proposed	17550000	TXDOT	Y		BRIDGE REPLACEMENT
12000005	12	San Antonio	TXDOT ROAD PROJECTS - CONVERT NON-FREEWAY	TXDOT_ID: 025304138	Bexar	12100301, 12100304	121003010103, 121003040104	12000005, 12000064	Ongoing	187918160	TXDOT	Y	2022	CONVERT NON-FREEWAY
12000006	12	San Antonio	TXDOT ROAD PROJECTS - CONVERT NON-FREEWAY	TXDOT_ID: 002407059	Bexar	12100302	121003020502, 121003020503, 121003020504, 121003020505	12000106, 12000107, 12000108	Proposed	110000000	TXDOT	Y		CONVERT NON-FREEWAY
12000007	12	San Antonio	TXDOT ROAD PROJECTS - CONSTRUCT NEW ROAD	TXDOT_ID: 025304146	Bexar	12100301	121003010103	12000005	Ongoing	179542336	TXDOT	Y	2021	CONSTRUCT NEW ROAD
12000008	12	San Antonio	TXDOT ROAD PROJECTS - CONVERT NON-FREEWAY	TXDOT_ID: 245203111	Bexar	12100304	121003040205, 121003040206	12000071, 12000072	Proposed	300000000	TXDOT	Y		CONVERT NON-FREEWAY
12000009	12	San Antonio	TXDOT ROAD PROJECTS - CONSTRUCT FRONTAGE ROADS	TXDOT_ID: 051602030	Goliad	12100303	121003030507, 121003030604	12000046, 12000049	Ongoing	11249526	TXDOT	Y	2021	CONSTRUCT FRONTAGE ROADS
12000010	12	San Antonio	TXDOT ROAD PROJECTS - CONVERT NON-FREEWAY	TXDOT_ID: 245203112	Bexar	12100304	121003040202, 121003040205	12000069, 12000071	Proposed	45888888	TXDOT	Y		CONVERT NON-FREEWAY
12000011	12	San Antonio	TXDOT ROAD PROJECTS - CONSTRUCT FRONTAGE ROADS	TXDOT_ID: 189001046	Bexar	12100301, 12100304	121003010106, 121003040205	12000007, 12000071	Ongoing	14631412	TXDOT	Y	2021	CONSTRUCT FRONTAGE ROADS
12000012	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 001608039	Bexar	12100301	121003010105	12000002	Proposed	6694602	TXDOT	Y		BRIDGE REPLACEMENT
12000013	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 112101022	Karnes	12100303	121003030402	12000021	Proposed	1490596	TXDOT	Y		BRIDGE REPLACEMENT
12000014	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 100902018	Wilson	12100304	121003040402	12000065	Proposed	2029110	TXDOT	Y		BRIDGE REPLACEMENT
12000015	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 094302012	De Witt	12100303	121003030601	12000047	Proposed	600000	TXDOT	Y		BRIDGE REPLACEMENT
12000016	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 014304072	Wilson	12100304	121003040401	12000060	Proposed	1776500	TXDOT	Y		BRIDGE REPLACEMENT
12000017	12	San Antonio	City Wide - Drainage Improvements Project	City of Seadrift: Drainage Improvement Project	Calhoun	12100403	121004030200,	12000074	Proposed	4850939	TX GLO	Y		INCREASE CITY'S RESILIENCE
12000018	12	San Antonio	Drainage System Improvements Project	Calhoun County: Heron Slough Drainage System Improvements Project	Calhoun	12100403	121004030200,	12000074	Proposed	11305233	TX GLO	Y		INCREASE DRAINAGE RESILIENCE
12000019	12	San Antonio	City Wide - Drainage and Stormwater Management Plan	City of Marion: Citywide Water and Wastewater Improvements	Guadalupe	12100304	121003040203	12000067	Proposed	9946174	TX GLO	Y		IMPROVE WATER AND WASTEWATER
12000020	12	San Antonio	City Wide - Wastewater Improvements	City of Seadrift: Facilitate proper functioning of critical wastewater-system components	Calhoun	12100403	121004030200	12000074	Proposed	1536581	TX GLO	Y		FACILITATES FUNCTIONING OF CRITICAL STORMWATER SYSTEMS
12000021	12	San Antonio	Seeling Channel Phase 3	COSA_SAPNo_ID: 23-01635	Bexar	12100301	121003010202	12000010	Ongoing	19968906	COSA	Y	2022	IMPROVES DRAINAGE
12000022	12	San Antonio	Barbara Drive Drainage Phase 2	COSA_SAPNo_ID: 23-01623	Bexar	12100301	121003010201	12000008	Ongoing	9665700	COSA	Y	2023	IMPROVES DRAINAGE
12000023	12	San Antonio	San Pedro Creek	COSA_SAPNo_ID: 23-01634	Bexar	12100301	121003010202	12000010	Ongoing	14600000	COSA	Y	2021	IMPROVES DRAINAGE
12000024	12	San Antonio	TXDOT ROAD PROJECTS - CONSTRUCT NEW ROAD	TXDOT_ID: 354404002	Bexar	12100302	121003020503	12000108	Proposed	12572434	TXDOT	Y		CONSTRUCT NEW ROAD
12000025	12	San Antonio	TXDOT ROAD PROJECTS - CONSTRUCT NEW ROAD	TXDOT_ID: 354403002	Medina, Medina	12100302	121003020307	12000075	Proposed	4009004	TXDOT	Y		CONSTRUCT NEW ROAD
12000026	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE REPLACEMENT	TXDOT_ID: 015503037	Goliad	12100303	121003030603	12000050	Ongoing	3587103	TXDOT	Y	2021	BRIDGE REPLACEMENT
12000027	12	San Antonio	TXDOT ROAD PROJECTS - CONVERT NON-FREEWAY	TXDOT_ID: 002408138	Bexar	12100302	121003020405, 121003020504	12000104, 12000106	Proposed	10000000	TXDOT	Y		CONVERT NON-FREEWAY
12000028	12	San Antonio	TXDOT ROAD PROJECTS - BRIDGE MAINTENANCE	TXDOT_ID: 010005001	Karnes	12100303	121003030202, 121003030204	12000027, 12000030	Proposed	394860	TXDOT	Y		BRIDGE MAINTENANCE
12000029	12	San Antonio	County Wide - Flood Planning/Prevention Study	Karnes County Wide Flood Planning/Prevention Study	Karnes	12100202, 12100204, 12100303, 12100304, 12100406, 12110110, 12110111	121002020507, 121002040201, 121002040202, 121003030201, 121003030202, 121003030204, 121003030205, 121003030206, 121003030303, 121003030304, 121003030305, 121003030306, 121003030401, 121003030402, 121003030403, 121003030404, 121003030405, 121003030501 ...	12000014, 12000016, 12000019, 12000020, 12000021, 12000022, 12000023, 12000024, 12000025, 12000026, 12000027, 12000030, 12000034, 12000037, 12000040, 12000041, 12000042, 12000043, 12000045, 12000052, 12000057, 12000070	Ongoing	618750	TWDB FIF	Y	2020	FLOOD PLANNING / PREVENTION
12000030	12	San Antonio	County Wide - Hazard Mitigation Improvements Project	Refugio County Hazard Mitigation Improvements Project	Refugio	12100303, 12100404, 12100405, 12100406	121003030606, 121003030607, 121003030608, 121004040000, 121004050101, 121004050102, 121004050301, 121004050302, 121004050303, 121004050304, 121004060305	12000015, 12000018, 12000051, 12000073	Proposed	6910131	TX GLO	Y		HAZARD MITIGATION IMPROVEMENT
12000031	12	San Antonio	City Wide - Water and Wastewater Improvements	City of Goliad: Wastewater Treatment System Improvements Project	Goliad	12100303	121003030603, 121003030604	12000049, 12000050	Proposed	93535536	TX GLO	Y		IMPROVE WASTEWATER TREATMENT
12000032	12	San Antonio	Drainage System Improvements and Stormwater Management Plan	Cove Harbor Drainage and Stormwater Management Plan	Aransas	12100405	121004050400		Ongoing	88150	TX GLO	Y	2011	DRAINAGE AND STORMWATER MASTERPLAN
12000033	12	San Antonio	Drainage System Improvements and Stormwater Management Plan	Cove Harbor Drainage System Improvements and Stormwater Management Plan	Aransas	12100405	121004050400		Ongoing	83140	TX GLO	Y	2009	DRAINAGE IMPROVEMENT
12000034	12	San Antonio	County Wide - Street Improvements	Aransas County: Improvement to Streets	Aransas	12100403, 12100404, 12100405	121004030200, 121004040000, 121004050102, 121004050302, 121004050303, 121004050304, 121004050307, 121004050400	12000073, 12000074	Proposed	53860272	TX GLO	Y		IMPROVEMENT TO STREETS DAMAGED BY FLOODING
12000035	12	San Antonio	County Wide - Storm water conveyances and reducing the impact of future flooding,	Calhoun County: Facilitating proper storm water conveyances and reducing the impact of future flooding, and ensuring emergecy response systems are fully operational during emergency siutations	Calhoun	12100204, 12100303, 12100402, 12100403, 12100404, 12100405	121002040404, 121003030608, 121004020500, 121004030100, 121004030200, 121004030300, 121004040000, 121004050400	12000051, 12000073, 12000074	Proposed	5936548	TX GLO	Y		FACILITATES STORMWATER CONVEYANCE
12000036	12	San Antonio	County Wide - Buyouts of storm-affected properties	Goliad County: Buyouts of storm-affected properties - approximately 6 homes	Goliad	12100204, 12100303, 12100405, 12100406	121002040205, 121002040206, 121002040303, 121002040304, 121002040305, 121002040403, 121003030501, 121003030502, 121003030503, 121003030504, 121003030505, 121003030506, 121003030507, 121003030601, 121003030602, 121003030603, 121003030604, 121003030605 ...	12000017, 12000018, 12000025, 12000026, 12000042, 12000043, 12000044, 12000045, 12000046, 12000047, 12000048, 12000049, 12000050	Proposed	1583333	TX GLO	Y		BUYOUT OF STORM-AFFECTED PROPERTIES
12000037	12	San Antonio	City Wide - Drainage Improvements Project	City of Goliad: Improve drainage and stormwater infrastructure	Goliad	12100303	121003030603, 121003030604	12000049, 12000050	Proposed	477108	TX GLO	Y		IMPROVES DRAINAGE
12000038	12	San Antonio	County Wide - Drainage Improvements	Karnes County Improve drainage and stormwater infrastructure	Karnes	12100202, 12100204, 12100303, 12100304, 12100406, 12110110, 12110111	121002020507, 121002040201, 121002040202, 121003030201, 121003030202, 121003030204, 121003030205, 121003030206, 121003030303, 121003030304, 121003030305, 121003030306, 121003030401, 121003030402, 121003030403, 121003030404, 121003030405, 121003030501 ...	12000014, 12000016, 12000019, 12000020, 12000021, 12000022, 12000023, 12000024, 12000025, 12000026, 12000027, 12000030, 12000034, 12000037, 12000040, 12000041, 12000042, 12000043, 12000045, 12000052, 12000057, 12000070	Proposed	74177	TX GLO	Y		IMPROVES DRAINAGE
12000039	12	San Antonio	County Wide - Buyouts of storm-affected properties	Karnes County Buyouts of storm-affected properties - approximately 12 homes	Karnes	12100202, 12100204, 12100303, 12100304, 12100406, 12110110, 12110111	121002020507, 121002040201, 121002040202, 121003030201, 121003030202, 121003030204, 121003030205, 121003030206, 121003030303, 121003030304, 121003030305, 121003030306, 121003030401, 121003030402, 121003030403, 121003030404, 121003030405, 121003030501 ...	12000014, 12000016, 12000019, 12000020, 12000021, 12000022, 12000023, 12000024, 12000025, 12000026, 12000027, 12000030, 12000034, 12000037, 12000040, 12000041, 12000042, 12000043, 12000045, 12000052, 12000057, 12000070	Proposed	1725606	TX GLO	Y		BUYOUT OF STORM-AFFECTED PROPERTIES
12000040	12	San Antonio	County Wide - Drainage Improvements Project	Facilitating proper storm water conveyance and reducing the impact of future flooding	Victoria	12100204, 12100303, 12100402, 12100403	121002040205, 121002040304, 121002040305, 121002040403, 121002040404, 121003030605, 121003030606, 121003030607, 121003030608, 121004030100	12000015, 12000017, 12000018, 12000051	Proposed	3515651	TX GLO	Y		FACILITATES STORMWATER CONVEYANCE
12000041	12	San Antonio	Eisenhauer/Northwood-Devonshire Area Ph1	COSA_SAPNo_ID: 23-01628	Bexar	12100301	121003010105	12000002	Ongoing	9462629	COSA	Y	2022	IMPROVES DRAINAGE
12000042	12	San Antonio	Auldine Dr & Burr Oak Dr(Alley -Outfall)	COSA_SAPNo_ID: 23-01622	Bexar	12100301	121003010201	12000008	Ongoing	4355738	COSA	Y	2021	IMPROVES DRAINAGE
12000043	12	San Antonio	Port San Antonio	COSA_SAPNo_ID: 23-01633	Bexar	12100302	121003020406	12000105	Ongoing	28700284	COSA	Y	2022	IMPROVES DRAINAGE
12000044	12	San Antonio	Cedarhurst Dr Area(Dumont to Eaglerock)	COSA_SAPNo_ID: 23-01627	Bexar	12100302	121003020504	12000106	Ongoing	10133609	COSA	Y	2021	STORM DRAINAGE CONSTRUCTION
12000045	12	San Antonio	West Millitary Drive & Westmar Drive Area	COSA_SAPNo_ID: 23-01639	Bexar	12100302	121003020405	12000104	Ongoing	13637603	COSA	Y	2022	IMPROVES DRAINAGE
12000046	12	San Antonio	Vance Jackson Road Low-Water Crossings	COSA_SAPNo_ID: 23-01638	Bexar	12100301	121003010201	12000008	Ongoing	8103653	COSA	Y	2022	IMPROVE LOW WATER CROSSING
12000047	12	San Antonio	Lake Medina Dam Modifications	Modify the Lake Medina Dam to address safety issues. Install and test post-tension anchors in the abutment sections of the dam.	Medina,Bandera	12100302	121003020303,121003020304,121003020305	12000098,12000099,12000100	Ongoing	4000000	TWDB DFUND	Y		IMPROVES STABILITY OF DAM
12000048	12	San Antonio	City Wide - Drainage Improvements	Bandera City. City-side drainage improvements. Riparian improvements on the Medina River.	Bandera	12100302	121003020203,121003020204	12000088,12000089	Proposed	2430000	TWDB FIF	Y		MITIGATE DAMAGES AND CITY MAINTENANCE ACTIVITIES CAUSED BY FLOOD EVENTS
12000049	12	San Antonio	Marcelinas Study	Marcelinas Study	Wilson,Karnes	12100303,12100304,12110110		12000014,12000016,12000019,12000020,12000022,12000027,12000028,12000030,12000031,12000033,12000034,12000035,12000036,12000037,12000041,12000052,12000053,12000057,12000060,12000065	Proposed		TX GLO	Y		
12000050	12	San Antonio	San Antonio Bay	San Antonio Bay	Aransas,Calhoun	12100402,12100404,12100403,12100405	121004020500,121004040000,121004030200,121004030100,121004030300,121004050400	12000073,12000074	Proposed		TX GLO	Y		

Table 3. Existing Condition Flood Risk Summary Table, By County

	RFPG No.	RFPG Name	County	Area in Flood Planning Region (sqmi)	1% Annual Chance Flood Risk										0.2% Annual Chance Flood Risk										Possible Flood Prone Areas								Average SVI of features in floodplain or flood prone areas
					Area in Floodplain (sqmi)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population (daytime)	Population (nightime)	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)	Area in Floodplain (sqmi)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population (daytime)	Population (nightime)	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)	Area (sqmi)	Number of Structures in Flood Prone Area	Residential Structures in in Flood Prone Area	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)	
1	12	San Antonio	Aransas	36.932	12.217	0	0	0	0	0	0	7.477	0.016	0	5.574	0	0	0	0	0	0	5.592	0.017	0	0.000	0	0	0	0	0.000	0.000	0	0.474
2	12	San Antonio	Atascosa	15.844	0.962	57	51	32	95	95	14	2.205	0.045	0	0.000	0	0	0	0	0	0	0.000	0.000	0	0.000	0	0	0	0	0.000	0.000	0	0.750
3	12	San Antonio	Bandera	526.418	47.944	938	567	788	1027	1463	225	61.398	1.105	1	10.705	663	290	551	637	967	20	20.348	0.179	4	0.000	0	0	0	0	0.017	0.000	0	0.417
4	12	San Antonio	Bexar	1220.295	148.206	11261	8309	52003	31084	73524	1261	353.048	10.087	95	9.328	2347	1895	7839	5583	11781	25	44.710	1.762	8	0.000	0	0	0	0	0.000	0.000	0	0.534
5	12	San Antonio	Calhoun	146.459	99.621	929	688	310	640	728	11	14.475	1.002	2	25.328	604	457	338	316	572	13	18.604	0.785	2	0.000	0	0	0	0	0.000	0.000	0	0.788
6	12	San Antonio	Comal	97.295	10.877	363	269	817	426	1113	63	15.022	0.503	34	2.121	286	238	665	323	897	6	4.639	0.097	0	0.000	0	0	0	0	0.000	0.000	0	0.159
7	12	San Antonio	De Witt	77.455	10.927	22	6	3	8	9	52	6.976	0.483	0	1.556	25	8	3	9	9	5	1.412	0.077	0	0.000	0	0	0	0	0.000	0.000	0	0.412
8	12	San Antonio	Goliad	337.047	91.113	177	62	102	204	216	117	30.113	12.497	0	11.125	110	33	56	130	138	5	8.297	1.297	0	0.000	0	0	0	0	0.000	0.000	0	0.595
9	12	San Antonio	Guadalupe	172.968	33.497	2239	1768	8128	5336	11783	153	65.287	4.876	42	4.080	1570	1355	8080	5882	12298	8	20.323	0.765	3	0.000	0	0	0	0	0.000	0.000	0	0.309
10	12	San Antonio	Karnes	596.240	120.558	336	161	195	422	524	284	58.800	22.649	0	17.822	227	94	123	172	237	50	27.294	3.222	0	0.000	0	0	0	0	0.000	0.000	0	0.464
11	12	San Antonio	Kendall	127.762	6.970	628	398	1812	1650	2904	56	12.465	0.067	5	0.826	333	208	2510	707	2967	0	4.626	0.027	5	0.054	10	8	39	3	1.159	0.000	0	0.327
12	12	San Antonio	Kerr	59.833	1.267	20	8	6	17	17	7	1.053	0.034	0	0.348	14	2	0	6	6	0	0.239	0.006	0	0.000	0	0	0	0	0.000	0.000	0	0.550
13	12	San Antonio	Medina	195.694	23.166	478	299	401	550	778	79	20.457	5.024	1	8.525	751	553	1603	1104	2338	3	20.828	4.217	5	0.000	0	0	0	0	0.000	0.000	0	0.391
14	12	San Antonio	Refugio	98.006	37.193	163	67	101	166	184	10	10.128	2.712	1	1.894	16	2	8	22	23	1	2.096	0.444	0	0.000	0	0	0	0	0.000	0.000	0	0.628
15	12	San Antonio	Victoria	43.156	26.582	30	11	9	19	22	9	5.101	1.858	1	0.998	7	3	1	2	2	0	0.557	0.048	0	0.000	0	0	0	0	0.000	0.000	0	0.439
16	12	San Antonio	Wilson	658.237	129.100	1459	1020	1449	1823	2797	392	89.064	16.790	9	24.111	580	381	370	799	960	34	34.763	5.197	2	0.000	0	0	0	0	0.000	0.000	0	0.480
Total				4409.64	800.20	19100	13684	66156	43467	96157	2733	753.07	79.75	191	124.34	7533	5519	22147	15692	33195	170	214.33	18.14	29	0.05	10	8	39	3	1.18	0.00	0	

Table 5. Future Condition Flood Risk Summary Table, By County

RFPG No.	RFPG Name	County	Area in Flood Planning Region (sqmi)	1% Annual Chance Flood Risk										0.2% Annual Chance Flood Risk									Possible Flood Prone Areas								Average SVI of features in floodplain or flood prone areas
				Area in Floodplain (sqmi)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population (daytime)	Population (nightime)	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)	Area in Floodplain (sqmi)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population (daytime)	Population (nightime)	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)	Area (sqmi)	Number of Structures in Flood Prone Area	Residential Structures in in Flood Prone Area	Population	Roadway Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)	
12	San Antonio	Aransas	36.932	17.791	0	0	0	0	0	0	13.069	0.033	0	1.059	0	0	0	0	0	0	2.897	0.003	0	0.000	0	0	0	0	0.000	0.000	0	0.474
12	San Antonio	Atascosa	15.844	0.962	57	51	32	95	95	14	2.205	0.045	0	0.232	22	19	9	30	30	2	0.472	0.012	0	0.000	0	0	0	0	0.000	0.000	0	0.748
12	San Antonio	Bandera	526.418	58.648	1601	857	1339	1664	2430	245	81.746	1.284	5	15.181	1095	631	938	1363	1798	57	22.146	0.098	5	0.000	0	0	0	0	0.017	0.000	0	0.405
12	San Antonio	Bexar	1220.295	157.539	13608	10204	59842	36667	85305	1286	397.758	11.849	103	43.917	22277	19061	94501	74892	146537	346	237.517	2.056	149	0.000	0	0	0	0	0.000	0.000	0	0.520
12	San Antonio	Calhoun	146.459	124.950	1533	1145	648	956	1300	24	33.078	1.787	4	2.335	121	104	11	49	49	8	8.941	0.111	0	0.000	0	0	0	0	0.000	0.000	0	0.788
12	San Antonio	Comal	97.295	13.000	649	507	1482	749	2010	69	19.661	0.600	34	2.660	441	382	980	797	1531	22	9.525	0.055	1	0.000	0	0	0	0	0.000	0.000	0	0.158
12	San Antonio	De Witt	77.455	12.484	47	14	6	17	18	57	8.388	0.560	0	4.341	44	12	5	18	19	25	9.799	0.242	0	0.000	0	0	0	0	0.000	0.000	0	0.412
12	San Antonio	Goliad	337.047	102.239	287	95	158	334	354	122	38.410	13.794	0	25.613	263	114	434	400	649	85	40.699	1.106	3	0.000	0	0	0	0	0.000	0.000	0	0.593
12	San Antonio	Guadalupe	172.968	37.577	3809	3123	16208	11218	24081	161	85.629	5.640	45	10.807	1483	1251	4468	4033	7398	59	37.138	1.644	10	0.000	0	0	0	0	0.000	0.000	0	0.290
12	San Antonio	Karnes	596.240	138.381	563	255	318	594	761	334	86.113	25.871	0	34.492	471	204	408	416	710	261	80.011	3.441	0	0.000	0	0	0	0	0.000	0.000	0	0.463
12	San Antonio	Kendall	127.762	7.798	961	606	4322	2357	5871	56	17.109	0.093	10	3.025	536	391	1612	1868	2914	16	6.922	0.016	3	0.054	10	8	39	3	1.159	0.000	0	0.317
12	San Antonio	Kerr	59.833	1.615	34	10	6	23	23	7	1.292	0.039	0	0.899	47	19	5	19	20	1	0.832	0.008	0	0.000	0	0	0	0	0.000	0.000	0	0.554
12	San Antonio	Medina	195.694	31.692	1229	852	2004	1654	3116	82	41.284	9.241	6	3.988	285	171	288	413	563	7	7.419	0.522	1	0.000	0	0	0	0	0.000	0.000	0	0.394
12	San Antonio	Refugio	98.006	39.090	179	69	109	188	207	11	12.255	3.156	1	4.722	78	27	234	130	279	13	20.397	0.722	3	0.000	0	0	0	0	0.000	0.000	0	0.626
12	San Antonio	Victoria	43.156	27.580	37	14	10	21	24	9	5.658	1.906	1	1.968	22	12	6	25	26	4	4.586	0.119	0	0.000	0	0	0	0	0.000	0.000	0	0.439
12	San Antonio	Wilson	658.237	153.218	2039	1401	1819	2622	3757	426	123.846	21.987	11	44.082	1666	1229	1941	2478	3731	195	115.094	2.928	7	0.000	0	0	0	0	0.000	0.000	0	0.479
Total			4409.64	924.57	26633	19203	88303	59159	129352	2903	967.50	97.89	220	199.32	28851	23627	105840	86931	166254	1101	604.40	13.08	182	0.05	10	8	39	3	1.18	0.00	0	

Table 6. Existing Floodplain Management Practices

Entity	Type	Entity ID	Floodplain Management Regulations (Yes/ No/ Unknown)A	Adopted minimum regulations pursuant to Texas Water Code Section 16.3145? (Yes/ No)A	NFIP Participant (Yes/ No)A,D	Higher Standards Adopted (Yes/ No)B	Floodplain Management Practices (Strong/Moderate/ Low/None)B	Level of Enforcement of Practices (High/ Moderate/ Low/ None)B,C	Existing Stormwater or Drainage Fee (Yes/ No)B	Web Link to Entity Regulations
Medina	County	00000005	Yes	Yes	Yes	Yes	Strong	High		medinacountytexas.org
Bexar	County	00000007	Yes	Yes	Yes	Yes	Strong	Moderate		Not Available online
Guadalupe	County	00000010	Yes	Yes	Yes	Yes	Strong			
Bandera	County	00000011	Yes	Yes	Yes	Yes	Moderate	Moderate		www.banderacounty.org
Comal	County	00000014	Yes	Yes	Yes	Yes	Moderate	High	No	https://cceo.org/flood/documents/Flood_Damage_Prevention_Order.pdf
Kendall	County	00000017	Yes	Yes	Yes	Yes	Moderate	None		
Kerr	County	00000022	Yes	Yes	Yes	Yes	Moderate	Moderate	No	https://www.co.kerr.tx.us/engineer/Flood_Damage_Prevention_Order_37967_02.24.2020.pdf
Aransas	County	00000083	Yes	Yes	Yes	Yes	Moderate	Moderate		https://www.aransascountytx.gov/main/docs/ordinances/OAmended%20Aransas%20County%20Floodplain%20Management%20Watershed%20Protection%20Order%20O-23-2019.pdf
Refugio	County	00000084	Yes	Yes	Yes	No	Low	Low		
Calhoun	County	00000088	Yes	Yes	Yes	Yes	Moderate	None		
Goliad	County	00000090	Yes	Yes	Yes	No	Low	None		
Victoria	County	00000094	Yes	Yes	Yes	No	Low	None		
Karnes	County	00000095	Yes	Yes	Yes	No	Moderate	Moderate		None
Atascosa	County	00000096	Yes	Yes	Yes	Yes	Moderate	None		
De Witt	County	00000099	Yes	Yes	Yes	No	Low	None		
Wilson	County	00000100	Yes	Yes	Yes	Yes	Moderate	Moderate	No	Flood_Order_Final_10272010.pdf
Nordheim	Municipality	00002402	No	No	No	No	None	None		
Fair Oaks Ranch	Municipality	12002436	Yes	Yes	Yes	Yes	Moderate	None		
Alamo Heights	Municipality	12002437	Yes	Yes	Yes	Yes	Moderate	None		
Balcones Heights	Municipality	12002438	Yes	Yes	Yes	No	Low	None		
Castle Hills	Municipality	12002439	Yes	Yes	Yes	Yes	Moderate	None		
China Grove	Municipality	12002440	Yes	Yes	Yes	Yes	Moderate	None		
Converse	Municipality	12002441	Yes	Yes	Yes	No	Low	None		
Elmendorf	Municipality	12002442	Yes	Yes	Yes	No	Low	High	No	https://library.municode.com/tx/elmendorf/codes/code_of_ordinances
Terrell Hills	Municipality	12002475	Yes	Yes	Yes	No	Low	None		
Windcrest	Municipality	12002476	Yes	Yes	Yes	Yes	Moderate	None		
Grey Forest	Municipality	12002506	Yes	Yes	Yes	No	Low	None		
Hill Country Village	Municipality	12002507	Yes	Yes	Yes	No	Low	None		
Hollywood Park	Municipality	12002508	Yes	Yes	Yes	No	Low	None		
Kirby	Municipality	12002510	Yes	Yes	Yes	No	Low	None		
Leon Valley	Municipality	12002511	Yes	Yes	Yes	Yes	Moderate	None		
Live Oak	Municipality	12002512	Yes	Yes	Yes	Yes	Strong	None		
Cibolo	Municipality	00002615	Yes	Yes	Yes	No	Low	None		
Bulverde	Municipality	00002669	Yes	Yes	Yes	Yes	Moderate	None		
New Braunfels	Municipality	00002670	Yes	Yes	Yes	Yes	Strong	None		
Schertz	Municipality	00002671	Yes	Yes	Yes	Yes	Moderate	None		
Karnes City	Municipality	12002756	Yes	Yes	Yes	No	Low	None		
Runge	Municipality	12002757	Yes	Yes	Yes	No	Low	None		
Boerne	Municipality	12002855	Yes	Yes	Yes	Yes	Moderate	None		
Olmos Park	Municipality	12002889	Yes	Yes	Yes	No	Low	None		
Floresville	Municipality	12002925	Yes	Yes	Yes	Yes	Moderate	None		

Table 6. Existing Floodplain Management Practices

Entity	Type	Entity ID	Floodplain Management Regulations (Yes/ No/ Unknown)A	Adopted minimum regulations pursuant to Texas Water Code Section 16.3145? (Yes/ No)A	NFIP Participant (Yes/ No)A,D	Higher Standards Adopted (Yes/ No)B	Floodplain Management Practices (Strong/Moderate/ Low/None)B	Level of Enforcement of Practices (High/ Moderate/ Low/ None)B,C	Existing Stormwater or Drainage Fee (Yes/ No)B	Web Link to Entity Regulations
LaCoste	Municipality	12002954	Yes	Yes	Yes	Yes	Moderate	None		
Marion	Municipality	12002966	Yes	Yes	Yes	No	Low	None		
Universal City	Municipality	12002967	Yes	Yes	Yes	Yes	Moderate	None		
New Berlin	Municipality	00002973	Yes	Yes	Yes	No	Low	None		
Falls City	Municipality	12002974	Yes	Yes	Yes	No	Low	None		
Kenedy	Municipality	12002975	Yes	Yes	Yes	Yes	Moderate	None		
Goliad	Municipality	12002986	Yes	Yes	Yes	No	Low	None		
Shavano Park	Municipality	12003000	Yes	Yes	Yes	Yes	Moderate	None		
Helotes	Municipality	12003002	Yes	Yes	Yes	Yes	Moderate	None		
Somerset	Municipality	12003003	Yes	Yes	Yes	No	Low	None		
St. Hedwig	Municipality	12003004	Yes	Yes	Yes	No	Low	None		
Austwell	Municipality	12003103	Yes	Yes	Yes	No	Low	None		
Seadrift	Municipality	12003175	Yes	Yes	Yes	Yes	Moderate	None		
La Vernia	Municipality	12003180	Yes	Yes	Yes	Yes	Moderate	None		
Poth	Municipality	12003181	Yes	Yes	Yes	No	Low	None		
Stockdale	Municipality	12003182	Yes	Yes	Yes	No	Low	None		
Sandy Oaks	Municipality	12003220	No	No	No	No	None	None	No	
Garden Ridge	Municipality	00003235	Yes	Yes	Yes	No	Low	None		
Selma	Municipality	12003258	Yes	Yes	Yes	No	Low	None		
Santa Clara	Municipality	00003276	Yes	Yes	Yes	No	Low	None		
Von Ormy	Municipality	12003318	Yes	Yes	Yes	No	Low	Moderate	Yes	
San Antonio	Municipality	12003327	Yes	Yes	Yes	Yes	Strong	High	No	
Castroville	Municipality	12003377	Yes	Yes	Yes	Yes	Moderate	None		
Bandera	Municipality	12003414	Yes	Yes	Yes	Yes	Moderate	Moderate		
San Antonio River Authority	River Authority	00000282	Unknown	No	No	No	None	None		
Nueces River Authority	River Authority	00000290	Unknown	No	No	No	None	None		
Guadalupe-Blanco River Authority	River Authority	00000291	Unknown	No	No	No	None	None		
Upper Guadalupe River Authority	River Authority	00000297	Unknown	No	No	No	None	None		
Bexar-Medina-Atascosa Counties WCID 1	River Authority	00000299	Unknown	No	No	No	None	None		
Bandera County River Authority	Other	00000339	Unknown	No	No	No	None	None		
Alamo Area Council of Governments	Other	00000255	Unknown	No	No	No	None	None		
Coastal Bend Council of Governments	Other	00000260	Unknown	No	No	No	None	None		
Golden Crescent Regional Planning Commission	Other	00000264	Unknown	No	No	No	None	None		
Canyon Regional Water Authority	Other	00000392	Unknown	No	No	No	None	None		
Falcon Point WCID 1	Other	12000480	Unknown	No	No	No	None	None		
Escondido Watershed District	Other	00000519	Unknown	No	No	No	None	None		
Hondo Creek Watershed Improvement District	Other	00000526	Unknown	No	No	No	None	None		
West Side Calhoun County Navigation District	Other	00000538	Unknown	No	No	No	None	None		
Medina County WCID 1	Other	12000546	Unknown	No	No	No	None	None		
Victoria County Navigation District	Other	00000588	Unknown	No	No	No	None	None		
Wilson County FWSD 1 of Wilson County Texas	Other	12000592	Unknown	No	No	No	None	None		
Westside 211 Special Improvement District	Other	12000648	Unknown	No	No	No	None	None		
Refugio County WCID 2	Other	00000714	Unknown	No	No	No	None	None		
rosswinds at South Lake Special Improvement Distri	Other	12000731	Unknown	No	No	No	None	None		
Refugio County Navigation District	Other	00000758	Unknown	No	No	No	None	None		

Table 6. Existing Floodplain Management Practices

Entity	Type	Entity ID	Floodplain Management Regulations (Yes/ No/ Unknown)A	Adopted minimum regulations pursuant to Texas Water Code Section 16.3145? (Yes/ No)A	NFIP Participant (Yes/ No)A,D	Higher Standards Adopted (Yes/ No)B	Floodplain Management Practices (Strong/Moderate/ Low/None)B	Level of Enforcement of Practices (High/ Moderate/ Low/ None)B,C	Existing Stormwater or Drainage Fee (Yes/ No)B	Web Link to Entity Regulations
Green Valley SUD	Other	00000821	Unknown	No	No	No	None	None		
Medina County FWSD 1	Other	12000874	Unknown	No	No	No	None	None		
Kendall County WCID 2	Other	00000936	Unknown	No	No	No	None	None		
Kendall County WCID 2A	Other	12000937	Unknown	No	No	No	None	None		
bolo Canyon Conservation and Improvement Distric	Other	12000959	Unknown	No	No	No	None	None		
Ecleto Creek Watershed District	Other	00001006	Unknown	No	No	No	None	None		
Refugio County WCID 1	Other	12001057	Unknown	No	No	No	None	None		
La Salle WCID 1-A	Other	12001130	Unknown	No	No	No	None	None		
La Salle WCID 1-B	Other	12001132	Unknown	No	No	No	None	None		
Lerin Hills MUD	Other	12001324	Unknown	No	No	No	None	None		
San Antonio MUD 1	Other	12001484	Unknown	No	No	No	None	None		
Cibolo Creek Municipal Authority	Other	00001485	Unknown	No	No	No	None	None		
Bexar County WCID 10	Other	12001486	Unknown	No	No	No	None	None		
Flying L PUD	Other	12001520	Unknown	No	No	No	None	None		
Bandera County FWSD 1	Other	12001521	Unknown	No	No	No	None	None		
Northeast Medina County WCID 1	Other	12001530	Unknown	No	No	No	None	None		
Johnson Ranch MUD	Other	12001578	Unknown	No	No	No	None	None		
East Central SUD	Other	12001595	Unknown	No	No	No	None	None		
Refugio County Drainage District 1	Other	00001608	Unknown	No	No	No	None	None		
Espada Development District	Other	12001650	Unknown	No	No	No	None	None		
Port O'Connor MUD	Other	00001672	Unknown	No	No	No	None	None		
Comal County WCID 6	Other	00002121	Unknown	No	No	No	None	None		
Kendall County WCID 4	Other	12002226	Unknown	No	No	No	None	None		
Kendall County WCID 3	Other	12002367	Unknown	No	No	No	None	None		

A At a minimum, the RFPGs must list all counties, cities and districts in the region with flood related authority in the region and identify whether entity they have any established floodplain management practices.
B This field may be left blank during the 1st planning cycle. However, RFPGs are strongly encouraged to provide this information when applicable and available.
C The following may serve as a guide for evaluating enforcement:
high – actively enforces the entire ordinance, performs many inspections throughout construction process, issues fines, violations, and Section 1316s where appropriate, and enforces substantial damage and substantial improvement;
moderate – enforces much of the ordinance, performs limited inspections and is limited in issuance of fines and violations;
low – provides permitting of development in the floodplain, may not perform inspections, may not issue fines or violations;
none – does not enforce floodplain management regulations.
D Communities Participating in the National Flood Program- Texas, FEMA Community Status Book Report, May 15, 2021. FEMA NFIP Participation Book – TX 5-15-21.pdf

Table 11. Regional Flood Plan Flood Mitigation and Floodplain Management Goals

Goal ID	RFPG No.	RFPG Name	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How will the Goal be Measured	Overarching Goal(s)	Associated Goal IDs
12000001	12	San Antonio	Track and document existing public outreach and education activities that improve awareness of flood hazards and benefits of flood planning, including nature based solutions, in the region and ensure there are at least 6 additional occurrences per year.	Short Term (10 year)	2033	Entire RFPG		Establishing a baseline and ensure a minimum number of occurrences.	Education and Outreach	
12000002	12	San Antonio	Increase to 12 per year and maintain and increase public outreach and education activities to improve awareness of flood hazards and benefits of flood planning including nature based solutions in the region.	Long Term (30 year)	2053	Entire RFPG		Number of activities.	Education and Outreach	
12000003	12	San Antonio	Increase the proficiency of stakeholders and floodplain managers across the region through training from Region 12 entities, TFMA, ASFPM and FEMA and provide certificates of completion. Improve 50% of FPM knowledge of nature based solutions, floodplain preservation, and cost/benefit of traditional structural solutions.	Short Term (10 year)	2033	Entire RFPG		Number of trainings reaching FPMs.	Education and Outreach	
12000004	12	San Antonio	Increase the proficiency of stakeholders and floodplain managers across the region through training from Region 12 entities, TFMA, ASFPM and FEMA and provide certificates of completion. Improve 100% of FPM knowledge of nature based solutions, floodplain preservation, and cost/benefit of traditional structural solutions.	Long Term (30 year)	2053	Entire RFPG		Number of trainings reaching FPMs.	Education and Outreach	
12000005	12	San Antonio	Support the development of a regionally coordinated warning and emergency response program that can detect the flood threat and provide timely warning of impending flood danger to reduce flood deaths and high water rescues across the region.	Short Term (10 year)	2033	Entire RFPG		Increase the number of NFIP communities by 25%.	Flood Warning and Readiness	12000009
12000006	12	San Antonio	Expand the development of a regionally coordinated warning and emergency response program that can detect the flood threat and provide timely warning of impending flood danger to reduce flood deaths and high water rescues across the region.	Long Term (30 year)	2053	Entire RFPG		Increase the number of NFIP communities too 100%.	Flood Warning and Readiness	12000010
12000007	12	San Antonio	Increase the number of flood gauges (rainfall, stream, reservoir, etc.) in the region to provide localized information to emergency responders, and storage and accessibility of data to agencies by 25% of existing or at minimum 10.	Short Term (10 year)	2033	Entire RFPG		Establish a baseline and increase the number of gages by 25% over 2022.	Flood Warning and Readiness	12000009
12000008	12	San Antonio	Increase the number of flood gauges (rainfall, stream, reservoir, etc.) in the region to provide localized information to emergency responders, and storage and accessibility of data to agencies by 50% of existing.	Long Term (30 year)	2053	Entire RFPG		Increase the number of gages by 50% over 2022.	Flood Warning and Readiness	12000010
12000009	12	San Antonio	Increase the number of entities that communicate real time flood warnings to the public. Leverage mobile phone navigation apps to provide real time rerouting for the public.	Short Term (10 year)	2033	Entire RFPG		Increase by 40% of the NFIP communities.	Flood Warning and Readiness	12000007

Goal ID	RFPG No.	RFPG Name	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How will the Goal be Measured	Overarching Goal(s)	Associated Goal IDs
12000010	12	San Antonio	Increase the number of entities that communicate real time flood warnings to the public. Leverage mobile phone navigation apps to provide real time rerouting for the public.	Long Term (30 year)	2053	Entire RFPG		Increase to 100% of the NFIP communities.	Flood Warning and Readiness	12000008
12000011	12	San Antonio	Establish a baseline and increase the number of NFIP communities which utilize Atlas 14 (Volume 11) or best available data from NOAA revised rainfall data as part of revisions to design criteria and flood prevention regulations by 50% percent. (region specific)	Short Term (10 year)	2033	Entire RFPG		Percentage of entities in the region.	Flood Studies and Analysis	
12000012	12	San Antonio	Increase the number of NFIP communities which utilize/adopt Atlas 14 (Volume 11) or best available data from NOAA revised rainfall data as part of revisions to design criteria and flood prevention regulations by 100%. (region specific)	Long Term (30 year)	2053	Entire RFPG		Percentage of entities in the region.	Flood Studies and Analysis	
12000013	12	San Antonio	Decrease the number of Zone X by 30% and increase the number of entities that conduct detailed studies to update their local flood risk by 25%.	Short Term (10 year)	2033	Entire RFPG		Percentage of entities in the region.	Flood Studies and Analysis	
12000014	12	San Antonio	Increase the number of entities that conduct detailed studies to update their local flood risk to 100%.	Long Term (30 year)	2053	Entire RFPG		Percentage of entities in the region.	Flood Studies and Analysis	
12000015	12	San Antonio	Decrease the average age of FEMA Flood Insurance Rate Maps (NFHL/FIRMs/FIS) to less than 10 years.	Short Term (10 year)	2033	Entire RFPG		100% of maps.	Flood Studies and Analysis	
12000016	12	San Antonio	Establish a baseline number of existing studies and process for analyzing watersheds to identify existing Natural Flood Mitigation Features (NFMF) such as headwaters, buffers, and conservation easements.	Short Term (10 year)	2033	Entire RFPG		Establishing a baseline/ process and increasing the number of entities that use the process.	Flood Studies and Analysis	
12000017	12	San Antonio	Increase the number of participating Community Rating System (CRS) entities in the FPR by 5.	Short Term (10 year)	2033	Entire RFPG		Number of entities in the region.	Flood Prevention	12000018
12000018	12	San Antonio	Increase the number of participating entities within Community Rating System (CRS) in the FPR by 100% or improve their rating.	Long Term (30 year)	2053	Entire RFPG		Percentage of entities in the region.	Flood Prevention	12000017
12000019	12	San Antonio	Increase the number of entities which regulate to the 1% annual chance future conditions floodplains as part of new development and redevelopment by 10%.	Short Term (10 year)	2033	Entire RFPG		Percentage of entities in the region.	Flood Prevention	

Goal ID	RFPG No.	RFPG Name	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How will the Goal be Measured	Overarching Goal(s)	Associated Goal IDs
12000020	12	San Antonio	Increase the number of entities which regulate to the 1% annual chance future conditions floodplains as part of new development and redevelopment by 50%.	Long Term (30 year)	2053	Entire RFPG		Percentage of entities in the region.	Flood Prevention	
12000021	12	San Antonio	Increase the number of entities above the established baseline that have adopted a holistic watershed approach using existing Natural Flood Mitigation Features (NFMF) such as headwaters, buffers, and conservation easements for flood risk reduction as a basis for comprehensive subdivision regulations.	Short Term (10 year)	2033	Entire RFPG		Number of entities in the region.	Flood Prevention	12000016
12000022	12	San Antonio	Establish a baseline and increase the number of acres of publicly protected open space by 10 % as part of land conservation and acquisitions to reduce future impacts of flooding.	Short Term (10 year)	2033	Entire RFPG		Establish a baseline and increase the number of protected acres.	Non-Structural Flood Infrastructure Projects	12000016
12000023	12	San Antonio	Increase the number of restored acres of publicly protected open space land in the region.	Long Term (30 year)	2053	Entire RFPG		Number of restored acres.	Non-Structural Flood Infrastructure Projects	12000016
12000024	12	San Antonio	Reduce the number of NFIP repetitive-loss properties in the FPR by 25%.	Short Term (10 year)	2033	Entire RFPG		Percentage of entities in the region.	Non-Structural Flood Infrastructure Projects	
12000025	12	San Antonio	Reduce the number of NFIP repetitive-loss properties in the FPR by 75%.	Long Term (30 year)	2053	Entire RFPG		Percentage of entities in the region.	Non-Structural Flood Infrastructure Projects	
12000026	12	San Antonio	Reduce the number of existing (2022) residential properties in the future 1% annual chance floodplain by 10%.	Short Term (10 year)	2033	Entire RFPG		Number of residential properties.	Structural and Non-structural Flood Infrastructure Projects	
12000027	12	San Antonio	Reduce the number of existing (2022) residential properties in the future 1% annual chance floodplain by 50%.	Long Term (30 year)	2053	Entire RFPG		Number of residential properties.	Structural and Non-structural Flood Infrastructure Projects	

Goal ID	RFPG No.	RFPG Name	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	How will the Goal be Measured	Overarching Goal(s)	Associated Goal IDs
12000028	12	San Antonio	Reduce the number of vulnerable critical facilities located within the existing and future 1% annual chance (100-year) floodplain by 50%.	Short Term (10 year)	2033	Entire RFPG		Number of vulnerable critical facilities.	Structural Flood Infrastructure Projects	
12000029	12	San Antonio	Reduce the number of vulnerable critical facilities located within the existing and future 1% annual chance (100-year) floodplain by 100%.	Long Term (30 year)	2053	Entire RFPG		Number of vulnerable critical facilities.	Structural Flood Infrastructure Projects	
12000030	12	San Antonio	Identify the eligible top 50 vulnerable roadway segments and low water crossings located within the existing and future 1% annual chance (100-year) floodplain.	Short Term (10 year)	2033	Entire RFPG		Number of entities in the region.	Structural Flood Infrastructure Projects	
12000031	12	San Antonio	Eliminate or mitigate the eligible top 50 vulnerable roadway segments and low water crossings located within the existing and future 1% annual chance (100-year) floodplain.	Long Term (30 year)	2053	Entire RFPG		Number of entities in the region.	Structural Flood Infrastructure Projects	
12000032	12	San Antonio	Increase the number of structural projects by 10% that include a NBS or Green Infrastructure (GI) component.	Short Term (10 year)	2033	Entire RFPG		Number of structural projects with NBS component.	Structural Flood Infrastructure Projects	
12000033	12	San Antonio	Increase the number of structural projects by 50% that include a NBS or Green Infrastructure (GI) component.	Long Term (30 year)	2053	Entire RFPG		Number of structural projects with NBS components.	Structural Flood Infrastructure Projects	

Table 12. Potential Flood Management Evaluations Identified by RFPG

FME ID	RFPG No.	RFPG Name	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)	RFPG Recommendation (Y/N)	Reason for Recommendation
121000001	12	San Antonio	Study the San Antonio River, Ojo de Agua Creek and its tributaries	Install steam gauges and develop a study to identify solutions to flooding. Implement engineering findings to reduce and mitigate risks.	12000007, 12000011, 12000013, 12000014	Karnes	12100303	121003030306,121003030404	12000016,12000023	Project Planning	1.18	Riverine,	12002757	00000095,00000255,00000282,00001006,12002757	No	250000		76	12	72	0	0	0	0.116907999	4.347249985			Y	Halff Identification Process
121000002	12	San Antonio	7820 Rolling Acres Trail	Low water crossing. Road closure gate is deployed at this crossing during large storm events.	12000033	Kendall	12100304	121003040103	12000063	Project Planning	0	Riverine,	12002436	00000017,00000255,00000291,12002436	No	685000		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000003	12	San Antonio	7900 Fair Oaks Parkway	Analysis needed to confirm no adverse impacts on the solution that was implemented.	12000011, 12000013, 12000014	Bexar	12100304	121003040103	12000063	Project Planning	0	Riverine,	12002436	00000007,00000255,00000282,12002436	No	10000		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000004	12	San Antonio	Ammann Road Low Water Crossing	Low water crossing runs over the street due to insufficient culverts that pass under Ammann Road. Replacing the current road with an elevated concrete bridge above the flood stage.	12000033	Kendall	12100304	121003040103	12000063	Project Planning	0	Riverine,	12002436	00000017,00000255,00000291	No	1124330		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000005	12	San Antonio	7420 Rolling Acres Trail Low Water Crossing	Low Water crossing moves toward home on Meadow Creek Trail. Road Closure gate is deployed at this crossing during large storm events.	12000033	Kendall	12100304	121003040103	12000063	Project Planning	0	Riverine,	12002436	00000017,00000255,00000291,12002436	No	759566		2	0	28	0	0	0	0	0			Y	Halff Identification Process
121000006	12	San Antonio	8402 Battle Intense Low Water Crossing	Battle intense is often shut down in large rain events. Debris collects and damages this low water crossing	12000011, 12000013, 12000014	Bexar	12100304	121003040103	12000063	Project Planning	0	Riverine,	12002436	00000007,00000255,00000282,12002436	No	3421450		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000007	12	San Antonio	Battle Intense LWC Flow-activated Sensors	Add flow-activated sensors and automated drop-down arms to close off a road when the water has surpassed the road.	12000005	Bexar,Comal	12100304	121003040103	12000063	Project Planning	0	Riverine,	12002436	00000007,00000014,00000255,00000282,00000291,12002436	Yes	200000		2	0	0	0	1	1	0.251383007	0			Y	Halff Identification Process
121000008	12	San Antonio	Rolling Acres Trail LWC Flow-activated Sensors	Add flow-activated sensors and automated drop-down arms to close off a road when the water has surpassed the road.	12000005	Kendall	12100304	121003040103	12000063	Project Planning	0.01	Riverine,	12002436	00000017,00000255,00000291,12002436	No	400000		8	0	0	0	0	0	0.460662991	0			Y	Halff Identification Process
121000009	12	San Antonio	Karnes Hwy at Escondido Creek	Raise bridge on Hwy and channel expansion on 181/5th in Kenedy	12000029	Karnes	12100303	121003030402	12000021	Project Planning	0.11	Riverine,	12002975	00000095,00000255,00000282,00000519,12002975	No	277000		22	0	0	0	0	2	0.069579698	0			Y	Halff Identification Process
121000010	12	San Antonio	Damage Center 1 Project1 – Detention in East Branch Poth Creek	Storage in this area would reduce downstream flooding and remove existing structures from the FEMA floodplain	12000029, 12000030	Wilson	12100303	121003030204	12000027	Project Planning	0	Riverine,	12003181	00000100,00000255,00000282,12003181	No	1386800		10	0	0	0	0	0	0	2.196990013			Y	Halff Identification Process
121000011	12	San Antonio	D/O Center M(HWY 1604 East of Somerset Community)	Oak Island Drainage Improvements. Culvert upgrades at two locations on Oak Island Dr and 1604 with channel work.	12000029, 12000030	Bexar	12100302	121003020508	12000093	Project Planning	0.56	Riverine,	12003327	00000007,00000255,00000282,00000290,00000392,12003327	No	3889350		186	82	206	0	0	4	0.937184989	20.99500084			Y	Halff Identification Process
121000012	12	San Antonio	Damage Center 1 (Stockdale Creek)	Stockdale Creek Stream Restoration with a natural channel design	12000029, 12000030	Wilson	12100304	121003040401	12000060	Project Planning	0.02	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	3071400		24	0	0	0	18	18	0.594425023	1.217260003			Y	Halff Identification Process
121000013	12	San Antonio	Karnes County Damage Centers Karnes A	Multiple structures at risk Within San Antonio River at US 181	12000011, 12000013, 12000014	Karnes	12100303	121003030202	12000030	Project Planning	0	Riverine,	12002974	00000095,00000255,00000282,12002974	No	3659360		5	0	0	0	0	0	0.067879997	0			Y	Halff Identification Process
121000014	12	San Antonio	Karnes County Damage Centers Karnes B	Multiple structures at risk Within Marcelinas Creek at US 181	12000011, 12000013, 12000014	Karnes	12100303	121003030204	12000027	Project Planning	0	Riverine,	12002974	00000095,00000255,00000282,12002974	No	3659360		10	0	0	0	0	0	0.725493014	0			Y	Halff Identification Process
121000015	12	San Antonio	Master Drainage Plan	A detailed drainage study of the city of Selma	12000011, 12000013, 12000014	Bexar,Guadalupe, Comal	12100304	121003040201,121003040202	12000066,12000069	Watershed Planning	5.02	Riverine,	12003327	00000007,00000010,00000014,00000255,00000282,00000291,00001485,12002512,00002671,12002967,12003258,12003327	Yes	0		220	71	897	15	0	8	6.205910206	5.328340054			Y	Halff Identification Process
121000016	12	San Antonio	Antonio Drive Drainage Improvements	Bridge at Los Reyes Creek and Antonio Dr	12000029, 12000030, 12000033	Bexar	12100302	121003020404	12000103	Project Planning	0	Riverine,	12003002	00000007,00000255,00000282,12003002	No	2982000		1	0	0	0	0	0	0.0293628	0			Y	Halff Identification Process
121000017	12	San Antonio	French Creek at Guilbeau Road NWWC	A basic trapezoidal channel with side slopes of 3:1, representing an earthen channel	12000029	Bexar	12100302	121003020402	12000078	Project Planning	0.1	Riverine,	12003327	00000007,00000255,00000282,12003327	No	30000		33	26	328	0	0	1	0.641292989	0			Y	Halff Identification Process
121000018	12	San Antonio	Huebner Creek Flood Control Project Segment 1	The channel will be widened to 50" in front of Raymond Rimkus Park (6440 Evers Road) and then widened more from the park to the bridge.	12000029, 12000030, 12000033	Bexar	12100302	121003020405	12000104	Project Planning	0.07	Riverine,	12002511	00000007,00000255,00000282,12002511	Yes	21617000		9	3	14	1	0	0	0.255641997	0			Y	Halff Identification Process
121000019	12	San Antonio	DC19: Salado Creek Tributary B	Improvement on IH 10 culvert crossing to reduce peak flood stages upstream of IH 10 channel improvements downstream of IH 10 to prevent peak flood stage increase	12000029	Bexar	12100301	121003030105	12000002	Project Planning	0.06	Riverine,	12003327	00000007,00000255,00000282,12003327	No	15368000		258	195	675	0	0	6	0.916868985	0			Y	Halff Identification Process
121000020	12	San Antonio	DC20: Rosillo Creek Unnamed Tributary 1	Upgrade Diane Road and construct drainage improvements	12000033	Bexar	12100301	121003010106	12000007	Project Planning	0.16	Riverine,	12003327	00000007,00000255,00000282,12003327	No	0		36	18	51	0	0	0	0.619801998	0			Y	Halff Identification Process
121000021	12	San Antonio	LWC#41 Vance Jackson 200ft south of Scenic	Low Water Crossing needs Bridge/Culvert Improvements with possible advanced warning signals. Associated street reconstruction to include curbs, sidewalks, and driveway approaches be incorporated into the project.	12000029, 12000033	Bexar	12100301	121003010201	12000008	Project Planning	0.01	#N/A	12003327	00000007,00000255,00000282,12003327	Yes	35000		0	0	0	0	1	0	0	0			Y	Halff Identification Process
121000022	12	San Antonio	LWC 112.1 Pvt Rd. 300' North of Marbcah Rd.	Project consists of channel improvements and an outfall to Slick Creek to alleviate street flooding. Channel improvements include installing 10x4 MBC along the channel to improve flow at this portion of Slick Creek.	12000029	Bexar	12100302	121003020405	12000104	Project Planning	0.1	#N/A	12003327	00000007,00000255,00000282,12003327	Yes	35000		0	0	0	0	3	0	0	0			Y	Halff Identification Process
121000023	12	San Antonio	LWC 100, Blakeley Area Drainage Improvement	This option consists of upsizing the Blakeley crossing to (3) 6'x3' RCB and providing a 7' bottom width concrete trap channel with 3:1 side slopes upstream of the crossing.	12000029	Bexar	12100301	121003010105	12000002	Project Planning	0	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	25000		21	15	30	0	3	3	0.056232601	0			Y	Halff Identification Process
121000024	12	San Antonio	LWC157 New Sulphur Springs Rd – East of Beck Rd	The proposed project will install 4-10' x 9' MBC at the LWC and reconstruct the portion of New Sulphur Springs Rd. affected by the culvert installation. The proposed street reconstruction will not include sidewalks or curbs.	12000029	Bexar	12100301	121003010302	12000009	Project Planning	0.01	Riverine,	12003327	00000007,00000255,00000282,00000392,12001595,12003327	Yes	35000		30	0	0	21	3	3	1.118929982	1.009459972			Y	Halff Identification Process
121000025	12	San Antonio	LWC#156 New Sulphur Springs Rd – btwn S. Foster & Gardner	The proposed project will replace the existing culvert system with a bridge approximately 1500' in length. The proposed bridge will span two streams at this location	12000029	Bexar	12100301	121003010302	12000009	Project Planning	0.01	Riverine,	12003327	00000007,00000255,00000282,00000392,12001595,12003327	Yes	35000		3	0	0	0	3	3	0.192645997	0			Y	Halff Identification Process
121000026	12	San Antonio	LWC #159.1 Southton Rd	The proposed project will replace the existing culvert system with a bridge approximately 1500' in length.	12000029	Bexar	12100301	121003010204	12000013	Project Planning	0.01	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	35000		6	0	0	0	3	3	0.033275198	0			Y	Halff Identification Process
121000027	12	San Antonio	LWC#158.1 –Nancy Carole Way, E. of Bobby Allen	Low Water Crossing needs Bridge/Culvert Improvements(10 ~ 8x5 MBC) with possible advanced warning signals. Associated street reconstruction to include curbs and pavement be incorporated into the project.	12000029, 12000033	Bexar	12100301	121003010203	12000011	Project Planning	0.01	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	35000		12	0	0	6	3	3	0.305804998	0			Y	Halff Identification Process
121000028	12	San Antonio	LWC #34 Sleepy Hollow @ Sunburst	This project requires the placement culverts or a bridge to eliminate a low water crossing . Street Reconstruction includes driveway approaches, curbs, and sidewalks as required.	12000029, 12000033	Bexar	12100301	121003010201	12000008	Project Planning	0.02	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	35000		9	3	9	0	3	3	0.250573009	0			Y	Halff Identification Process
121000029	12	San Antonio	Damage Center 43-Olmos Creek Middle Reach near DeZavala	The depth of flooding for the 100-year event ranges between 0.10 and 3.82 feet, therefore, buyouts do not appear to be a practical solution	12000025	Bexar	12100301	121003010201	12000008	Project Planning	0.26	Riverine,	12003327	00000007,00000255,00000282,12003000	No	633500		33	27	66	0	0	3	0.073155999	0			Y	Halff Identification Process
121000030	12	San Antonio	Damage Center 4- Apache Creek	Majority of the flooding is caused by the undersized culverts downstream of West Woodlawn, providing addition of box culverts will provide adequate capacity to the existing storm drain system	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.14	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	11660000		390	345	1383	0	1	0	1.159780025	0			Y	Halff Identification Process
121000031	12	San Antonio	Apache Creek & Elmendorf Lake Dam	The Elmendorf Lake Dam area is prone to flooding and will require an extensive drainage project to mitigate the floodplain. A Preliminary Engineering Report (PER) will need to be provided to assess a feasible solution	12000013	Bexar	12100301	121003010202	12000010	Watershed Planning	0.61	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	350000		1650	1230	7578	6	0	24	6.912899971	2.774139881			Y	Halff Identification Process
121000032	12	San Antonio	Cibolo Creek Tributary 19 Mapping Improvements	Alternative Anylsis and Project recommendation	12000011, 12000013, 12000014	Comal	12100304	121003040105,121003040104	12000061,12000064	Project Planning	0.82	Riverine,	00002669	00000014,00000255,00000291,00002121,00002669	No	5000		7	6	5	0	0	0	0.128888994	0			Y	Halff Identification Process
121000033	12	San Antonio	Indian Creek Mapping Improvements	Alternative Anylsis and Project recommendation	12000011, 12000013, 12000014	Comal	12100304,12100201	121003040104,121002010402,121002010401	12000064	Project Planning	13.08	Riverine,	00002669	00000014,00000255,00000291,00002669	Yes	0		126	18	72	13	0	1	1.399870038	51.13380051			Y	Halff Identification Process
121000034	12	San Antonio	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquisition.	12000011, 12000013, 12000014	Karnes	12100303	121003030204,121003030202	12000027,12000030	Project Planning	0.91	Riverine,	12002974	00000095,00000255,00000282,12002974	No	50000		543	76	296	0	0	8	1.779680014	110.9189987			Y	Halff Identification Process
121000035	12	San Antonio	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021, 12000022	Karnes	12100303	121003030401,121003030402,121003030403,121003030205,121003030206	12000020,12000021,12000022,12000034,12000037	Project Planning	2.31	Riverine,	00000095	00000095,00000255,00000282,00000519,12002756	No	100000		60	15	576	0	0	0	0.165754005	2.094369888			Y	HDR Identification Process
121000036	12	San Antonio	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquisition.	12000011, 12000013, 12000014	Karnes	12100303	121003030402	12000021	Project Planning	3.67	Riverine,	12002975	00000095,00000255,00000282,00000519,12002975	No	50000		385	72	276	0	0	15	0.511632025	18.04159927			Y	Halff Identification Process
121000037	12	San Antonio	Mitigate local flooding in identified problem areas	Identify problem flooding areas and implement a program to reduce loaclized flooding	12000011, 12000013, 12000014	Wilson	12100303	121003030204,121003030105	12000027,12000035	Project Planning	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Yes	5000		1406	450	1350	0	45	54	1.640259981	88.02529907			Y	Halff Identification Process
121000038	12	San Antonio	Develop and implement a Stormwater Management Plan for Stockdale Creek	Stockdale Creek, sa tributary of Clinton Branch which flows into Cibolo Creek, does not have sufficient capacity to contain floodwater as it flows through the center of Stockdale. The railroad on the east side of town used to act as a levee, but when it	12000013, 12000014	Wilson	12100304	121003040401	12000060	Project Planning	1.68	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	1200000		639	220	735	0	38	48	1.747529984	14.58240032			Y	Halff Identification Process
121000039	12	San Antonio	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021, 12000022	Karnes	12100303	121003030204,121003030202	12000027,12000030	Project Planning	0.91	Riverine,	12002974	00000095,00000255,00000282,12002974	No	100000		543	76	296	0	0	8	1.779680014	110.9189987			Y	HDR Identification Process
121000040	12	San Antonio	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquisition.	12000011, 12000013, 12000014	Karnes	12100303	121003030401,121003030402,121003030403,121003030205,121003030206	12000020,12000021,12000022,12000034,12000037	Project Planning	2.31	Riverine,	00000095	00000095,00000255,00000282,00000519,12002756	No	50000		60	15	576	0	0	0	0.165754005	2.094369888			Y	Halff Identification Process
121000041	12	San Antonio	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021, 12000022	Karnes	12100303	121003030306,121003030404	12000016,12000023	Project Planning	1.18	Riverine,	12002757	00000095,00000255,00000282,00001006,12002757	No	100000		76	12	72	0	0	0	0.116907999	4.347249985			Y	HDR Identification Process
121000042	12	San Antonio	Install early warning systems	Conduct a feasibility study that evaluates the coverage area, property ownership and availability, power requirements, telemetry requirements, technology, cost, and other local considerations. Based on study findings, install an emergency warning systems	12000013, 12000014	Wilson	12100303	121003030204,121003030105	12000027,12000035	Project Planning	3.18	Riverine,	00000100	00000100,00000255,00000282,12003181	Yes	100000		1406	450	1350	0	45	54	1.640259981	88.02529907			Y	Halff Identification Process
121000043	12	San Antonio	Drainage Study Marcelinas Creek and its major tributary	Marcelinas Creek has a floodplain that runs through the center of the city. Install stream gauges and identify alternatives to mitigate flooding. Implement study findings.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Project Planning	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Yes	250000		1406	450	1350	0	45	54	1.640259981	88.02529907			Y	Halff Identification Process

FME ID	RFPG No.	RFPG Name	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)	RFPG Recommendation (Y/N)	Reason for Recommendation
121000044	12	San Antonio	Build Detention Pond	Phase I: Perform a study to evaluate Poth Branch Watershed - Phase II: Purchase land and construct a drainage infrastructure facility in accordance with the engineering recommendations of the study.	12000011, 12000013, 12000014	Wilson	12100303	121003030204,121003030105	12000027,12000035	Project Planning	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Yes	100000		1406	450	1350	0	45	54	1.640259981	88.02529907			Y	Halff Identification Process
121000045	12	San Antonio	Drainage improvements to wastewater treatment plants	A drainage improvement was completed in 2018 with 2016 disaster relief funding. Internal plumbing was buried and the size of the weir box was increased. Funding and improvements are still needed to connect 2 and 3 and cross CR401 to increase discharge ca	12000029, 12000030, 12000033	Wilson	12100304	121003040401	12000060	Preparedness	1.68	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	800000		639	220	735	0	38	48	1.74529984	14.58240032			Y	Halff Identification Process
121000046	12	San Antonio	New Bridges on 6th and 8th Streets	New construction of waterway bridges on 6th and 8th Streets crossing Stockdale Creek. Lift elevation profile of the two bridges that provide access to critical facilities and services within the city as well as access from the City to the surrounding reg	12000029, 12000030	Wilson	12100304	121003040401	12000060	Project Planning	1.68	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	500000		639	220	735	0	38	48	1.74529984	14.58240032			Y	Halff Identification Process
121000047	12	San Antonio	Detention/Retention pond on school property	Install a Detention/Retention pond and reservoir to store excess stormwater on school property along Fordtran Street	12000029, 12000030	Wilson	12100304	121003040401	12000060	Project Planning	1.68	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	1500000		639	220	735	0	38	48	1.74529984	14.58240032			Y	Halff Identification Process
121000048	12	San Antonio	7840 Silver Spur Trail	Runoff collects from the northside of the city and passes this point before passing under Keeneland then to the Cibolo Creek Post Oak Creek low water crossing.	12000033	Kendall	12100304	121003040103	12000063	Project Planning	0	#N/A	12002436	00000017,00000255,00000291,12002436	No	690000		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000049	12	San Antonio	8410 Noble Lark Dr	Regrade channel and install erosin control measures, repair the eroded foundation of the culvert headwall	12000029, 12000030	Bexar	12100304	121003040103	12000063	Project Planning	0	#N/A	12002436	00000007,00000255,00000282,12002436	No	223066		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000050	12	San Antonio	D/O Center A (Old Pearsall road at Medio Creek)	Old Pearsall Rd overtopping at Medio Creek Bridge and backwater conditions created from RailRoad Bridge DS Old pearsall rd	12000011, 12000013, 12000014	Bexar	12100302	121003020504	12000106	Project Planning	0.04	Riverine,	12003327	00000007,00000255,00000282,12003327	No	17830000		1	0	0	0	0	1	0.151509002	0			Y	Halff Identification Process
121000051	12	San Antonio	Damage Center 1 Project2A -- Improved crossing at U.S. Highway 181	Creek crossing improvements on HWY 181. Ponding upstream to an elevation that inundates adjacent homes.	12000029, 12000030	Wilson	12100303	121003030204	12000027	Project Planning	0	Riverine,	12003181	00000100,00000255,00000282,12003181	No	1639000		10	0	0	0	0	0	0.0291049	0			Y	Halff Identification Process
121000052	12	San Antonio	Damage Center 2-Project 1 Culvert Improvements at Menchaca	Significant overtopping at one 3' x 5' box culvert. Improving this culvert would provide emergency access to the areas of Poth west of Poth Creek	12000029, 12000030	Wilson	12100303	121003030105	12000035	Project Planning	0	Riverine,	12003181	00000100,00000255,00000282	No	198000		0	0	0	0	0	0	0.0156301	0			Y	Halff Identification Process
121000053	12	San Antonio	Damage Center 2- Project 2 Road connection from Mosspoint to Sunshine	During a large storm event, access to and from residences adjacent to Mosspoint Street is compromised	12000033, 12000034	Wilson	12100303	121003030204	12000027	Project Planning	0	#N/A	12003181	00000100,00000255,00000282,12003181	No	130000		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000054	12	San Antonio	Damage Center 2 (South Tributary to Stockdale Creek)	Detention South Tributary to Stockdale Creek near the eastern city limit	12000029, 12000030	Wilson	12100304	121003040401	12000060	Project Planning	0.03	Riverine,	12003182	00000100,00000255,00000282,12003182	No	533030		0	0	0	0	0	0	0	0.687676013			Y	Halff Identification Process
121000055	12	San Antonio	Parrigin Road Drainage Improvements	Parrigin Road low water crossing at Helotes Creek Tributary A floods frequently, limiting access for nearby residences	12000011, 12000013, 12000014	Bexar	12100302	121003020404	12000103	Project Planning	0	Riverine,	12003002	00000007,00000255,00000282,12003002	No	1053000		0	0	0	0	0	0	0.019626001	0			Y	Halff Identification Process
121000056	12	San Antonio	Detailed Study of Unnamed Trib 3 to Helotes Creek	Detailed hydrologic and hydraulic study is needed to determine appropriate drainage improvements.	12000011, 12000013, 12000014	Bexar	12100302	121003020404	12000103	Watershed Planning	0.02	Riverine,	12003002	00000007,00000255,00000282,12003327	Yes	40000		0	0	0	0	1	0	0	0			Y	Halff Identification Process
121000057	12	San Antonio	Detailed Study of Culebra Creek Trib C	Three low water crossings of Culebra Creek Tributary C, Beverly Hill Drive, Doheny at FM 1560, and FM 1560. A detailed hydrologic and hydraulic study is needed to determine appropriate drainage improvements	12000011, 12000013, 12000014	Bexar	12100302	121003020403	12000102	Watershed Planning	0.15	Riverine,	12003002	00000007,00000255,00000282,12003002	Yes	65000		5	0	0	0	1	1	0.280672014	0			Y	Halff Identification Process
121000058	12	San Antonio	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquisition.	12000011, 12000013, 12000014	Karnes	12100303	121003030306,121003030404	12000016,12000023	Project Planning	1.18	Riverine,	12002757	00000095,00000255,00000282,00001006,12002757	No	50000		76	12	72	0	0	0	0.116907999	4.347249985			Y	Halff Identification Process
121000059	12	San Antonio	French Creek RSWF	An on-channel RSWF provides approximately 150 acre-feet of storag	12000029	Bexar	12100302	121003020402	12000078	Project Planning	0.03	Riverine,	12003327	00000007,00000255,00000282,12003327	No	18246000		9	0	14	0	0	2	0.253704995	0			Y	Halff Identification Process
121000060	12	San Antonio	Culebra Creek Tributary A at Tezel Road Enhanced Conveyance	Increasing the flow area by widening the channel and increasing its side slope	12000029	Bexar	12100302	121003020404	12000103	Project Planning	0.18	Riverine,	12003327	00000007,00000255,00000282,12003327	No	8725000		122	99	440	0	0	4	0.897171974	0			Y	Halff Identification Process
121000061	12	San Antonio	Helotes Creek at Bandera Road Enhanced Conveyance	Channel modifications were designed as a basic trapezoidal channel with side slopes of 3:1.	12000029	Bexar	12100302	121003020404	12000103	Project Planning	0.18	Riverine,	12003327	00000007,00000255,00000282,12003002	No	2416000		43	16	76	0	0	5	1.340909958	0			Y	Halff Identification Process
121000062	12	San Antonio	Helotes Creek RSWF	An off-channel RSWF provides approximately 3330 acres-ft oof storage.	12000029	Bexar	12100302	121003020404	12000103	Project Planning	0.42	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	8493000		40	16	183	3	2	3	0.988897979	0			Y	Halff Identification Process
121000063	12	San Antonio	Hubner Creek Flood Protection Barier	This project includes proposed Flood Protection Barrier between Ingram Road and Culebra Road	12000029	Bexar	12100302	121003020402,121003020405	12000078,12000103,12000104	Project Planning	0.57	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	27700000		146	101	1470	0	1	4	1.855620027	1.105620027			Y	Halff Identification Process
121000064	12	San Antonio	Damage Center 5-Salado Creek Trib F	Approximately 4,487 feet of channel improvements as well as constructing two inline reservoirs.	12000029	Bexar	12100301	121003010104	12000004	Project Planning	0.96	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	20860000		278	81	1359	27	6	21	1.918059945	2.213949919			Y	Halff Identification Process
121000065	12	San Antonio	Damage Center 3-Lorence Creek	Approximately 10,000 feet of channel improvement. The proposed drainage improvements reduces the occurrence of structural flooding in several areas along the banks of the creek.	12000029	Bexar	12100301	121003010103	12000005	Project Planning	0.72	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	7040000		282	177	765	12	6	15	0.817198992	0.667185009			Y	Halff Identification Process
121000066	12	San Antonio	DC13/14: Walzem Creek	A proposed combination of regional detention and channel improvement to reduce flooding on Walzem Creek.	12000029	Bexar	12100301	121003010105	12000002	Project Planning	0.18	Riverine,	12003327	00000007,00000255,00000282,12001486,12002476,12003327	Yes	5438000		288	135	1596	9	6	21	1.274399996	0			Y	Halff Identification Process
121000067	12	San Antonio	DC26: Salado Creek, Downstream of IH 10	Will consist of raising Roland Ave above the 1% chance rainfall events water surface elevation crossing over Salado Creek. Roland Rd will be realigned to improve the sharp curves in this area. This project ties into the South Salado Creek	12000029	Bexar	12100301	121003010105	12000002	Project Planning	3.11	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	0		573	135	354	18	0	18	6.220739841	72.53379822			Y	Halff Identification Process
121000068	12	San Antonio	Damage Center 2- Martinez Creek	The downstream culvert system creates a backwater which will continue to affect properties near the inlet of that structure. Improved channelization and culvert/bridge replacement and voluntary property acquisition	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.24	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	24061300		618	489	1968	3	0	33	3.601730108	0			Y	Halff Identification Process
121000069	12	San Antonio	Woodlawn Lawn Lake Option 2	Detention, Storm drain improvements, Culvert Improvements, Roadway Improvements.	12000029, 12000030, 12000033	Bexar	12100301	121003010202	12000010	Project Planning	0.06	Riverine,	12002438	00000007,00000255,00000282,12002438,12003327	No	5500000		48	32	472	0	0	0	0.176060006	0			Y	Halff Identification Process
121000070	12	San Antonio	Woodlawn Lawn Lake Option 1(Phase 1-3)	Detention, Storm drain improvements, Culvert Improvements, Roadway Improvements.	12000029, 12000030, 12000033	Bexar	12100301	121003010202	12000010	Project Planning	0.06	Riverine,	12002438	00000007,00000255,00000282,12002438,12003327	No	10000000		48	32	472	0	0	0	0.176060006	0			Y	Halff Identification Process
121000071	12	San Antonio	Normoyle Ditch - Alt 1	Channel improvements are proposed from the Six Mile Creek outfall up to approximately 200 feet upstream of New Laredo Hwy. The project area was limited to the area south of Kelly AFB as the majority of habitable structures area	12000029, 12000033	Bexar	12100302	121003020406	12000105	Project Planning	0.37	#N/A	12003327	00000007,00000255,00000282,00000392,12003327	No	0		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000072	12	San Antonio	LWC 42 Dreamland south of RR Xing	The project will consist of proposed Bridge crossing with +/- 6300 LF of total channel grading upstream and downstream and excavating to eliminate a low water crossing. Street reconstruction includes driveway approaches, curbs, and sidewalks as required	12000029, 12000033	Bexar	12100301	121003010201	12000008	Project Planning	0.14	Riverine,	12003327	00000007,00000255,00000282,00000392,12002439,12003327	Yes	35000		75	51	168	0	3	3	1.754789948	0			Y	Halff Identification Process
121000073	12	San Antonio	LWC No 113-116 and Associated Channel Improvements	This project proposes to upgrade LWC 115 & 116 and construct an underground storm system on Military to tie into the existing earthen channel. The underground system will consist of 10' curb inlets, 6'x3' box culverts, 24"-42" (RCP),outfall structures	12000029	Bexar	12100302	121003020405	12000104	Project Planning	0.04	#N/A	12003327	00000007,00000255,00000282,12003327	Yes	35000		0	0	0	0	3	0	0	0			Y	Halff Identification Process
121000074	12	San Antonio	LWC# 91 Weidner 500 ft N of Schertz	Construct a bridge on Weidner Rd. to pass a 100 yr storm to replace LWC# 91, to include curbs and sidewalks. This project will require channel excavation. This LWC is not within a FEMA floodplain.	12000029, 12000033	Bexar	12100301	121003010104	12000004	Project Planning	0.01	#N/A	12003327	00000007,00000255,00000282,12003327	No	25000		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000075	12	San Antonio	LWC #15 Copperhill Between Parkstone & Happy Hollow	Low Water Crossing #15 has approximately 128 acres of storm water that is conveyed through this crossing. This project proposes to construct an underground drainage system to assist in the conveyance of runoff crossing through this section	12000029	Bexar	12100301	121003010103	12000005	Project Planning	0	#N/A	12003327	00000007,00000255,00000282,12003327	Yes	35000		0	0	0	0	1	0	0	0			Y	Halff Identification Process
121000076	12	San Antonio	LWC #13 West Ave. @ Interpark	Since approximately 2006, residents have complained about flooding within a low point on West Ave. Approximately 173 acres drains through this area. This project will construct an underground drainage system with an earthen channel	12000029	Bexar	12100301	121003010102	12000001	Project Planning	0	#N/A	12003327	00000007,00000255,00000282,12003327	Yes	35000		0	0	0	0	1	0	0	0			Y	Halff Identification Process
121000077	12	San Antonio	New Sulphur Springs – East of Lodi Rd	This project will install a cross arm/barricade at the LWC. Construction of a bridge or culvertinstallation	12000029, 12000033	Bexar	12100301	121003010302	12000009	Project Planning	0.03	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	Yes	35000		15	9	45	0	3	3	0.098183997	0			Y	Halff Identification Process
121000078	12	San Antonio	LWC #71 Danville and Overbrook	This project requires the replacement of existing low water crossing on Danville with an upgraded culvert (2-10'X10' MBC) or bridge to eliminate a low water crossing with some channel modifications upstream and downstream of the crossing	12000029, 12000033	Bexar	12100301	121003010202	12000010	Project Planning	0.01	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	50000		6	0	0	0	3	3	0.544211984	0			Y	Halff Identification Process
121000079	12	San Antonio	LWC#72 Spencer Lane, east of Balcones Rd.	During a rain storm event, storm water runoff from the East Woodlawn Ditch overtops the road. This project proposes the construction of a culvert crossing to include an associated energy dissipation system, headwall, and outfall structures.	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	35000		6	0	0	0	3	3	0.098261997	0			Y	Halff Identification Process
121000080	12	San Antonio	Mahncke Park Outfall	To convey the 100-yr ultimate development and relieve the current backwater conditions. This project proposes drainage improvement to watershed SA4.To reduce clogging and increase efficiency.	12000029	Bexar	12100301	121003010201	12000008	Watershed Planning	0.08	Riverine,	12003327	00000007,00000255,00000282,12003327	No	25000		60	42	243	0	0	0	0.62420702	0			Y	Halff Identification Process
121000081	12	San Antonio	Damage Center 44-San Antonio River Near Center Road	This area consists of large agricultural lots. Buyouts appear to be the best option since the entire damage center is in the floodplain. The area can be converted to a recreational water park area or pavilions to encourage biking	12000025	Bexar	12100301	121003010203	12000011	Project Planning	0.34	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	4983650		45	12	12	6	0	0	0.550787985	209.0670013			Y	Halff Identification Process
121000082	12	San Antonio	Damage Center 40-San Antonio River DS Reach near Roosevelt	Three lots have 100-year flood depths greater than 2 feet and were therefore not considered for flood-proofing. Due to its location between parks,it appears reasonable to be buyout the flooed properties and continue the park	12000025	Bexar	12100301	121003010203	12000011	Project Planning	0.31	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	11963300		258	156	3387	0	3	9	1.012189984	0			Y	Halff Identification Process
121000083	12	San Antonio	Damage Center 39-Olmos Creek and Olmos Creek East Channel	Antonian High School is just downstream of this damage center. There are a total of eight parcels that are flooded by the 100-year storm event. Flood-proofing appears to be a practical approach for these properties	12000029	Bexar	12100301	121003010201	12000008	Project Planning	0.12	Riverine,	12003327	00000007,00000255,00000282,00000392,12002439,12003327	Yes	390530		30	12	15	6	0	0	1.810649991	0			Y	Halff Identification Process
121000084	12	San Antonio	Damage Center 38-Olmos Creek Lower Reach Near Montview	Flooding occurs on the left overbank and begins just upstream of Montview. A total of 10 lots are impacted by the 100-year storm event and the depth of flooding ranges between 0.10 and 0.15 feet.Flood depths are less than 0.5 feet; therefore	12000029	Bexar	12100301	121003010201	12000008	Project Planning	0.05	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	No	407544		36	24	192	0	0	3	0.388651997	0			Y	Halff Identification Process
121000085	12	San Antonio	Damage Center 3- Zarzamora Creek	The proposed earthen channel would begin upstream of the pedestrian bridge and end approximately 780 feet downstream of Ingram Road	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.55	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	11240000		270	180	933	6	1	3	2.099720001	0.202150002			Y	Halff Identification Process
121000086	12	San Antonio	Damage Center 6- Martinez Creek	Voluntary Property Acquisition is the only option that would be recommended under current regulatory and funding scenarios	12000025	Bexar	12100301	121003010202	12000010	Project Planning	0.66	Riverine,	12003327	00000007,00000255,00000282,12003327	No	31453300		1722	1083	6090	0	0	33	8.9373703	0			Y	Halff Identification Process

FME ID	RFPG No.	RFPG Name	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)	RFPG Recommendation (Y/N)	Reason for Recommendation
121000087	12	San Antonio	Damage Center 7- Zarzamora Creek	Based on the value of the homes within this damage center, VPAs appear to be a practical option that may be well received	12000025	Bexar	12100301	121003010202	12000010	Project Planning	0.51	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	11425000		951	747	2871	30	0	21	6.954979897	1.334370017			Y	Halff Identification Process
121000088	12	San Antonio	Damage Center 9- Alazan Creek	severe flooding upstream of South Colorado Street, where the majority of the buildings flood during the 10&50 yr. Channel improvements	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.36	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	63081000		933	504	2730	9	0	27	3.882910013	0.237638995			Y	Halff Identification Process
121000089	12	San Antonio	Damage Center 14- Airport Trib	There are four bridges within this Damage Center, of which all overtop during the 1% AC storm event. Voluntary Acquisition of 79 residential propoerties that are compromised	12000025	Bexar	12100301	121003010104,121003010201	12000004,12000008	Project Planning	0.35	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	30290000		351	186	2049	21	0	21	2.227639914	0			Y	Halff Identification Process
121000090	12	San Antonio	Damage Center 19- San Pedro Creek	A lateral detention project is recommended to reduce the Camaron Street spill which will also provide some minor relief to the storm sewer surcharges at West Elmira Street, Cadwallader Street, Marshall Street, and Hill Street	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.11	Riverine,	12003327	00000007,00000255,00000282,12003327	No	12454000		174	39	909	0	0	9	1.423069954	0			Y	Halff Identification Process
121000091	12	San Antonio	Damage Center 20-Matinez Creek	Lateral detention is a viable alternative for this project and could be used in conjunction with VPA, and reduced channelization, to meet the desired outcomes of multi-use functionality and flood reduction.	12000029	Bexar	12100301	121003010202	12000010	Project Planning	0.26	Riverine,	12003327	00000007,00000255,00000282,12003327	No	63987000		723	576	2661	0	0	12	2.900870085	0			Y	Halff Identification Process
121000092	12	San Antonio	Damage Center 23-New Braunfels, Austin Hwy, Broadway Drain	Reduce regional flooding and remove secure safe passage during 100 yr event. Utilizes a combined regional and local trunkline of 4'x4' and new outfall near Patterson Avenue.	12000029	Bexar	12100301	121003010201	12000008	Project Planning	0.88	Riverine,	12003327	00000007,00000255,00000282,12002437,12002475,12003327	No	53405000		558	210	5133	0	0	0	5.442039967	0			Y	Halff Identification Process
121000093	12	San Antonio	Damage Center 32-Six Mile Creek	the proposed pond would have a direct impact on the flow in Normoyle Ditch, it is recommended that the required drainage structures be r.eanalyzed	12000013, 12000014	Bexar	12100301	121003010203	12000011	Watershed Planning	0.56	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	Yes	15630700		9	0	0	3	0	0	0.186229005	0			Y	Halff Identification Process
121000094	12	San Antonio	Damage Center 34-State Hospital Creek	the channelization project will have to be constructed to remove all structures from the 1% annual chance storm event floodplain	12000029	Bexar	12100301	121003010203	12000011	Project Planning	0.26	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	5716000		222	162	534	12	3	9	1.4454	0			Y	Halff Identification Process
121000095	12	San Antonio	LWC at Ammann Rd and Post Oak Creek	Improve the low water crossing at Ammann Road and Post Oak Creek	12000029	Kendall	12100304	121003040103	12000063	Project Planning	0.09	Riverine,	00000017	00000017,00000255,00000291	No	0		2	0	0	0	0	0	0.0402532	0			Y	Halff Identification Process
121000096	12	San Antonio	LWC at Old Fredericksburg Rd and Balcones Creek	Improve the low water crossing at Old Fredericksburg Rd and Balcones Creek	12000029	Bexar,Kendall	12100304	121003040102	12000062	Project Planning	0.01	Riverine,	00000017	00000007,00000017,00000255,00000282,00000291	Yes	0		7	0	0	0	2	2	0.116108999	0.267993987			Y	Halff Identification Process
121000097	12	San Antonio	Damage Center 31-Rockwood Creek	Limits of the effective DFIRM model are incorrect based on the DFIRM hydrology if the hydrology is re-evaluated to take into account the limiting factor of the storm drain system, the actual flow to Rockwood Crk is less than the DFIRM flow	12000029	Bexar	12100301	121003010203	12000011	Watershed Planning	0.15	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	0		435	333	1122	6	0	12	0.791041017	0			Y	Halff Identification Process
121000098	12	San Antonio	FM 1863 at Cibolo Creek LWC	Replace low water crossings at two locations(US &DS) where FM1863 crossing Cibolo Creek with bridges.	12000033	Bexar,Comal	12100304	121003040201	12000066	Project Planning	0.04	#N/A	00002669	00000007,00000014,00000255,00000282,00000291,00002669	Yes	8000000		6	0	0	0	2	2	0	0.140808001			Y	Halff Identification Process
121000099	12	San Antonio	Install pipe gates to close off streets	Install automated systems at low-water crossings with high rate of vehicular access resulting in frequency of accidents and loss of life.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Preparedness	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Yes	250000		1406	450	1350	0	45	54	0	88.02529907			Y	Halff Identification Process
121000100	12	San Antonio	LWC# 101 Rittiman Creek @ Gibbs Sprawl	This proposed planning study adds culverts at the railroad crossing, upgrades the earthen channel in the park from the westerly property line to Rittiman road, and installation of larger box culverts at the Gibbs Sprawl LWC which requires Gibbs Sprawl	12000029	Bexar	12100301	121003010106	12000007	Project Planning	0.12	#N/A	12003327	00000007,00000255,00000282,00000392,12003327	Yes	35000		218	189	726	0	3	3	0	0			Y	Halff Identification Process
121000101	12	San Antonio	Maintain Drainage System	Improve storm water drainage within residential and commercial areas by removing brush and debris,opening and widening waterways, restricting building in the flood zone, and widening bridges. Status or project was 90% complete in 2012 plan awaiting purch	12000029, 12000030, 12000033	Wilson	12100304	121003040401	12000060	Project Planning	1.68	#N/A	12003182	00000100,00000255,00000282,12003182	Yes	2000000		639	220	735	0	38	48	0	14.58240032			Y	Halff Identification Process
121000102	12	San Antonio	Upper Martinez Creek Improvements	Improvements to already channelized section of Martinez Creek (Cibolo Watershed) from Montgomery Dr to Walzem Rd and bridge improvements at Gibbs Sprawl Road	12000029	Bexar	12100304	121003040205	12000071	Project Planning	0.02	#N/A	12003327	00000007,00000255,00000282,00000392,12003327	No	4000000		13	13	41	0	0	0	0	0			Y	Halff Identification Process
121000103	12	San Antonio	Recommend for Wilson Roadways - Project 4 - Mariana Rd & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	Project Planning	0	#N/A	00000100	00000100,00000255,00000282	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000104	12	San Antonio	Recommend for Wilson Roadways - Project 5 - CR 108 & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	Project Planning	0	#N/A	00000100	00000100,00000255,00000282,00000290	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000105	12	San Antonio	Erosion at CR 401 and Cibolo Creek	Phase I: Engineering study of design solutions to erosion of CR 401 at Cibolo Creek.Phase II: Implementation of stabilization project to address stream incision and erosion CR 401 at Cibolo Creek.	12000034	Wilson	12100304	121003040401	12000060	Project Planning	0	#N/A	00000100	00000100,00000255,00000282	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000106	12	San Antonio	Erosion on CR 202 East and Marcelina Creek	Phase I: Engineering study of design solutions to erosion of CR 202 at Marcelina Creek. Phase II: Implementation of stabilization project to address stream incision and erosion CR 202 at Marcelina Creek.	12000030	Wilson	12100303	121003030204	12000027	Project Planning	0	#N/A	00000100	00000100,00000255,00000282	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000107	12	San Antonio	Improve bridge at CR 337	streets and adjacent properties. An interception channel is proposed upstream of the City to capture flows and divert them west to a tributary of Lower Cibolo Creek.	12000030	Karnes	12100303	121003030306	12000016	Project Planning	0	#N/A	00000095	00000095,00000255,00000282,00001006	Yes	500000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000108	12	San Antonio	Flat Creek Study	Update details on both current and expected ultimate watershed build-oit conditions, Identify at-risk infrastructure and detail oppurtunities for flood reduction, and provide mitigation plans with regard to risk due to delevopment.	12000014	Medina	12100302	121003020501,12100302020503	12000081,12000107	Watershed Planning	5.8	#N/A	12003377	00000005,00000255,12003377	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000109	12	San Antonio	Goliad Damage Center A	Vegetated swales along Bungalow Ave and N San Patricio St	12000032, 12000012	Goliad	12100303	121003030604	12000049	Project Planning	0.01	#N/A	00000090	00000090,00000264,00000282,12002986	No	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000110	12	San Antonio	Goliad Damage Center B	Construct dam north of W. Ward St	12000026, 12000012	Goliad	12100303	121003030604	12000049	Project Planning	0.02	#N/A	00000090	00000090,00000264,00000282	No	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000111	12	San Antonio	Kempf Creek Watershed Study	H&H Study. Alternatives analysis for regional flood conveyance systems. Project identification and recommendations.	12000014	Medina	12100302	121003020501	12000081	Watershed Planning	4.87	#N/A	12003377	00000005,00000255	Yes	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000112	12	San Antonio	Lower Basin Predictive Flood Model	Lower Basin Predictive Flood Model	12000012	De Witt,Wilson,Bexar,Guadalupe,Refugio,Calhoun,Goliad,Victoria,Karnes	12100204,12100301,12100303,12100304,12100202,12100404,12100406,12110110,12110111,12100403,12100405			Watershed Planning	1481.11	#N/A	00000282		Yes	1000000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000113	12	San Antonio	Culvert improvement on Hatch St in Tivoli	The bridge on Hatch Street in Tivoli was replaced with a culvert which drains slow and causes the water to breach the levee. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	Project Planning	0	#N/A	Tivoli Community	00000084,00000260,00000291,00000758,12001057,00001608	No	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000114	12	San Antonio	Culvert Improvement on Highway 239 in Tivoli	Culverts on Highway 239 in Tivoli are too small causing water to get in houses. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	Project Planning	0	#N/A	Tivoli Community	00000084,00000260,00000291,00000758,12001057,00001608	No	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000115	12	San Antonio	Miller Creek on the Smoky Creek Ranch Drainage Improvements	Miller Creek on the Smoky Creek Ranch drains Tivoli and the surrounding area which is washing out property where Indian artifacts were found. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	Project Planning	0.01	#N/A	Tivoli Community	00000084,00000260,00000291,00000714,00000758,00001608	No	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000116	12	San Antonio	Holistic Watershed based master planning consistent with Nature Based Solutions	This Flood Management Evaluation (FME) will fill the knowledge gap in the region on the benefits of NFMS for floodplains, flood peak attenuation, ecosystem services, groundwater recharge, and recreational value	12000013	Wilson,Bexar	12100301,12100303,12100304,12110110,12100302		12000001,12000002,12000003,12000004,12000005,12000006,12000007,12000008,12000009,12000010,12000011,12000012,12000013,12000029,12000055,12000056,12000063,12000064,12000066,12000069,12000071,12000076,12000078,12000094,12000104,12000105	Watershed Planning	505.2	#N/A	00000282		Yes	2247403		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000117	12	San Antonio	New Drainage Analysis to Update/Revise Flood Maps	This action proposes performing a new drainage analysis for the community to update/revise Flood Maps to better identify areas subject to this Hazard; last study completed in September 1977.	12000014	Medina	12100302	121003020501,12100302020503	12000081,12000108	Watershed Planning	0.63	#N/A	12002954	00000005,00000255,12002954	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000118	12	San Antonio	Low Water Crossing Upgrades	Prioritize low water crossings within Karnes County and upgrade with higher level of flood protection, warnings, and signage	12000014, 12000007	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12100202,12100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Watershed Planning	749.22	#N/A	00000095		No	305000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000119	12	San Antonio	Early warning flood systems	Conduct feasibility analysis for need and location for placement and installation of an early warning system. Install early warning systems for non incorporated communities	12000005	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12100202,12100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Project Planning	749.22	#N/A	00000095		No	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000120	12	San Antonio	Recommend for Wilson Roadways-Project 3-CR 122 & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	Project Planning	0	#N/A	00000100	00000100,00000255,00000282	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000121	12	San Antonio	North Lorenzo, Athens Street, Naples Street Storm Drainage Improvements	Preliminary Engineering of storm drainage and inlet system.	12000013	Medina	12100302	121003020501	12000081	Project Planning	0.17	#N/A	12003377	00000005,00000255,12003377	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000122	12	San Antonio	La Vernia Issue # 5 (Hwy 87 crossing and CR 342)	Study to assess city acquiring drainage easements in the area upstream of the Highway 87 crossings, as well as the area between the crossings at Highway 87 and the crossing at CR 342 for the purpose of constructing a channel.	12000016	Wilson	12100304	121003040302	12000056	Project Planning	0.03	#N/A	12003180	00000100,00000255,00000282,00000392,12003180	No	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000123	12	San Antonio	La Vernia Issue # 2 and # 3 (City Park/ La Vernia ISD)	Study to assess 6'-wide concrete-bottom channel/sidewalk with earthen sides (graded 5:1) be constructed through this area to better define the flow path. Gauge boards on San Antonio Road. Aquire 25'-wide drainage easements.	12000013, 12000032	Wilson	12100304	121003040302	12000056	Project Planning	0.07	#N/A	12003180	00000100,00000255,00000282,00000392,12003180	Yes	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000124	12	San Antonio	Escondido Creek WS SCS Site 1, 2, 4 Dam	Rehabilitation of Escondido Creek 1,2, and 4 to ensure passage of the PMF.	12000030	Karnes	12100303	121003030402	12000021	Project Planning	0.13	#N/A	00000095	00000095,00000255,00000282,00000519	No	300000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000125	12	San Antonio	Wilson County LWC Study	Study to evaluate the LWC in Wilson County and recommend alternatives both short term and long term alternatives. Some short term alternatives could include Low Water Signage, Turn Around Don't Drown, automatic gates. 195 LWC in Wilson County.	12000030	Atascosa,Wilson,Bexar,Guadalupe,Karnes	12100301,12100303,12100304,12100202,12110110		12000006,12000012,12000027,12000028,12000029,12000030,12000031,12000032,12000033,12000034,12000035,12000036,12000038,12000039,12000040,12000041,12000052,12000053,12000054,12000056,12000057,12000059,12000060,12000065,12000070,12000072	Watershed Planning	805.06	#N/A	00000100		Yes	300000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000126	12	San Antonio	Wilson 10 - Acquisitions of Flooded Structures	Acquire flooded structures to remove them out of the SFHA and restrict future structures from development on the site. Removal of damaged structures that are no longer liveable.	12000026	Atascosa,Wilson,Bexar,Guadalupe,Karnes	12100301,12100303,12100304,12100202,12110110		12000006,12000012,12000027,12000028,12000029,12000030,12000031,12000032,12000033,12000034,12000035,12000036,12000038,12000039,12000040,12000041,12000052,12000053,12000054,12000056,12000057,12000059,12000060,12000065,12000070,12000072	Project Planning	805.06	#N/A	00000100		No	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process

FME ID	RFPG No.	RFPG Name	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)	RFPG Recommendation (Y/N)	Reason for Recommendation
121000127	12	San Antonio	City of Floresville Flood Study	City wide study	12000013	Wilson	12100303	121003030102,12100 3030103	12000028,12000033	Watershed Planning	7.7	#N/A	12002925	00000100,00000255,00000282,12 000592,12002925	No	308000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000128	12	San Antonio	Highway 16 Bridge Upgrade	Closes the road down which is the main access for citizens. Study to upgrade crossing.	12000030	Bandera	12100302	121003020203,12100 3020204	12000088,12000089	Project Planning	0.05	#N/A	00000011	00000011,00000255,00000339	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000129	12	San Antonio	Bandera State Highway 173 Study	Prevents access to citizens from the city. Study to upgrade crossing.	12000030	Bandera	12100302	121003020204	12000089	Project Planning	0.01	#N/A	00000011	00000011,00000255,00000339	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000130	12	San Antonio	Bandera English Crossing Study	This low water crossing can sometimes remain flooded for months. Study to upgrade road.	12000030	Bandera	12100302	121003020302	12000097	Project Planning	0.07	#N/A	00000011	00000011,00000255,00000339	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000131	12	San Antonio	Bandera FM 2107 Study	FM 2107 is the only path for residents to access community lifelines.FM 2107 is the only path for residents to access community lifelines. Study to upgrade road.	12000030	Bandera	12100302	121003020103	12000082	Project Planning	0.14	#N/A	00000011	00000011,00000255,00000339	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000132	12	San Antonio	Bandera Patterson Street Study	Impairs travel for citizens to reach community lifeline services. Study to upgrade road.	12000030	Bandera	12100302	121003020201	12000087	Project Planning	0.01	#N/A	00000011	00000011,00000255,00000339	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000133	12	San Antonio	Bandera Lower Mason Creek and Bandera Creek at State Highway 16	Lower Mason Creek and Bandera Creek contribute to flooding at SH 16. Study to upgrade road.	12000030	Bandera	12100302	121003020204	12000089	Project Planning	0.01	#N/A	00000011	00000011,00000255,00000339	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000134	12	San Antonio	Bandera WWTP Study	Wastewater treatment plant is in 100 yr floodplain. Study to find solutions.	12000028	Bandera	12100302	121003020203	12000088	Project Planning	0.03	#N/A	00000011	00000011,00000255,00000339,12 003414	Yes	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000135	12	San Antonio	Bandera 470 and Indian Creek Study	Blocks public access to lifelines in Bandera. Study to upgrade road.	12000030	Bandera	12100302	121003020203	12000088	Project Planning	0.02	#N/A	00000011	00000011,00000255,00000339	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000136	12	San Antonio	Bandera 470 and Medina River Study	Blocks people of Tarpley from EMS and other lifelines in the city of Bandera. Study to upgrade road.	12000030	Bandera	12100302	121003020203	12000088	Project Planning	0.01	#N/A	00000011	00000011,00000255,00000339	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000137	12	San Antonio	Natural capital inventory	Development of a dataset identifying lands under conservation easement. Project includes courthouse and deed records research to identify lands that are protected or have future development restrictions.	12000014	Atascosa,De Witt,Wilson,Medi na,Bexar,Guadalu pe,Bandera,Comal ,Kendall,Kerr,Aran sas,Refugio,Calho un,Goliad,Victoria, Karnes				Watershed Planning	4409.74	#N/A	00000282		No	300000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000138	12	San Antonio	Evaluation and prioritization of new gauge locations	Study to identify stream gage locations in the San Antonio River Basin and cost effective/resilient monitoring technologies.	12000014	Atascosa,De Witt,Wilson,Medi na,Bexar,Guadalu pe,Bandera,Comal ,Kendall,Kerr,Aran sas,Refugio,Calho un,Goliad,Victoria, Karnes				Watershed Planning	4409.74	#N/A	00000282		Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000139	12	San Antonio	Future conditions data refinement study	Future conditions data refinement study,study future landuse and apply to future models	12000013	Atascosa,De Witt,Wilson,Medi na,Bexar,Guadalu pe,Bandera,Comal ,Kendall,Kerr,Aran sas,Refugio,Calho un,Goliad,Victoria, Karnes				Watershed Planning	4409.74	#N/A	00000282		No	500000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000140	12	San Antonio	Port of San Antonio Floodproofing	Port SA, site specific, study flood mitigation for critial structures	12000028	Bexar	12100302	121003020406	12000105	Project Planning	0.03	#N/A	00000282	00000007,00000255,00000282,12 003327	Yes	250000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000141	12	San Antonio	River Authority WWTP Resilience	Study of all River Authority WWTP Resilience, finding alternatives for floodproofing	12000028	Atascosa,De Witt,Wilson,Medi na,Bexar,Guadalu pe,Bandera,Comal ,Kendall,Kerr,Aran sas,Refugio,Calho un,Goliad,Victoria, Karnes				Project Planning	4409.74	#N/A	00000282		Yes	600000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000142	12	San Antonio	Bandera Substation In Floodplain Study	Electrical sub-station is in 100 yr floodplain. Study to find solutions.	12000028	Bexar	12100302	121003020405	12000104	Project Planning	0	#N/A	00000011	00000007,00000255,00000282,12 002511	Yes	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000143	12	San Antonio	Garcia Creek Channel Stabilization	Preliminary Engineering to identify stabilization methods and sizing.	12000030	Medina	12100302	121003020501	12000081	Project Planning	0.02	#N/A	12003377	00000005,00000255,12003377	No	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000144	12	San Antonio	Country Village Channel Improvements	Preliminary Engineering including an H&H study to size the channel improvements	12000030	Medina	12100302	121003020501	12000081	Project Planning	0.11	#N/A	12003377	00000005,00000255,12003377	No	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000145	12	San Antonio	Lucas Creek at Cinco De Mayo Dr Bridge and Channel (DC-MRD)	Regional detention, channel improvements, and bridge/culvert upgrades, property acquisition	12000031	Bexar	12100302	121003020502,12100 3020503	12000107,12000108	Project Planning	0.97	#N/A	00000005	00000007,00000255,00000282,00 000392	Yes	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000146	12	San Antonio	Cagnon Rd at Polecat Creek (DC-MRN)	Replace the existing crossing with an approximately 320-foot long bridge.	12000031	Bexar	12100302	121003020503	12000108	Project Planning	0.04	#N/A	00000005	00000007,00000255,00000282,00 000392	Yes	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000147	12	San Antonio	Trumbo Rd at Palo Blanco Creek (DC-MRP)	Upgrades to Trumbo Rd and Loop 1604 crossings at Palo Blanco Creek with channel work.	12000031	Bexar	12100302	121003020509	12000094	Project Planning	0.25	#N/A	00000005	00000007,00000255,00000282,00 000290,00000392	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000148	12	San Antonio	Wet-Proof Wastewater System	This action proposes "wet-proofing" city sewer lines to the Wastewater Treatment Plant	12000028	Medina	12100302	121003020501,12100 3020503	12000081,12000108	Project Planning	0.63	#N/A	12002954	00000005,00000255,12002954	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000149	12	San Antonio	Karnes Damage Center H	Raise bridge on Hwy 181/5th in Kenedy	12000030, 12000012	Karnes	12100303	121003030402	12000021	Project Planning	0.04	#N/A	00000095	00000095,00000255,00000282,00 000519,12002975	Yes	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000150	12	San Antonio	Additional flood proof at wastewater treatment plant	Study to evaluate removing the WWTP from flood and erosion risk	12000028	Wilson	12100304	121003040302	12000056	Project Planning	0.02	#N/A	12003180	00000100,00000255,00000282,00 000392,12003180	Yes	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000151	12	San Antonio	Bexar County Line LWC Engineering Study	Engineering Study to evaluate twelve LWC upgrades at county line	12000030	Atascosa,Wilson, Medina,Bexar,Gua dalupe,Bandera,C omal,Kendall	12100301,12100303, 12100304,12110110, 12100302			Project Planning	1253.25	#N/A	00000007		Yes	600000		0	0	0	0	0	0	0	0			Y	Halff Identification Process
121000152	12	San Antonio	Recommend for Wilson Roadways - Project 7 - CR 119 & Mariana Creek	Study: Upgrade bridge so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	Project Planning	0	#N/A	00000011	00000100,00000255,00000282	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000153	12	San Antonio	Property acquisition and demolition and/or relocations	Property acquisition and demolition and/or relocations	12000022	Wilson	12100303	121003030102,12100 3030103	12000028,12000033	Project Planning	7.7	#N/A	12002925	00000100,00000255,00000282,12 000592,12002925	No	1500000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000154	12	San Antonio	Damage Center 2: Project 1 Channelization	The channelization project would add 8 feet to the left bank of the channel, and the depth would be kept at its existing elevation. The project would remove two structures adjacent to the stream from the floodplain.	12000026	Wilson	12100303	121003030103	12000033	Project Planning	0	#N/A	12002925	00000100,00000255,00000282,12 002925	No	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000155	12	San Antonio	Damage Center 1: Project 1A, 1B, 1C	Detention upstream of Lost Springs Hollow along with some channel work. Upgrade Hwy 181 crossing at Lodi Branch and channelization (contingent of Project 1A).	12000030	Wilson	12100303	121003030103	12000033	Project Planning	0.13	#N/A	12002925	00000100,00000255,00000282,12 002925	Yes	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000156	12	San Antonio	Repetitive loss properties	Offer relocation/mitigation incentives to current flood hazard area property owners; initiate a community program to acquire repetitive loss structures identified by FEMA.	12000024	Wilson	12100304	121003040304,12100 3040302	12000053,12000056	Project Planning	1.72	#N/A	12003180	00000100,00000255,00000282,00 000392,12001595,12003180	Yes	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000157	12	San Antonio	Nichols Creek Stabilization	Restoration of Nichols Creek to improve stream function including conveyance of flow and sediment.	12000026	Karnes	12100303	121003030402	12000021	Project Planning	0.02	#N/A	00000282	00000095,00000255,00000282,00 000519,12002975	No	1000000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000158	12	San Antonio	Master Drainage Plan for Bexar County Unincorporated Areas	Engineering master plan to assess flood damage centers for Bexar County unincorporated areas.	12000024	Atascosa,Wilson, Medina,Bexar,Gua dalupe,Bandera,C omal,Kendall	12100301,12100303, 12100304,12110110, 12100302			Watershed Planning	1253.25	#N/A	00000007		No	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000159	12	San Antonio	Master Drainage Plan for Bexar County HALT Low Water	Engineering master plan to assess existing HALT sites for drainage improvements.	12000024	Atascosa,Wilson, Medina,Bexar,Gua dalupe,Bandera,C omal,Kendall	12100301,12100303, 12100304,12110110, 12100302			Watershed Planning	1253.25	#N/A	00000007		No	150000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000160	12	San Antonio	Culebra Creek RSWF	Engineering study to evaluate the Culebra Creek RSWF under the revised Green & Ampt hydrology.	12000030	Bexar	12100302	121003020402,12100 3020403,1210030204 04,121003020405	12000078,12000102,12000103,12000104	Project Planning	0.36	#N/A	00000007	00000007,00000255,00000282,00 000392,12001484,12003327	Yes	50000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000161	12	San Antonio	Gass Road at Culebra Creek Tributary D	Engineering study to assess the removal of Gass Road from the 100-Yr flood plain at Culebra Creek Tributary D for 100-Yr accessibility and driver safety at the crossing.	12000030	Bexar	12100302	121003020403	12000102	Project Planning	0	#N/A	00000007	00000007,00000255,00000282	No	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000162	12	San Antonio	Rockwood Creek (SA-39)	Engineering study to assess the removal of properties and residential structures from the 100-Yr flood plain along Rockwood Creek upstream of the San Antonio River and River Side Golf Course.	12000026	Bexar	12100301	121003010203	12000011	Project Planning	0.13	#N/A	00000007	00000007,00000255,00000282,12 003327	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000163	12	San Antonio	Live Oak at Salitrillo Creek (CB-9)	Engineering study to assess removal of residential structures from the Salitrillo Creek 100-Yr flood plain upstream of Martinez Creek Dam No. 5.	12000026	Bexar	12100304	121003040205	12000071	Project Planning	0.78	#N/A	00000007	00000007,00000255,00000282,12 002512,12002967	Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000164	12	San Antonio	Bexar County LWC Engineering Study	Engineering Study to evaluate seven LWC upgrades.	12000030	Atascosa,Wilson, Medina,Bexar,Gua dalupe,Bandera,C omal,Kendall	12100301,12100303, 12100304,12110110, 12100302			Project Planning	1253.25	#N/A	00000007		Yes	300000		0	0	0	0	0	0	0	0			Y	HDR Identification Process
121000165	12	San Antonio	Update flood information and policies	Study to compile information on residential property in flood zones, establish a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process based on the 100-year flood event	12000030	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303, 12100304,12100202, 12100406,12110110, 12110111		12000014,12000016,12000019,12000020,12000021,120 0022,12000023,12000024,12000025,12000026,120000027 12000030,12000034,12000037,12000040,12000041,120 0042,12000043,12000045,12000052,12000057,120000	Project Planning	749.22	#N/A	00000011		Yes	100000		0	0	0	0	0	0	0	0			Y	HDR Identification Process

Table 13. Potentially Feasible Flood Mitigation Projects Identified by RFPC

FMP ID	RFPG No.	RFPG Name	FMP Name	Description	Associated Goals (ID)	Counties	HUC12s	Watersheds	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost ($)	Potential Funding Sources and Amount	Flood Risk									
																	Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
123000001	12	San Antonio	29010 Tivoli Way	Utilize existing stormwater infrastructure by regrading the roadway to slope towards existing inlets and open channels on the north and south side of Windermere Dr on the east side of Fair Oaks Parkway. New curb installed along the west side of Fair Oak	12000029, 12000030	Bexar	121003040103	12000063	Storm Drain	0	Riverine,	12003327	00000007,00000255,00000282,12002436	N	500000	0	0	0	0	0	0	0	0	0	0
123000002	12	San Antonio	PROJECT 1A - ADLER ROAD AT CURREY CREEK AND UNNAMED TRIBUTARY A	Improve low water crossings along Adler Road, channel regrading, curbs, sidewalks, street reconstruction	12000029, 12000030	Kendall	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1700000	0	5.26434E-05	2.4322E-06	0	0	0	0	2	2	0.169481993	0
123000003	12	San Antonio	PROJECT 2 - UNNAMED TRIBUTARY A REGIONAL DETENTION FACILITY	Inline detention facility with culvert improvements	12000029, 12000030	Kendall	121003040102	12000062	Detention Pond	0.03	Riverine,	12002855	00000017,00000255,00000291	N	7400000	0	2.97355E-05	1.09724E-05	121	0	363	0	0	0	0	0
123000004	12	San Antonio	PROJECT 3 - CURREY CREEK REGIONAL DETENTION FACILITY	Inline detention facility with additional stormdrain imporvements	12000029, 12000030	Kendall	121003040102	12000062	Detention Pond	0.04	Riverine,	12002855	00000017,00000255,00000291,12002855	N	9400000	0	2.18009E-05	3.00105E-06	280	0	840	0	0	0	0.447068006	0
123000005	12	San Antonio	PROJECT 4 - SCHOOL STREET AT CIBOLO CREEK AND FREDERICK CREEK	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways	12000034	Kendall	121003040101	12000058	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	5300000	0	0.000164757	3.3142E-06	0	0	0	0	2	2	0.067571998	0
123000006	12	San Antonio	PROJECT 5D - OLD SAN ANTONIO STREET AT MENGER CREEK	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways	12000029, 12000030	Kendall	121003040102	12000062	Infrastructure	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	3700000	0	2.95956E-05	1.28896E-06	0	0	0	0	1	0	0.46191901	0
123000007	12	San Antonio	PROJECT 6 - JOHNS ROAD NEAR CIBOLO CROSSING SUBDIVISION	Storm drain, channel, increase capacity of existing detention	12000029, 12000030	Kendall	121003040101	12000058	Storm Drain	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1500000	0	2.38815E-05	1.26644E-05	25	0	75	0	0	0	0.046724301	0
123000008	12	San Antonio	PROJECT 7 - SCHWEPPE AND HICKMAN STREET	Storm drain, and channel improvments	12000029, 12000030	Kendall	121003040102	12000062	Storm Drain	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	N	2100000	0	1.65716E-05	3.03453E-05	38	0	114	0	0	0	0	0
123000009	12	San Antonio	PROJECT 8 - JOHNS AND LOHMANN STREET	Storm drain and channel improvements	12000029, 12000030	Kendall	121003040101	12000058	Storm Drain	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1800000	0	9.57874E-06	7.09278E-05	12	0	36	0	0	0	0	0
123000010	12	San Antonio	PROJECT 9 - UNNAMED TRIBUTARY A- SUBDIVISION FLOOD PROTECTION & MOBILITY PROJECT	Low water crossing improvemnts, channel improvements	12000029, 12000030	Kendall	121003040102	12000062	LWC upgrade	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	5100000	0	6.91978E-05	1.16312E-06	121	0	0	0	3	2	1.061059952	0
123000011	12	San Antonio	PROJECT 10 - E. BLANCO ROAD AT UNNAMED TRIBUTARY A	Improve low water crossings along Blanco Road, channel regrading, curbs, sidewalks, street reconstruction	12000034	Kendall	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1600000	0	3.34516E-05	0	0	0	0	0	1	2	0.168147996	0
123000012	12	San Antonio	PROJECT 11 - RIVER ROAD AT UNNAMED TRIBUTARY A	Improve low water crossings along River Road, channel regrading, curbs, sidewalks, street reconstruction	12000034	Kendall	121003040102	12000062	LWC upgrade	0	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	1400000	0	5.06867E-05	6.6049E-06	0	0	0	0	1	2	0.085803904	0
123000013	12	San Antonio	PROJECT 13 - HERFF AND ESSER ROAD IMPROVEMENTS AT CURREY AND CIBOLO CREEK	Bridge at Currey Creek and Esser Road, Bridge at Cibolo Creek and River Road, Channel grading, Roadway reconstruction	12000029, 12000030	Kendall	121003040102	12000062	Storm Drain	0.02	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	15300000	0	0.000183333	5.02663E-06	0	0	0	0	3	8	0.937945008	0.234044999

Table 13. Potentially Feasible Flood Mitigation Projects Identified by RFPC

FMP ID	RFPG No.	RFPG Name	FMP Name	Description	Associated Goals (ID)	Counties	HUC12s	Watersheds	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost ($)	Potential Funding Sources and Amount	Flood Risk									
																	Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
123000014	12	San Antonio	PROJECT 12 - PLANT CHANNEL IMPROVEMENT	Channel improvements	12000029, 12000030	Kendall	121003040102	12000062	Channel	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1300000	0	1.21637E-05	1.07313E-05	6	7	18	0	0	0	0	0
123000015	12	San Antonio	PROJECT 14 - EAST BOERNE REGIONAL LID	Proposed inline extended detention facility that provides water quality benefits to the urbanized tributary of Cibolo Creek and properties downstream of Scenic Loop Road	12000029, 12000030	Kendall	121003040102	12000062	Natural	0	Riverine,	12002855	00000017,00000255,00000291,12002855	N	700000	0	0	0	0	0	0	0	0	0	0	0
123000016	12	San Antonio	PROJECT 15 - NORTH CURREY CHANNEL IMPROVEMENTS	Channel regrading, curbs, sidewalks, street reconstruction. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 16 being implimented at the same time as this project to achieve the project benefits.	12000029, 12000030	Kendall	121003040102	12000062	Channel	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	Y	700000	0	2.62923E-05	1.03441E-06	280	0	840	0	3	0	0.122639	0
123000017	12	San Antonio	PROJECT 16 - SOUTH CURREY CREEK CHANNEL IMPROVEMENTS	Low water crossing improvemnts, channel improvements. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 15 being implimented at the same time as this project to achieve the project benefits.	12000029, 12000030	Kendall	121003040102	12000062	LWC upgrade	0.01	Riverine,	12002855	00000017,00000255,00000291,12002855	N	1500000	0	0.000114216	1.24899E-05	280	0	840	0	1	2	0.35056299	0
123000018	12	San Antonio	Lewis Creek Alternative 1 Phase 1 & 2	Channel improvement, roadway improvement	12000029, 12000030, 12000033	Comal	121003040105	12000061	Channel	0.1	Riverine,	00000014	00000014,00000255,00000291,00002121,00002669	Y	5468250	0	1.55517E-05	0.00576689	36	36	102	0	2	2	0.294860005	0
123000019	12	San Antonio	Seeling Drainage Improvements	Install box culverts, grass lined channel construction	12000029, 12000030	Bexar	121003010202	12000010	Storm Drain	0.26	Riverine,	12003327	00000007,00000255,00000282,12003327	N	30790000	0	0.000150305	0	649	0	1947	0	0	0	2.14677	0
123000020	12	San Antonio	Lewis Creek Tributary 2 Alternative 1 & 2	Channel widening/lowering, culvert improvement, roadway improvement	12000029, 12000030, 12000033	Comal	121003040105	12000061	Detention Pond	0.19	Riverine,	00000014	00000014,00000255,00000291,00002669	N	2669190	0	1.55517E-05	0.000272803	38	38	114	0	0	0	0.042753801	0.222395003
123000021	12	San Antonio	Lewis Creek Main	High water detection system. System includes warning signs, with flashers and automatic arm barricade.	12000005, 12000006	Comal	121003040105	12000061	Preparedness	0.1	Riverine,	00000014	00000014,00000255,00000291,00002121,00002669	Y	150000	0	1.55517E-05	0.00576689	36	36	102	0	2	2	0.294860005	0
123000022	12	San Antonio	Rock Creek - Alt 1	Reducing the height of the drop structure at the Olmos Creek outfall, Bridge replacements will be required for both the railroad crossing and West Ave.	12000029, 12000030	Bexar	121003010201	12000008	Infrastructure	0.52	Riverine,	12003327	00000007,00000255,00000282,00000392,12002439,12003327	Y	15860000	0	5.67233E-05	0.00059086	0	0	0	0	2	12	2.662719965	0
123000023	12	San Antonio	Judson and Lookout LWC Improvement	Upgrade the low water crossings and the connecting/downstream channel	12000029, 12000030	Bexar	121003010104	12000004	LWC upgrade	0.03	Riverine,	12003327	00000007,00000255,00000282,12003327	Y	5665140	0	0.00466562	0	21	0	0	0	6	6	0.161856994	0
123000024	12	San Antonio	Symphony Lane Voluntary Property Acquisition	Purchase 32 properties located west of the San Antonio River Symphony Reach, and along Pyron Ave and Symphony Lane.	12000025	Bexar	121003010203	12000011	Property Acquisition	0.42	Riverine,	12003327	00000007,00000255,00000282,12003327	Y	36730500	0	0.000137879	1.18234E-05	28	0	84	0	0	12	2.189919949	5.04445982
123000025	12	San Antonio	Holbrook Road Improvements	Offset a portion of the roadway south of Woodburn Rd	12000033	Bexar	121003010105	12000002	Infrastructure	0.05	Riverine,	12003327	00000007,00000255,00000282,12003327	N	16250000	0	1.80235E-05	0	0	0	0	0	1	0	0.417144001	0
123000026	12	San Antonio	Barbara Drive Drainage Improvements	Upsizing the boxes underneath Dellwood Drive and Oblate Drive. The improvements will also include reconstruction of the street and curb for the portion of Dellwood Drive and Oblate Drive within the project boundary	12000029, 12000030	Bexar	121003010201	12000008	Storm Drain	0.29	Riverine,	12003327	00000007,00000255,00000282,12003327	Y	29362000	0	6.79493E-05	0	43	7	129	0	0	6	2.141720057	0
123000027	12	San Antonio	Thames Drainage Channel Replacement - Alt 1	Replace the existing culverts at Blanco Rd., San Pedro Ave, Thames Dr, Private Dr and Dorsets.	12000029, 12000030	Bexar	121003010201	12000008	Storm Drain	0.19	Riverine,	12003327	00000007,00000255,00000282,00000392,12002439,12003327	N	30590000	0	0.0654497	0.00363188	0	0	0	0	2	9	1.226529956	0
123000028	12	San Antonio	Shady Lane Dr.Voluntary Property Acquisition	This project consist primarily of property buy-outs within the floodplain to mitigate structural flooding to those properties.	12000025	Bexar	121003020401	12000076	Property Acquisition	0	Riverine,	12003327	00000007,00000255,00000282,12003327	N	1453880	0	0.00362427	0.000913848	7	6	18	0	0	0	0.187212005	0
123000029	12	San Antonio	Concepcion Creek Improvements Project	Ph1. 54-ac detention, property acquisition and 10,000ft of storm drain systems and road reconstruction. Ph2. 1.36mi of Concepcion Creek channel improvements. Ph3. 2,300ft of (3)10x8 MBC systems	12000027 12000027	Bexar	121003010202,121003010203	12000010,12000011	Other	0.96	#N/A	12003327	00000007,00000255,00000282,00000392,12003327	Y	240222000	0	0.889999986	0	4216	2949	8847	0	0	0	1.399999976	0

Table 13. Potentially Feasible Flood Mitigation Projects Identified by RFPC

FMP ID	Reduction in Flood Risk												Pre-Project Level-of-Service	Post-Project Level-of-Service	Cost/ Structure removed	Percent Nature-based Solution (by cost)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Water Supply Benefit (Y/N)	Traffic Count for Low Water Crossings	Benefit-Cost Ratio	RFPG Recommendation (Y/N)	Reason for Recommendation
	Number of structures with reduced 100yr (1% annual chance) Flood risk	Number of structures removed from 100yr (1% annual chance) Flood risk	Number of structures removed from 500yr (0.2% annual chance) Flood risk	Habitable structures removed from 100yr (1% annual chance) Flood risk	Estimated Population removed from 100yr (1% annual chance) Flood risk	Critical facilities removed from 100yr (1% annual chance) Flood risk (#)	Number of low water crossings removed from 100yr (1% annual chance) Flood risk (#)	Estimated reduction in road closure occurrences	Estimated length of roads removed from 100yr flood risk (Miles)	Estimated active farm & ranch land removed from 100yr flood risk (acres)	Estimated reduction in fatalities (if available)	Estimated reduction in injuries (if available)											
123000001	0	0	0	0	0	0	0	0	0	0	0	0			0	0	N			0	6.920000076	Y	Halff Identification Process
123000002	0	0	0	0	0	0	2	0	0.1271115	0	0	0	10-year	100-year	0	0	Y			0	2.5	Y	Halff Identification Process
123000003	0	8	5	0	24	0	0	0	0	0	0	0	The project is expected remove 33 structure from 10-year floodplain, 59 structures from the 50-year floodplain, 8 structures from 100-year floodplain, and 5 structures from 500-year floodplain	The project is expected remove 33 structure from 10-year floodplain, 59 structures from the 50-year floodplain, 8 structures from 100-year floodplain, and 5 structures from 500-year floodplain	0	0	Y			0	0.540000021	Y	Halff Identification Process
123000004	0	174	197	0	522	0	0	0	0.335301	0	0	0	The project is expected to remove 118 structures from the 10-year floodplain, 162 structures from the 50-year floodplain, 174 structures from the 100-year floodplain, and 197 structures from the 500-year floodplain	The project is expected to remove 118 structures from the 10-year floodplain, 162 structures from the 50-year floodplain, 174 structures from the 100-year floodplain, and 197 structures from the 500-year floodplain	0	0	Y			0	2.789999962	Y	Halff Identification Process
123000005	0	0	0	0	0	0	2	0	0.050679	0	0	0	10-year	100-year	0	0	Y			0	0.400000006	Y	Halff Identification Process
123000006	0	0	0	0	0	0	1	0	0.34643925	0	0	0	10-year	100-year	0	0	Y			0	0.5	Y	Halff Identification Process
123000007	0	18	21	0	54	0	0	0	0.035043	0	0	0	The project is expected to remove 11 structures from the 10-year floodplain, 15 structures from the 50-year floodplain, 18 structures from the 100-year floodplain, and 21 structures from the 500-year floodplain	The project is expected to remove 11 structures from the 10-year floodplain, 15 structures from the 50-year floodplain, 18 structures from the 100-year floodplain, and 21 structures from the 500-year floodplain	0	0	Y			0	0.860000014	Y	Halff Identification Process
123000008	0	31	35	0	93	0	0	0	0	0	0	0	The project is expected to remove 11 structures from the 10-year floodplain, 26 structures from the 50-year floodplain, 31 structures from the 100-year floodplain, and 35 structures from the 500-year floodplain	The project is expected to remove 11 structures from the 10-year floodplain, 26 structures from the 50-year floodplain, 31 structures from the 100-year floodplain, and 35 structures from the 500-year floodplain	0	0	Y			0	0.819999993	Y	Halff Identification Process
123000009	0	12	15	0	36	0	0	0	0	0	0	0	The project is expected to remove 7 structures from the 10-year floodplain, 12 structures from the 50-year floodplain, 12 structures from the 100-year floodplain, and 15 structures from the 500-year floodplain	The project is expected to remove 7 structures from the 10-year floodplain, 12 structures from the 50-year floodplain, 12 structures from the 100-year floodplain, and 15 structures from the 500-year floodplain	0	0	Y			0	5.460000038	Y	Halff Identification Process
123000010	0	42	27	0	126	0	3	0	0.795795	0	0	0	The project is expected to remove 46 structures from the 10-year floodplain, 59 structures from the 50-year floodplain, 42 structures from the 100-year floodplain, and 27 structures from the 500-year floodplain	The project is expected to remove 46 structures from the 10-year floodplain, 59 structures from the 50-year floodplain, 42 structures from the 100-year floodplain, and 27 structures from the 500-year floodplain	0	0	Y			0	0.479999989	Y	Halff Identification Process
123000011	0	0	0	0	0	0	1	0	0.126111	0	0	0	10-year	100-year	0	0	Y			0	4.099999905	Y	Halff Identification Process
123000012	0	0	0	0	0	0	1	0	0.064353	0	0	0	10-year	100-year	0	0	Y			0	3.099999905	Y	Halff Identification Process
123000013	0	0	0	0	0	0	3	0	0.70345875	0.234044999	0	0	10-year	100-year	0	0	Y			0	1.700000048	Y	Halff Identification Process

Table 13. Potentially Feasible Flood Mitigation Projects Identified by RFPC

FMP ID	Reduction in Flood Risk												Pre-Project Level-of-Service	Post-Project Level-of-Service	Cost/ Structure removed	Percent Nature-based Solution (by cost)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Water Supply Benefit (Y/N)	Traffic Count for Low Water Crossings	Benefit-Cost Ratio	RFPG Recommendation (Y/N)	Reason for Recommendation
	Number of structures with reduced 100yr (1% annual chance) Flood risk	Number of structures removed from 100yr (1% annual chance) Flood risk	Number of structures removed from 500yr (0.2% annual chance) Flood risk	Habitable structures removed from 100yr (1% annual chance) Flood risk	Estimated Population removed from 100yr (1% annual chance) Flood risk	Critical facilities removed from 100yr (1% annual chance) Flood risk (#)	Number of low water crossings removed from 100yr (1% annual chance) Flood risk (#)	Estimated reduction in road closure occurrences	Estimated length of roads removed from 100yr flood risk (Miles)	Estimated active farm & ranch land removed from 100yr flood risk (acres)	Estimated reduction in fatalities (if available)	Estimated reduction in injuries (if available)											
123000014	0	6	7	7	18	0	0	0	0	0	0	0	The project is expected to remove 2 structures from the 10-year floodplain, 4 structures from the 50-year floodplain, 6 structures from the 100-year floodplain, and 4 structures from the 500-year floodplain	The project is expected to remove 2 structures from the 10-year floodplain, 4 structures from the 50-year floodplain, 6 structures from the 100-year floodplain, and 4 structures from the 500-year floodplain	0	0	Y			0	0.400000006	Y	Halff Identification Process
123000015	0	0	0	0	0	0	0	0	0	0	0	0			0	0	Y			0	0.600000024	Y	Halff Identification Process
123000016	0	216	237	0	648	0	3	0	0.09197925	0	0	0	The project is expected to remove 151 structures from the 10-year floodplain, 196 structures from the 50-year floodplain, 216 structures from the 100-year floodplain, and 237 structures from the 500-year floodplain	The project is expected to remove 151 structures from the 10-year floodplain, 196 structures from the 50-year floodplain, 216 structures from the 100-year floodplain, and 237 structures from the 500-year floodplain	0	0	Y			0	1.330000043	Y	Halff Identification Process
123000017	0	216	237	0	648	0	1	0	0.26292225	0	0	0	The project is expected to remove 151 structures from the 10-year floodplain, 196 structures from the 50-year floodplain, 216 structures from the 100-year floodplain, and 237 structures from the 500-year floodplain and improve LOS from 10-year to 100-ye	The project is expected to remove 151 structures from the 10-year floodplain, 196 structures from the 50-year floodplain, 216 structures from the 100-year floodplain, and 237 structures from the 500-year floodplain and improve LOS from 10-year to 100-ye	0	0	Y			0	1.330000043	Y	Halff Identification Process
123000018	0	12	0	0	36	0	0	0	0.221145	0	0	0			0	0	Y			0	0.109999999	Y	Halff Identification Process
123000019	0	396	0	0	1188	0	0	0	1.6100775	0	0	0		Reduction in 100 year flooding	0	0	Y			0	0.620000005	Y	Halff Identification Process
123000020	0	15	0	0	45	0	0	0	0.0320655	0.222395003	0	0			0	0	Y			0	0.189999998	Y	Halff Identification Process
123000021	0	12	0	0	36	0	0	0	0.221145	0	0	0			0	0	Y			0	0	Y	Halff Identification Process
123000022	0	14	0	0	42	0	2	0	1.99704	0	0	0	Less than the 100 year	100 year	0	0	Y			0	0.100000001	Y	Halff Identification Process
123000023	0	0	0	0	0	0	0	0	0.12139275	0	0	0	Less than 100 year	100 year	0	0	Y			0	0.899999976	Y	Halff Identification Process
123000024	0	28	0	0	84	0	0	0	1.64244	5.04445982	0	0			0	0	Y			0	0.400000006	Y	Halff Identification Process
123000025	0	0	0	0	0	0	1	0	0.312858	0	0	0	Less than 100 year	100 year	0	0	Y			0	0.01	Y	Halff Identification Process
123000026	0	18	0	0	54	0	0	0	1.60629	0	0	0	Less than the 25 year	Convey the 25 year and reduce the 100 year	0	0	Y			0	0.039999999	Y	Halff Identification Process
123000027	0	23	0	20	69	0	2	0	0.9198975	0	0	0	Less than the 100 year	At least the 100 year	0	0	Y			0	0.029999999	Y	Halff Identification Process
123000028	0	6	0	0	18	0	0	0	0.140409	0	0	0			0	0	Y			0	0.200000003	Y	Halff Identification Process
123000029	0	2335	0	1251	3753	0	0	0	1.05	0	0	0			87461	0	N		N	0	1	Y	HDR Identification Process

Table 14. Potentially Feasible Flood Management Strategies Identified by RFPG

FMS ID	RFPG No.	RFPG Name	FMS Name	Description	Associated Goals (ID)	Counties	HUC8s	HUC12s	Watersheds	Project Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Nonrecurring, Noncapital Cost ($)	Esitimated Total Stategy Cost ($)	Potential Funding Sources and Amount	Area in 100yr (1% annual chance) Floodplain
122000001	12	San Antonio	Study the San Antonio River and its tributes	When the San Antonio River floods, the city is cutoff from the rest of the county (hospital and EMS) with islands lsating over a week. Install stream gauges and develop a study to identify solutions to flooding. SARA completed a study but County official	12000007	Karnes	12100303	121003030204,121003030202	12000027,12000030	Regulatory and Guidance	0.91	Riverine,	12002974	00000095,00000255,00000282,12002974	N	0	250000	0	3.5
122000002	12	San Antonio	San Antonio River drainage ownership study	Develop ownership and access understanding parcels fronting the San Antoinion River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030204,121003030202	12000027,12000030	Education and Outreach	0.91	Riverine,	12002974	00000095,00000255,00000282,12002974	N	0	30000	0	3.5
122000003	12	San Antonio	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antoinion River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030401,121003030402,121003030403,121003030205,121003030206	12000020,12000021,12000022,12000034,12000037	Education and Outreach	2.31	Riverine,	12002756	00000095,00000255,00000282,00000519,12002756	N	0	30000	0	3.5
122000004	12	San Antonio	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antoinion River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030402	12000021	Education and Outreach	3.67	Riverine,	12002975	00000095,00000255,00000282,00000519,12002975	N	0	30000	0	3.5
122000005	12	San Antonio	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antoinion River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030306,121003030404	12000016,12000023	Education and Outreach	1.18	Riverine,	12002757	00000095,00000255,00000282,00001006,12002757	N	0	30000	0	3.5
122000006	12	San Antonio	Strengthen floodplain management ordinances	Adopt higher floodplain standards for new development	12000021, 12000022	Wilson	12100303	121003030204,121003030105	12000027,12000035	Regulatory and Guidance	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Y	0	25000	0	11.60000038
122000007	12	San Antonio	Education Signage	Install educational signage such as "Turn around don't drown" at high risk low water crossings.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Y	0	5000	0	11.60000038
122000008	12	San Antonio	Digital signage for communication	Coordinate with school district to use sign on US 181 for emergency info and safety directions during hazard events.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Y	0	5000	0	11.60000038
122000009	12	San Antonio	Early warning system education	Alert the population through education material, media and other methods about enrolling in the early warning system	12000001	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Y	0	5000	0	11.60000038
122000010	12	San Antonio	Development of a Streamscaping Program for Flood Risk Management in Texas	Increase the number of public outreach and education activities to improve awareness of flood hazards and benefits of flood planning in the Flood Planning Region. Promote nature-based solution training	12000014	Wilson,Bexar	12100301,12100303,12100304,12110110,12100302		12000001,12000002,12000003,12000004,12000005,12000006,12000007,12000008,12000009,12000010,12000011,12000012,12000013,12000029,12000055,12000056,12000063,12000064,12000066,12000069,12000071,12000076,12000078,12000094,12000104,12000105	Education and Outreach	505.2	Riverine,	00000007		Y	0	129000	0	120.0999985
122000011	12	San Antonio	Automatic low water crossings and gauges	Add automatic low water crossings and gauges at various locations. This would include development of a plan to identify locations, followed by installation.	12000005	Bexar,Bandera,Comal,Kendall,Kerr	12100304,12100201,12100302		12000058,12000062,12000063,12000095,12000096	Flood Measurement and Warning	660.51	Riverine,	00000017		Y	0	0	0	7
122000012	12	San Antonio	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021, 12000022	Karnes	12100303	121003030402	12000021	Regulatory and Guidance	3.67	Riverine,	12002975	00000095,00000255,00000282,00000519,12002975	N	0	100000	0	3.5
122000013	12	San Antonio	Shelter requirement for RV parks	Adopt and implement an ordinance to require RV Parks to provide shelter facilities.	12000005	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12100202,12100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Regulatory and Guidance	749.22	#N/A	00000095		N	0	10000	0	0
122000014	12	San Antonio	Public Education & Outreach	Create a program to educate the public about specific mitigation actions for flooding hazards	12000001, 12000012	Medina	12100302	121003020501,121003020503	12000081,12000108	Education and Outreach	0.63	#N/A	12002954	00000005,00000255,12002954	N	0	35000	0	0
122000015	12	San Antonio	Public education and outreach	Implement public education and outreach programs to educate citizens about mitigation against (flood) hazards; seek partnership with county neighboring communities and San Antonio River Authority.	12000001	Wilson	12100304	121003040304,121003040302	12000053,12000056	Education and Outreach	1.72	#N/A	12003180	00000100,00000255,00000282,00000392,12001595,12003180	N	0	5000	0	0
122000016	12	San Antonio	Citizen flood education outreach	Educate citizens about mitigation strategies prior to any flood conditions, including dangers of debris flooding roads and how to best floodproof homes and businesses.	12000001	Wilson	12100303	121003030102,121003030103	12000028,12000033	Education and Outreach	7.7	#N/A	12002925	00000100,00000255,00000282,12000592,12002925	N	0	10000	0	0
122000017	12	San Antonio	Updating floodplain ordinances and development code	Updating floodplain ordinances and development code	12000011	Wilson	12100304	121003040304,121003040302	12000053,12000056	Regulatory and Guidance	1.72	#N/A	12003180	00000100,00000255,00000282,00000392,12001595,12003180	N	0	100000	0	0
122000018	12	San Antonio	Texas Forest Service	Mission of Service is to provide technical assistance, program delivery and science-based information to protect against wildland fires and other emergencies.	12000001	Atascosa,Medina,Bexar,Bandera	12110106,12110107,12110109,12110110,12100302		12000075,12000081,12000098,12000099,12000100,12000101,12000106,12000107,12000108	Education and Outreach	1332.93	#N/A	12000001		N	0	50000	0	0
122000019	12	San Antonio	Conservation Easement Program	Develop a Conservation Easement Program.	12000021	Medina,Bexar	12110107,12110109,12100302	121101070108,121101090101,121003020307,121003020501,121003020304,121003020305,121003020502,121003020503	12000075,12000081,12000099,12000100,12000107,12000108	Regulatory and Guidance	69.34	#N/A	00000005	00000005,00000255,00000290,00000299,12002954,12003377	N	0	100000	0	0
122000020	12	San Antonio	City of Floresville Floodplain Ordinance and Development Code Update	Create a floodplain ordinance and update development code	12000011	Wilson	12100303	121003030102,121003030103	12000028,12000033	Regulatory and Guidance	7.7	#N/A	12002925	00000100,00000255,00000282,12000592,12002925	Y	0	100000	0	0

Table 14. Potentially Feasible Flood Management Strategies Identified by RFPG

Flood Risk									FMS ID	Reduction in Flood Risk												Cost/ Structure removed	Consideration of Nature-based Solution (Y/N)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Water Supply Benefit (Y/N)	RFPG Recommendation (Y/N)	Reason for Recommendation
Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)		Number of structures with reduced 100yr (1% annual chance) Flood risk	Number of structures removed from 100yr (1% annual chance) Flood risk	Number of structures removed from 500yr (0.2% annual chance) Flood risk	Habitable structures removed from 100yr (1% annual chance) Flood risk	Estimated Population removed from 100yr (1% annual chance) Flood risk	Critical facilities removed from 100yr (1% annual chance) Flood risk (#)	Number of low water crossings removed from 100yr (1% annual chance) Flood risk (#)	Estimated reduction in road closure occurrences	Estimated length of roads removed from 100yr flood risk (Miles)	Estimated active farm & ranch land removed from 100yr flood risk (acres)	Estimated reduction in fatalities (if available)	Estimated reduction in injuries (if available)						
0.649999976	264	76	496	0	0	0	4	110.9000015	122000001	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes				Y	Halff Identification Process
0.649999976	264	76	496	0	0	0	4	110.9000015	122000002	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes				Y	Halff Identification Process
0.649999976	264	76	496	0	0	0	4	110.9000015	122000003	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes				Y	Halff Identification Process
0.649999976	264	76	496	0	0	0	4	110.9000015	122000004	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes				Y	Halff Identification Process
0.649999976	264	76	496	0	0	0	4	110.9000015	122000005	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes				Y	Halff Identification Process
1.899999976	882	450	1530	0	45	0	2	88	122000006	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes				Y	Halff Identification Process
1.899999976	882	450	1530	0	45	0	2	88	122000007	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes				Y	Halff Identification Process
1.899999976	882	450	1530	0	45	0	2	88	122000008	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes				Y	Halff Identification Process
1.899999976	882	450	1530	0	45	0	2	88	122000009	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes				Y	Halff Identification Process
4.300000191	18428	13857	149353	1541	181	4	287	1951.599976	122000010	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes	N			Y	Halff Identification Process
0.829999983	968	398	5883	67	30	24	24	42.90000153	122000011	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes				Y	Halff Identification Process
0.649999976	264	76	496	0	0	0	4	110.9000015	122000012	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes				Y	Halff Identification Process
0	0	0	0	0	0	0	0	0	122000013	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes	N			Y	HDR Identification Process
0	0	0	0	0	0	0	0	0	122000014	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes	N			Y	HDR Identification Process
0	0	0	0	0	0	0	0	0	122000015	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes	N			Y	HDR Identification Process
0	0	0	0	0	0	0	0	0	122000016	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes	N			Y	HDR Identification Process
0	0	0	0	0	0	0	0	0	122000017	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes	N			Y	HDR Identification Process
0	0	0	0	0	0	0	0	0	122000018	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes	N			Y	HDR Identification Process
0	0	0	0	0	0	0	0	0	122000019	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes	N			Y	HDR Identification Process
0	0	0	0	0	0	0	0	0	122000020	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes	N			Y	HDR Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	FME Study Area (sqmi)	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
121000001	Study the San Antonio River, Ojo de Agua Creek and its tributaries	Install steam gauges and develop a study to identify solutions to flooding. Implement engineering findings to reduce and mitigate risks.	12000007, 12000011, 12000013, 12000014	Karnes	12100303	121003030306,121003030404	12000016,12000023	1.18	Riverine,	12002757	00000095,00000255,00000282,00001006,12002757	No	250000	Y	Halff Identification Process
121000002	7820 Rolling Acres Trail	Low water crossing. Road closure gate is deployed at this crossing during large storm events.	12000033	Kendall	12100304	121003040103	12000063	0	Riverine,	12002436	00000017,00000255,00000291,12002436	No	685000	Y	Halff Identification Process
121000003	7900 Fair Oaks Parkway	Analysis needed to confirm no adverse impacts on the solution that was implemented.	12000011, 12000013, 12000014	Bexar	12100304	121003040103	12000063	0	Riverine,	12002436	00000007,00000255,00000282,12002436	No	10000	Y	Halff Identification Process
121000004	Ammann Road Low Water Crossing	Low water crossing runs over the street due to insufficient culverts that pass under Ammann Road. Replacing the current road with an elevated concrete bridge above the flood stage.	12000033	Kendall	12100304	121003040103	12000063	0	Riverine,	12002436	00000017,00000255,00000291	No	1124330	Y	Halff Identification Process
121000005	7420 Rolling Acres Trail Low Water Crossing	Low Water crossing moves toward home on Meadow Creek Trail. Road Closure gate is deployed at this crossing during large storm events.	12000033	Kendall	12100304	121003040103	12000063	0	Riverine,	12002436	00000017,00000255,00000291,12002436	No	759566	Y	Halff Identification Process
121000006	8402 Battle Intense Low Water Crossing	Battle intense is often shut down in large rain events. Debris collects and damages this low water crossing	12000011, 12000013, 12000014	Bexar	12100304	121003040103	12000063	0	Riverine,	12002436	00000007,00000255,00000282,12002436	No	3421450	Y	Halff Identification Process
121000007	Battle Intense LWC Flow-activated Sensors	Add flow-activated sensors and automated drop-down arms to close off a road when the water has surpassed the road.	12000005	Bexar,Comal	12100304	121003040103	12000063	0	Riverine,	12002436	00000007,00000014,00000255,00000282,00000291,12002436	Yes	200000	Y	Halff Identification Process
121000008	Rolling Acres Trail LWC Flow-activated Sensors	Add flow-activated sensors and automated drop-down arms to close off a road when the water has surpassed the road.	12000005	Kendall	12100304	121003040103	12000063	0.01	Riverine,	12002436	00000017,00000255,00000291,12002436	No	400000	Y	Halff Identification Process
121000009	Karnes Hwy at Escondido Creek	Raise bridge on Hwy and channel expansion on 181/5th in Kenedy	12000029	Karnes	12100303	121003030402	12000021	0.11	Riverine,	12002975	00000095,00000255,00000282,00000519,12002975	No	277000	Y	Halff Identification Process
121000010	Damage Center 1 Project1 – Detention in East Branch Poth Creek	Storage in this area would reduce downstream flooding and remove existing structures from the FEMA floodplain	12000029, 12000030	Wilson	12100303	121003030204	12000027	0	Riverine,	12003181	00000100,00000255,00000282,12003181	No	1386800	Y	Halff Identification Process
121000011	D/O Center M(HWY 1604 East of Somerset Community)	Oak Island Drainage Improvements. Culvert upgrades at two locations on Oak Island Dr and 1604 with channel work.	12000029, 12000030	Bexar	12100302	121003020508	12000093	0.56	Riverine,	12003327	00000007,00000255,00000282,00000290,00000392,12003327	No	3889350	Y	Halff Identification Process
121000012	Damage Center 1 (Stockdale Creek)	Stockdale Creek Stream Restoration with a natural channel design	12000029, 12000030	Wilson	12100304	121003040401	12000060	0.02	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	3071400	Y	Halff Identification Process
121000013	Karnes County Damage Centers Karnes A	Multiple structures at risk Within San Antonio River at US 181	12000011, 12000013, 12000014	Karnes	12100303	121003030202	12000030	0	Riverine,	12002974	00000095,00000255,00000282,12002974	No	3659360	Y	Halff Identification Process
121000014	Karnes County Damage Centers Karnes B	Multiple structures at risk Within Marcelinas Creek at US 181	12000011, 12000013, 12000014	Karnes	12100303	121003030204	12000027	0	Riverine,	12002974	00000095,00000255,00000282,12002974	No	3659360	Y	Halff Identification Process
121000015	Master Drainage Plan	A detailed drainage study of the city of Selma	12000011, 12000013, 12000014	Bexar,Guadalupe,Comal	12100304	121003040201,121003040202	12000066,12000069	5.02	Riverine,	12003327	00000007,00000010,00000014,00000255,00000282,00000291,00001485,12002512,00002671,12002967,12003258,12003327	Yes	0	Y	Halff Identification Process
121000016	Antonio Drive Drainage Improvements	Bridge at Los Reyes Creek and Antonio Dr	12000029, 12000030, 12000033	Bexar	12100302	121003020404	12000103	0	Riverine,	12003002	00000007,00000255,00000282,12003002	No	2982000	Y	Halff Identification Process
121000017	French Creek at Guilbeau Road NWWC	A basic trapezoidal channel with side slopes of 3:1, representing an earthen channel	12000029	Bexar	12100302	121003020402	12000078	0.1	Riverine,	12003327	00000007,00000255,00000282,12003327	No	30000	Y	Halff Identification Process
121000018	Huebner Creek Flood Control Project Segment 1	The channel will be widened to 50" in front of Raymond Rimkus Park (6440 Evers Road) and then widened more from the park to the bridge.	12000029, 12000030, 12000033	Bexar	12100302	121003020405	12000104	0.07	Riverine,	12002511	00000007,00000255,00000282,12002511	Yes	21617000	Y	Halff Identification Process
121000019	DC19: Salado Creek Tributary B	Improvement on IH 10 culvert crossing to reduce peak flood stages upstream of IH 10 channel improvements downstream of IH 10 to prevent peak flood stage increase	12000029	Bexar	12100301	121003010105	12000002	0.06	Riverine,	12003327	00000007,00000255,00000282,12003327	No	15368000	Y	Halff Identification Process
121000020	DC20: Rosillo Creek Unnamed Tributary 1	Upgrade Diane Road and construct drainage improvements	12000033	Bexar	12100301	121003010106	12000007	0.16	Riverine,	12003327	00000007,00000255,00000282,12003327	No	0	Y	Halff Identification Process
121000021	LWC#41 Vance Jackson 200ft south of Scenic	Low Water Crossing needs Bridge/Culvert Improvements with possible advanced warning signals. Associated street reconstruction to include curbs, sidewalks, and driveway approaches be incorporated into the project.	12000029, 12000033	Bexar	12100301	121003010201	12000008	0.01	#N/A	12003327	00000007,00000255,00000282,12003327	Yes	35000	Y	Halff Identification Process
121000022	LWC 112.1 Pvt Rd. 300' North of Marbcah Rd.	Project consists of channel improvements and an outfall to Slick Creek to alleviate street flooding. Channel improvements include installing 10x4 MBC along the channel to improve flow at this portion of Slick Creek.	12000029	Bexar	12100302	121003020405	12000104	0.1	#N/A	12003327	00000007,00000255,00000282,12003327	Yes	35000	Y	Halff Identification Process
121000023	LWC 100, Blakeley Area Drainage Improvement	This option consists of upsizing the Blakeley crossing to (3) 6'x3' RCB and providing a 7' bottom width concrete trap channel with 3:1 side slopes upstream of the crossing.	12000029	Bexar	12100301	121003010105	12000002	0	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	25000	Y	Halff Identification Process
121000024	LWC157 New Sulphur Springs Rd – East of Beck Rd	The proposed project will install 4-10' x 9' MBC at the LWC and reconstruct the portion of New Sulphur Springs Rd. affected by the culvert installation. The proposed street reconstruction will not include sidewalks or curbs.	12000029	Bexar	12100301	121003010302	12000009	0.01	Riverine,	12003327	00000007,00000255,00000282,00000392,12001595,12003327	Yes	35000	Y	Halff Identification Process
121000025	LWC#156 New Sulphur Springs Rd – btwn S. Foster & Gardner	The proposed project will replace the existing culvert system with a bridge approximately 1500' in length. The proposed bridge will span two streams at this location	12000029	Bexar	12100301	121003010302	12000009	0.01	Riverine,	12003327	00000007,00000255,00000282,00000392,12001595,12003327	Yes	35000	Y	Halff Identification Process
121000026	LWC #159.1 Southton Rd	The proposed project will replace the existing culvert system with a bridge approximately 1500' in length.	12000029	Bexar	12100301	121003010204	12000013	0.01	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	35000	Y	Halff Identification Process
121000027	LWC#158.1 –Nancy Carole Way, E. of Bobby Allen	Low Water Crossing needs Bridge/Culvert Improvements(10 ~ 8x5 MBC) with possible advanced warning signals. Associated street reconstruction to include curbs and pavement be incorporated into the project.	12000029, 12000033	Bexar	12100301	121003010203	12000011	0.01	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	35000	Y	Halff Identification Process
121000028	LWC #34 Sleepy Hollow @ Sunburst	This project requires the placement culverts or a bridge to eliminate a low water crossing . Street Reconstruction includes driveway approaches, curbs, and sidewalks as required.	12000029, 12000033	Bexar	12100301	121003010201	12000008	0.02	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	35000	Y	Halff Identification Process
121000029	Damage Center 43-Olmos Creek Middle Reach near DeZavala	The depth of flooding for the 100-year event ranges between 0.10 and 3.82 feet, therefore, buyouts do not appear to be a practical solution	12000025	Bexar	12100301	121003010201	12000008	0.26	Riverine,	12003327	00000007,00000255,00000282,12003000	No	633500	Y	Halff Identification Process
121000030	Damage Center 4- Apache Creek	Majority of the flooding is caused by the undersized culverts downstream of West Woodlawn, providing addition of box culverts will provide adequate capacity to the existing storm drain system	12000029	Bexar	12100301	121003010202	12000010	0.14	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	11660000	Y	Halff Identification Process
121000031	Apache Creek & Elmendorf Lake Dam	The Elmendorf Lake Dam area is prone to flooding and will require an extensive drainage project to mitigate the floodplain. A Preliminary Engineering Report (PER) will need to be provided to assess a feasible solution	12000013	Bexar	12100301	121003010202	12000010	0.61	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	350000	Y	Halff Identification Process
121000032	Cibolo Creek Tributary 19 Mapping Improvements	Alternative Anylsis and Project recommendation	12000011, 12000013, 12000014	Comal	12100304	121003040105,121003040104	12000061,12000064	0.82	Riverine,	00002669	00000014,00000255,00000291,00002121,00002669	No	5000	Y	Halff Identification Process
121000033	Indian Creek Mapping Improvements	Alternative Anylsis and Project recommendation	12000011, 12000013, 12000014	Comal	12100304,12100201	121003040104,121002010404,121002010401	12000064	13.08	Riverine,	00002669	00000014,00000255,00000291,00002669	Yes	0	Y	Halff Identification Process
121000034	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011, 12000013, 12000014	Karnes	12100303	121003030204,121003030202	12000027,12000030	0.91	Riverine,	12002974	00000095,00000255,00000282,12002974	No	50000	Y	Halff Identification Process
121000035	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021, 12000022	Karnes	12100303	121003030401,121003030402,121003030403,121003030205,121003030206	12000020,12000021,12000022,12000034,12000037	2.31	Riverine,	00000095	00000095,00000255,00000282,00000519,12002756	No	100000	Y	HDR Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	FME Study Area (sqmi)	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
121000036	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011, 12000013, 12000014	Karnes	12100303	121003030402	12000021	3.67	Riverine,	12002975	00000095,00000255,00000282,00000519,12002975	No	50000	Y	Halff Identification Process
121000037	Mitigate local flooding in identified problem areas	Identify problem flooding areas and implement a program to reduce loaclized flooding	12000011, 12000013, 12000014	Wilson	12100303	121003030204,121003030105	12000027,12000035	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Yes	5000	Y	Halff Identification Process
121000038	Develop and implement a Stormwater Management Plan for Stockdale Creek	Stockdale Creek, sa tributary of Clinton Branch which flows into Cibolo Creek, does not have sufficient capacity to contain floodwater as it flows through the center of Stockdale. The railroad on the east side of town used to act as a levee, but when it	12000013, 12000014	Wilson	12100304	121003040401	12000060	1.68	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	1200000	Y	Halff Identification Process
121000039	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021, 12000022	Karnes	12100303	121003030204,121003030202	12000027,12000030	0.91	Riverine,	12002974	00000095,00000255,00000282,12002974	No	100000	Y	HDR Identification Process
121000040	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011, 12000013, 12000014	Karnes	12100303	121003030401,121003030402,121003030403,121003030205,121003030206	12000020,12000021,12000022,12000034,12000037	2.31	Riverine,	00000095	00000095,00000255,00000282,00000519,12002756	No	50000	Y	Halff Identification Process
121000041	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021, 12000022	Karnes	12100303	121003030306,121003030404	12000016,12000023	1.18	Riverine,	12002757	00000095,00000255,00000282,00001006,12002757	No	100000	Y	HDR Identification Process
121000042	Install early warning systems	Conduct a feasibility study that evaluates the coverage area, property ownership and availability, power requirements, telemetry requirements, technology, cost, and other local considerations. Based on study findings, install an emergency warning systems	12000013, 12000014	Wilson	12100303	121003030204,121003030105	12000027,12000035	3.18	Riverine,	00000100	00000100,00000255,00000282,12003181	Yes	100000	Y	Halff Identification Process
121000043	Drainage Study Marcelinas Creek and its major tributary	Marcelinas Creek has a floodplain that runs through the center of the city. Install stream gauges and identify alternatives to mitigate flooding. Implement study findings.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Yes	250000	Y	Halff Identification Process
121000044	Build Detention Pond	Phase I: Perform a study to evaluate Poth Branch Watershed - Phase II: Purchase land and construct a drainage infrustructure facility in accordance with the engineering recommendations of the study.	12000011, 12000013, 12000014	Wilson	12100303	121003030204,121003030105	12000027,12000035	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Yes	100000	Y	Halff Identification Process
121000045	Drainage improvements to wastewater treatment plants	A drainage improvement was completed in 2018 with 2016 disaster relief funding. Internal plumbing was buried and the size of the weir box was increased. Funding and improvements are still needed to connect 2 and 3 and cross CR401 to increase discharge ca	12000029, 12000030, 12000033	Wilson	12100304	121003040401	12000060	1.68	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	800000	Y	Halff Identification Process
121000046	New Bridges on 6th and 8th Streets	New construction of waterway bridges on 6th and 8th Streets crossing Stockdale Creek. Lift elevation profile of the two bridges that provide access to critical facilities and services within the city as well as access from the City to the surrounding reg	12000029, 12000030	Wilson	12100304	121003040401	12000060	1.68	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	500000	Y	Halff Identification Process
121000047	Detention/Retention pond on school property	Install a Detention/Retention pond and reservoir to store excess stormwater on school property along Fordtran Street	12000029, 12000030	Wilson	12100304	121003040401	12000060	1.68	Riverine,	12003182	00000100,00000255,00000282,12003182	Yes	1500000	Y	Halff Identification Process
121000048	7840 Silver Spur Trail	Runoff collects from the northside of the city and passes this point before passing under Keeneland then to the Cibolo Creek Post Oak Creek low water crossing.	12000033	Kendall	12100304	121003040103	12000063	0	#N/A	12002436	00000017,00000255,00000291,12002436	No	690000	Y	Halff Identification Process
121000049	8410 Noble Lark Dr	Regrade channel and install erosin control measures, repair the eroded foundation of the culvert headwall	12000029, 12000030	Bexar	12100304	121003040103	12000063	0	#N/A	12002436	00000007,00000255,00000282,12002436	No	223066	Y	Halff Identification Process
121000050	D/O Center A (Old Pearsall road at Medio Creek)	Old Pearsall Rd overtopping at Medio Creek Bridge and backwater conditions created from RailRoad Bridge DS Old pearsall rd	12000011, 12000013, 12000014	Bexar	12100302	121003020504	12000106	0.04	Riverine,	12003327	00000007,00000255,00000282,12003327	No	17830000	Y	Halff Identification Process
121000051	Damage Center 1 Project2A – Improved crossing at U.S. Highway 181	Creek crossing improvements on HWY 181. Ponding upstream to an elevation that inundates adjacent homes.	12000029, 12000030	Wilson	12100303	121003030204	12000027	0	Riverine,	12003181	00000100,00000255,00000282,12003181	No	1639000	Y	Halff Identification Process
121000052	Damage Center 2-Project 1 Culvert Improvements at Menchaca	Significant overtopping at one 3' x 5' box culvert. Improving this culvert would provide emergency access to the areas of Poth west of Poth Creek	12000029, 12000030	Wilson	12100303	121003030105	12000035	0	Riverine,	12003181	00000100,00000255,00000282	No	198000	Y	Halff Identification Process
121000053	Damage Center 2- Project 2 Road connection from Mosspoint to Sunshine	During a large storm event, access to and from residences adjacent to Mosspoint Street is compromised	12000033, 12000034	Wilson	12100303	121003030204	12000027	0	#N/A	12003181	00000100,00000255,00000282,12003181	No	130000	Y	Halff Identification Process
121000054	Damage Center 2 (South Tributary to Stockdale Creek)	Detention South Tributary to Stockdale Creek near the eastern city limit	12000029, 12000030	Wilson	12100304	121003040401	12000060	0.03	Riverine,	12003182	00000100,00000255,00000282,12003182	No	533030	Y	Halff Identification Process
121000055	Parrigin Road Drainage Improvements	Parrigin Road low water crossing at Helotes Creek Tributary A floods frequently, limiting access for nearby residences	12000011, 12000013, 12000014	Bexar	12100302	121003020404	12000103	0	Riverine,	12003002	00000007,00000255,00000282,12003002	No	1053000	Y	Halff Identification Process
121000056	Detailed Study of Unnamed Trib 3 to Helotes Creek	Detailed hydrologic and hydraulic study is needed to determine appropriate drainage improvements.	12000011, 12000013, 12000014	Bexar	12100302	121003020404	12000103	0.02	Riverine,	12003002	00000007,00000255,00000282,12003327	Yes	40000	Y	Halff Identification Process
121000057	Detailed Study of Culebra Creek Trib C	Three low water crossings of Culebra Creek Tributary C, Beverly Hill Drive, Doheny at FM 1560, and FM 1560. A detailed hydrologic and hydraulic study is needed to determine appropriate drainage improvements	12000011, 12000013, 12000014	Bexar	12100302	121003020403	12000102	0.15	Riverine,	12003002	00000007,00000255,00000282,12003002	Yes	65000	Y	Halff Identification Process
121000058	Inventory of residences in floodplain	Identify residential structures that are located in flood zones or high hazard areas and develop plan and implement a program for floodproofing or acquistion.	12000011, 12000013, 12000014	Karnes	12100303	121003030306,121003030404	12000016,12000023	1.18	Riverine,	12002757	00000095,00000255,00000282,00001006,12002757	No	50000	Y	Halff Identification Process
121000059	French Creek RSWF	An on-channel RSWF provides approximately 150 acre-feet of storag	12000029	Bexar	12100302	121003020402	12000078	0.03	Riverine,	12003327	00000007,00000255,00000282,12003327	No	18246000	Y	Halff Identification Process
121000060	Culebra Creek Tributary A at Tezel Road Enhanced Conveyance	Increasing the flow area by widening the channel and increasing its side slope	12000029	Bexar	12100302	121003020404	12000103	0.18	Riverine,	12003327	00000007,00000255,00000282,12003327	No	8725000	Y	Halff Identification Process
121000061	Helotes Creek at Bandera Road Enhanced Conveyance	Channel modifications were designed as a basic trapezoidal channel with side slopes of 3:1.	12000029	Bexar	12100302	121003020404	12000103	0.18	Riverine,	12003327	00000007,00000255,00000282,12003002	No	2416000	Y	Halff Identification Process
121000062	Helotes Creek RSWF	An off-channel RSWF provides approximately 3330 acres-ft oof storage.	12000029	Bexar	12100302	121003020404	12000103	0.42	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	8493000	Y	Halff Identification Process
121000063	Hubner Creek Flood Protection Barier	This project includes proposed Flood Protection Barrier between Ingram Road and Culebra Road	12000029	Bexar	12100302	121003020402,121003020404,121003020405	12000078,12000103,12000104	0.57	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	27700000	Y	Halff Identification Process
121000064	Damage Center 5-Salado Creek Trib F	Approximately 4,487 feet of channel improvements as well as constructing two inline reservoirs.	12000029	Bexar	12100301	121003010104	12000004	0.96	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	20860000	Y	Halff Identification Process
121000065	Damage Center 3-Lorence Creek	Approximately 10,000 feet of channel improvement. The proposed drainage improvements reduces the occurrence of structural flooding in several areas along the banks of the creek.	12000029	Bexar	12100301	121003010103	12000005	0.72	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	7040000	Y	Halff Identification Process
121000066	DC13/14: Walzem Creek	A proposed combination of regional detention and channel improvement to reduce flooding on Walzem Creek.	12000029	Bexar	12100301	121003010105	12000002	0.18	Riverine,	12003327	00000007,00000255,00000282,12001486,12002476,12003327	Yes	5438000	Y	Halff Identification Process
121000067	DC26: Salado Creek, Downstream of IH 10	Will consist of raising Roland Ave above the 1% chance rainfall events water surface elevation crossing over Salado Creek. Roland Rd will be realigned to improve the sharp curves in this area. This project ties into the South Salado Creek	12000029	Bexar	12100301	121003010105	12000002	3.11	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	0	Y	Halff Identification Process
121000068	Damage Center 2- Martinez Creek	The downstream culvert system creates a backwater which will continue to affect properties near the inlet of that structure. Improved channelization and culvert/bridge replacement and voluntary property acquisition	12000029	Bexar	12100301	121003010202	12000010	0.24	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	24061300	Y	Halff Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	FME Study Area (sqmi)	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
121000069	Woodlawn Lawn Lake Option 2	Detention, Storm drain improvements, Culvert Improvments, Roadway Improvements.	12000029, 12000030, 12000033	Bexar	12100301	121003010202	12000010	0.06	Riverine,	12002438	00000007,00000255,00000282,12002438,12003327	No	5500000	Y	Halff Identification Process
121000070	Woodlawn Lawn Lake Option 1(Phase 1-3)	Detention, Storm drain improvements, Culvert Improvments, Roadway Improvements.	12000029, 12000030, 12000033	Bexar	12100301	121003010202	12000010	0.06	Riverine,	12002438	00000007,00000255,00000282,12002438,12003327	No	10000000	Y	Halff Identification Process
121000071	Normoyle Ditch - Alt 1	Channel improvements are proposed from the Six Mile Creek outfall up to approximately 200 feet upstream of New Laredo Hwy. The project area was limited to the area south of Kelly AFB as the majority of habitable structures area	12000029, 12000033	Bexar	12100302	121003020406	12000105	0.37	#N/A	12003327	00000007,00000255,00000282,00000392,12003327	No	0	Y	Halff Identification Process
121000072	LWC 42 Dreamland south of RR Xing	The project will consist of proposed Bridge crossing with +/- 6300 LF of total channel grading upstream and downstream and excavating to eliminate a low water crossing. Street reconstruction includes driveway approaches, curbs, and sidewalks as required	12000029, 12000033	Bexar	12100301	121003010201	12000008	0.14	Riverine,	12003327	00000007,00000255,00000282,00000392,12002439,12003327	Yes	35000	Y	Halff Identification Process
121000073	LWC No 113-116 and Associated Channel Improvements	This project proposes to upgrade LWC 115 & 116 and construct an underground storm system on Military to tie into the existing earthen channel. The underground system will consist of 10' curb inlets, 6'x3' box culverts, 24"-42" (RCP),outfall structures	12000029	Bexar	12100302	121003020405	12000104	0.04	#N/A	12003327	00000007,00000255,00000282,12003327	Yes	35000	Y	Halff Identification Process
121000074	LWC# 91 Weidner 500 ft N of Schertz	Construct a bridge on Weidner Rd. to pass a 100 yr storm to replace LWC# 91, to include curbs and sidewalks. This project will require channel excavation. This LWC is not within a FEMA floodplain.	12000029, 12000033	Bexar	12100301	121003010104	12000004	0.01	#N/A	12003327	00000007,00000255,00000282,12003327	No	25000	Y	Halff Identification Process
121000075	LWC #15 Copperhill Between Parkstone & Happy Hollow	Low Water Crossing #15 has approximately 128 acres of storm water that is conveyed through this crossing. This project proposes to construct an underground drainage system to assist in the conveyance of runoff crossing through this section	12000029	Bexar	12100301	121003010103	12000005	0	#N/A	12003327	00000007,00000255,00000282,12003327	Yes	35000	Y	Halff Identification Process
121000076	LWC #13 West Ave. @ Interpark	Since approximately 2006, residents have complained about flooding within a low point on West Ave. Approximately 173 acres drains through this area. This project will construct an underground drainage system with an earthen channel	12000029	Bexar	12100301	121003010102	12000001	0	#N/A	12003327	00000007,00000255,00000282,12003327	Yes	35000	Y	Halff Identification Process
121000077	New Sulphur Springs – East of Lodi Rd	This project will install a cross arm/barricade at the LWC. Construction of a bridge or culvertinstallation	12000029, 12000033	Bexar	12100301	121003010302	12000009	0.03	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	Yes	35000	Y	Halff Identification Process
121000078	LWC #71 Danville and Overbrook	This project requires the replacement of existing low water crossing on Danville with an upgraded culvert (2-10'X10' MBC) or bridge to eliminate a low water crossing with some channel modifications upstream and downstream of the crossing	12000029, 12000033	Bexar	12100301	121003010202	12000010	0.01	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	50000	Y	Halff Identification Process
121000079	LWC#72 Spencer Lane, east of Balcones Rd.	During a rain storm event, storm water runoff from the East Woodlawn Ditch overtops the road. This project proposes the construction of a culvert crossing to include an associated energy dissipation system, headwall, and outfall structures.	12000029	Bexar	12100301	121003010202	12000010	0	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	35000	Y	Halff Identification Process
121000080	Mahncke Park Outfall	To convey the 100-yr ultimate development and relieve the current backwater conditions. This project proposes drainage improvement to watershed SA4.To reduce clogging and increase effciency.	12000029	Bexar	12100301	121003010201	12000008	0.08	Riverine,	12003327	00000007,00000255,00000282,12003327	No	25000	Y	Halff Identification Process
121000081	Damage Center 44-San Antonio River Near Center Road	This area consists of large agricultural lots. Buyouts appear to be the best option since the entire damage center is in the floodplain. The area can be converted to a recreational water park area or pavilions to encourage biking	12000025	Bexar	12100301	121003010203	12000011	0.34	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	4983650	Y	Halff Identification Process
121000082	Damage Center 40-San Antonio River DS Reach near Roosevelt	Three lots have 100-year flood depths greater than 2 feet and were therefore not considered for flood-proofing. Due to its location between parks,it appears reasonable to be buyout the flooed properties and continue the park	12000025	Bexar	12100301	121003010203	12000011	0.31	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	11963300	Y	Halff Identification Process
121000083	Damage Center 39-Olmos Creek and Olmos Creek East Channel	Antonian High School is just downstream of this damage center. There are a total of eight parcels that are flooded by the 100-year storm event. Flood-proofing appears to be a practical approach for these properties	12000029	Bexar	12100301	121003010201	12000008	0.12	Riverine,	12003327	00000007,00000255,00000282,00000392,12002439,12003327	Yes	390530	Y	Halff Identification Process
121000084	Damage Center 38-Olmos Creek Lower Reach Near Montview	Flooding occurs on the left overbank and begins just upstream of Montview. A total of 10 lots are impacted by the 100-year storm event and the depth of flooding ranges between 0.10 and 0.15 feet.Flood depths are less than 0.5 feet; therefore	12000029	Bexar	12100301	121003010201	12000008	0.05	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	No	407544	Y	Halff Identification Process
121000085	Damage Center 3- Zarzamora Creek	The proposed earthen channel would begin upstream of the pedestrian bridge and end approximately 780 feet downstream of Ingram Road	12000029	Bexar	12100301	121003010202	12000010	0.55	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	11240000	Y	Halff Identification Process
121000086	Damage Center 6- Martinez Creek	Voluntary Property Acquisition is the only option that would be recommended under current regulatory and funding scenarios	12000025	Bexar	12100301	121003010202	12000010	0.66	Riverine,	12003327	00000007,00000255,00000282,12003327	No	31453300	Y	Halff Identification Process
121000087	Damage Center 7- Zarzamora Creek	Based on the value of the homes within this damage center, VPAs appear to be a practical option that may be well received	12000025	Bexar	12100301	121003010202	12000010	0.51	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	11425000	Y	Halff Identification Process
121000088	Damage Center 9- Alazan Creek	severe flooding upstream of South Colorado Street, where the majority of the buildings flood during the 10&50 yr. Channel improvments	12000029	Bexar	12100301	121003010202	12000010	0.36	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	63081000	Y	Halff Identification Process
121000089	Damage Center 14- Airport Trib	There are four bridges within this Damage Center, of which all overtop during the 1% AC storm event. Voluntary Acquisition of 79 residential propoerties that are compromised	12000025	Bexar	12100301	121003010104,121003010201	12000004,12000008	0.35	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	30290000	Y	Halff Identification Process
121000090	Damage Center 19- San Pedro Creek	A lateral detention project is recommended to reduce the Camaron Street spill which will also provide some minor relief to the storm sewer surcharges at West Elmira Street, Cadwallader Street, Marshall Street, and Hill Street	12000029	Bexar	12100301	121003010202	12000010	0.11	Riverine,	12003327	00000007,00000255,00000282,12003327	No	12454000	Y	Halff Identification Process
121000091	Damage Center 20-Matinez Creek	Lateral detention is a viable alternative for this project and could be used in conjunction with VPA, and reduced channelization, to meet the desired outcomes of multi-use functionality and flood reduction.	12000029	Bexar	12100301	121003010202	12000010	0.26	Riverine,	12003327	00000007,00000255,00000282,12003327	No	63987000	Y	Halff Identification Process
121000092	Damage Center 23-New Braunfels, Austin Hwy, Broadway Drain	Reduce regional flooding and remove secure safe passage during 100 yr event. Utilizes a combined regional and local trunkline of 4'x4' and new outfall near Patterson Avenue.	12000029	Bexar	12100301	121003010201	12000008	0.88	Riverine,	12003327	00000007,00000255,00000282,12002437,12002475,12003327	No	53405000	Y	Halff Identification Process
121000093	Damage Center 32-Six Mile Creek	the proposed pond would have a direct impact on the flow in Normoyle Ditch, it is recommended that the required drainage structures be r.eanalyzed	12000013, 12000014	Bexar	12100301	121003010203	12000011	0.56	Riverine,	12003327	00000007,00000255,00000282,00000392,12003327	Yes	15630700	Y	Halff Identification Process
121000094	Damage Center 34-State Hospital Creek	the channelization project will have to be constructed to remove all structures from the 1% annual chance storm event floodplain	12000029	Bexar	12100301	121003010203	12000011	0.26	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	5716000	Y	Halff Identification Process
121000095	LWC at Ammann Rd and Post Oak Creek	Improve the low water crossing at Ammann Road and Post Oak Creek	12000029	Kendall	12100304	121003040103	12000063	0.09	Riverine,	00000017	00000017,00000255,00000291	No	0	Y	Halff Identification Process
121000096	LWC at Old Fredericksburg Rd and Balcones Creek	Improve the low water crossing at Old Fredericksburg Rd and Balcones Creek	12000029	Bexar,Kendall	12100304	121003040102	12000062	0.01	Riverine,	00000017	00000007,00000017,00000255,00000282,00000291	Yes	0	Y	Halff Identification Process
121000097	Damage Center 31-Rockwood Creek	Limits of the effective DFIRM model are incorrect based on the DFIRM hydrology if the hydrology is re-evaluated to take into account the limiting factor of the storm drain system, the actual flow to Rockwood Crk is less than the DFIRM flow	12000029	Bexar	12100301	121003010203	12000011	0.15	Riverine,	12003327	00000007,00000255,00000282,12003327	Yes	0	Y	Halff Identification Process
121000098	FM 1863 at Cibolo Creek LWC	Replace low water crossings at two locations(US &DS) where FM1863 crossing Cibolo Creek with bridges.	12000033	Bexar,Comal	12100304	121003040201	12000066	0.04	#N/A	00002669	00000007,00000014,00000255,00000282,00000291,00002669	Yes	8000000	Y	Halff Identification Process
121000099	Install pipe gates to close off streets	Install automated systems at low-water crossings with high rate of vehicular access resulting in frequency of accidents and loss of life.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Yes	250000	Y	Halff Identification Process
121000100	LWC# 101 Rittiman Creek @ Gibbs Sprawl	This proposed planning study adds culverts at the railroad crossing, upgrades the earthen channel in the park from the westerly property line to Rittiman road, and installation of larger box culverts at the Gibbs Sprawl LWC which requires Gibbs Sprawl	12000029	Bexar	12100301	121003010106	12000007	0.12	#N/A	12003327	00000007,00000255,00000282,00000392,12003327	Yes	35000	Y	Halff Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	**FME Study Area (sqmi)**	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
121000101	Maintain Drainage System	Improve storm water drainage within residential and commercial areas by removing brush and debris,opening and widening waterways, restricting building in the flood zone, and widening bridges. Status or project was 90% complete in 2012 plan awaiting purch	12000029, 12000030, 12000033	Wilson	12100304	121003040401	12000060	1.68	#N/A	12003182	00000100,00000255,00000282,12003182	Yes	2000000	Y	Halff Identification Process
121000102	Upper Martinez Creek Improvements	Improvements to already channelized section of Martinez Creek (Cibolo Watershed) from Montgomery Dr to Walzem Rd and bridge improvements at Gibbs Sprawl Road	12000029	Bexar	12100304	121003040205	12000071	0.02	#N/A	12003327	00000007,00000255,00000282,00000392,12003327	No	4000000	Y	Halff Identification Process
121000103	Recommend for Wilson Roadways - Project 4 - Mariana Rd & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	0	#N/A	00000100	00000100,00000255,00000282	Yes	100000	Y	HDR Identification Process
121000104	Recommend for Wilson Roadways - Project 5 - CR 108 & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	0	#N/A	00000100	00000100,00000255,00000282,00000290	Yes	100000	Y	HDR Identification Process
121000105	Erosion at CR 401 and Cibolo Creek	Phase I: Engineering study of design solutions to erosion of CR 401 at Cibolo Creek.Phase II: Implementation of stabilization project to address stream incision and erosion CR 401 at Cibolo Creek.	12000034	Wilson	12100304	121003040401	12000060	0	#N/A	00000100	00000100,00000255,00000282	Yes	100000	Y	HDR Identification Process
121000106	Erosion on CR 202 East and Marcelina Creek	Phase I: Engineering study of design solutions to erosion of CR 202 at Marcelina Creek. Phase II: Implementation of stabilization project to address stream incision and erosion CR 202 at Marcelina Creek.	12000030	Wilson	12100303	121003030204	12000027	0	#N/A	00000100	00000100,00000255,00000282	Yes	100000	Y	HDR Identification Process
121000107	Improve bridge at CR 337	streets and adjacent properties. An interception channel is proposed upstream of the City to capture flows and divert them west to a tributary of Lower Cibolo Creek.	12000030	Karnes	12100303	121003030306	12000016	0	#N/A	00000095	00000095,00000255,00000282,00001006	Yes	500000	Y	HDR Identification Process
121000108	Flat Creek Study	Update details on both current and expected ultimate watershed build-oit conditions, Identify at-risk infrastructure and detail oppurtunities for flood reduction, and provide mitigation plans with regard to risk due to delevopment.	12000014	Medina	12100302	121003020501,121003020502	12000081,12000107	5.8	#N/A	12003377	00000005,00000255,12003377	Yes	50000	Y	HDR Identification Process
121000109	Goliad Damage Center A	Vegetated swales along Bungalow Ave and N San Patricio St	12000032, 12000012	Goliad	12100303	121003030604	12000049	0.01	#N/A	00000090	00000090,00000264,00000282,12002986	No	50000	Y	HDR Identification Process
121000110	Goliad Damage Center B	Construct dam north of W. Ward St	12000026, 12000012	Goliad	12100303	121003030604	12000049	0.02	#N/A	00000090	00000090,00000264,00000282	No	100000	Y	HDR Identification Process
121000111	Kempf Creek Watershed Study	H&H Study. Alternatives analysis for regional flood conveyance systems. Project identification and recommendations.	12000014	Medina	12100302	121003020501	12000081	4.87	#N/A	12003377	00000005,00000255	Yes	150000	Y	HDR Identification Process
121000112	Lower Basin Predictive Flood Model	Lower Basin Predictive Flood Model	12000012	De Witt,Wilson,Bexar,Guadalupe,Refugio,Calhoun,Goliad,Victoria,Karnes	12100204,12100301,12100303,12100304,12100202,12100404,12100406,12110110,12110111,12100403,12100405			1481.11	#N/A	00000282		Yes	1000000	Y	HDR Identification Process
121000113	Culvert improvement on Hatch St in Tivoli	The bridge on Hatch Street in Tivoli was replaced with a culvert which drains slow and causes the water to breach the levee. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	0	#N/A	Tivoli Community	00000084,00000260,00000291,00000758,12001057,00001608	No	150000	Y	HDR Identification Process
121000114	Culvert Improvement on Highway 239 in Tivoli	Culverts on Highway 239 in Tivoli are too small causing water to get in houses. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	0	#N/A	Tivoli Community	00000084,00000260,00000291,00000758,12001057,00001608	No	150000	Y	HDR Identification Process
121000115	Miller Creek on the Smoky Creek Ranch Drainage Improvements	Miller Creek on the Smoky Creek Ranch drains Tivoli and the surrounding area which is washing out property where Indian artifacts were found. Study to find alternatives to determine solutions for this drainage issue.	12000030	Refugio	12100404	121004040000	12000073	0.01	#N/A	Tivoli Community	00000084,00000260,00000291,00000714,00000758,00001608	No	150000	Y	HDR Identification Process
121000116	Holistic Watershed based master planning consistent with Nature Based Solutions	This Flood Management Evaluation (FME) will fill the knowledge gap in the region on the benefits of NFMS for floodplains, flood peak attenuation, ecosystem services, groundwater recharge, and recreational value	12000013	Wilson,Bexar	12100301,12100303,12100304,12110110,12100302		12000001,12000002,12000003,12000004,12000005,12000006,12000007,12000008,12000009,12000010,12000011,12000012,12000013,12000029,12000055,12000056,12000063,12000064,12000066,12000069,12000071,12000076,12000078,12000094,12000104,12000105	505.2	#N/A	00000282		Yes	2500000	Y	HDR Identification Process
121000117	New Drainage Analysis to Update/Revise Flood Maps	This action proposes performing a new drainage analysis for the community to update/revise Flood Maps to better identify areas subject to this Hazard; last study completed in September 1977.	12000014	Medina	12100302	121003020501,121003020503	12000081,12000108	0.63	#N/A	12002954	00000005,00000255,12002954	Yes	100000	Y	HDR Identification Process
121000118	Low Water Crossing Upgrades	Prioritize low water crossings within Karnes County and upgrade with higher level of flood protection, warnings, and signage	12000014, 12000007	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12100202,12100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	749.22	#N/A	00000095		No	305000	Y	HDR Identification Process
121000119	Early warning flood systems	Conduct feasibility analysis for need and location for placement and installation of an early warning system. Install early warning systems for non incorporated communities	12000005	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12100202,12100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	749.22	#N/A	00000095		No	150000	Y	HDR Identification Process
121000120	Recommend for Wilson Roadways-Project 3-CR 122 & Mariana Creek	Upgrade crossing so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	0	#N/A	00000100	00000100,00000255,00000282	Yes	100000	Y	HDR Identification Process
121000121	North Lorenzo, Athens Street, Naples Street Storm Drainage Improvements	Preliminary Engineering of storm drainage and inlet system.	12000013	Medina	12100302	121003020501	12000081	0.17	#N/A	12003377	00000005,00000255,12003377	Yes	50000	Y	HDR Identification Process
121000122	La Vernia Issue # 5 (Hwy 87 crossing and CR 342)	Study to assess city acquiring drainage easements in the area upstream of the Highway 87 crossings, as well as the area between the crossings at Highway 87 and the crossing at CR 342 for the purpose of constructing a channel.	12000016	Wilson	12100304	121003040302	12000056	0.03	#N/A	12003180	00000100,00000255,00000282,00000392,12003180	No	150000	Y	HDR Identification Process
121000123	La Vernia Issue # 2 and # 3 (City Park/ La Vernia ISD)	Study to assess 6'-wide concrete-bottom channel/sidewalk with earthen sides (graded 5:1) be constructed through this area to better define the flow path. Gauge boards on San Antonio Road. Aquire 25'-wide drainage easements.	12000013, 12000032	Wilson	12100304	121003040302	12000056	0.07	#N/A	12003180	00000100,00000255,00000282,00000392,12003180	Yes	150000	Y	HDR Identification Process
121000124	Escondidio Creek WS SCS Site 1, 2, 4 Dam	Rehabilitation of Escondido Creek 1,2, and 4 to ensure passage of the PMF.	12000030	Karnes	12100303	121003030402	12000021	0.13	#N/A	00000095	00000095,00000255,00000282,00000519	No	300000	Y	HDR Identification Process

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121000125	Wilson County LWC Study	Study to evaluate the LWC in Wilson County and recommend alternatives both short term and long term alternatives. Some short term alternatives could include Low Water Signage, Turn Around Don't Drown, automatic gates. 195 LWC in Wilson County.	12000030	Atascosa,Wilson,Bexar,Guadalupe,Karnes	12100301,12100303,12100304,12100202,12110110		12000006,12000012,12000027,12000028,12000029,12000030,12000031,12000032,12000033,12000034,12000035,12000036,12000038,12000039,12000040,12000041,12000052,12000053,12000054,12000056,12000057,12000059,12000060,12000065,12000070,12000072	805.06	#N/A	00000100		Yes	300000	Y	HDR Identification Process
121000126	Wilson 10 - Acquisitions of Flooded Structures	Acquire flooded structures to remove them out of the SFHA and restrict future structures from development on the site. Removal of damaged structures that are no longer liveable.	12000026	Atascosa,Wilson,Bexar,Guadalupe,Karnes	12100301,12100303,12100304,12100202,12110110		12000006,12000012,12000027,12000028,12000029,12000030,12000031,12000032,12000033,12000034,12000035,12000036,12000038,12000039,12000040,12000041,12000052,12000053,12000054,12000056,12000057,12000059,12000060,12000065,12000070,12000072	805.06	#N/A	00000100		No	100000	Y	HDR Identification Process
121000127	City of Floresville Flood Study	City wide study	12000013	Wilson	12100303	121003030102,121003030103	12000028,12000033	7.7	#N/A	12002925	00000100,00000255,00000282,12000592,12002925	No	308000	Y	HDR Identification Process
121000128	Highway 16 Bridge Upgrade	Closes the road down which is the main access for citizens. Study to upgrade crossing.	12000030	Bandera	12100302	121003020203,121003020204	12000088,12000089	0.05	#N/A	00000011	00000011,00000255,00000339	Yes	50000	Y	HDR Identification Process
121000129	Bandera State Highway 173 Study	Prevents access to citizens from the city. Study to upgrade crossing.	12000030	Bandera	12100302	121003020204	12000089	0.01	#N/A	00000011	00000011,00000255,00000339	Yes	50000	Y	HDR Identification Process
121000130	Bandera English Crossing Study	This low water crossing can sometimes remain flooded for months. Study to upgrade road.	12000030	Bandera	12100302	121003020302	12000097	0.07	#N/A	00000011	00000011,00000255,00000339	Yes	50000	Y	HDR Identification Process
121000131	Bandera FM 2107 Study	FM 2107 is the only path for residents to access community lifelines.FM 2107 is the only path for residents to access community lifelines. Study to upgrade road.	12000030	Bandera	12100302	121003020103	12000082	0.14	#N/A	00000011	00000011,00000255,00000339	Yes	50000	Y	HDR Identification Process
121000132	Bandera Patterson Street Study	Impairs travel for citizens to reach community lifeline services. Study to upgrade road.	12000030	Bandera	12100302	121003020201	12000087	0.01	#N/A	00000011	00000011,00000255,00000339	Yes	50000	Y	HDR Identification Process
121000133	Bandera Lower Mason Creek and Bandera Creek at State Highway 16	Lower Mason Creek and Bandera Creek contribute to flooding at SH 16. Study to upgrade road.	12000030	Bandera	12100302	121003020204	12000089	0.01	#N/A	00000011	00000011,00000255,00000339	Yes	50000	Y	HDR Identification Process
121000134	Bandera WWTP Study	Wastewater treatment plant is in 100 yr floodplain. Study to find solutions.	12000028	Bandera	12100302	121003020203	12000088	0.03	#N/A	00000011	00000011,00000255,00000339,12003414	Yes	150000	Y	HDR Identification Process
121000135	Bandera 470 and Indian Creek Study	Blocks public access to lifelines in Bandera. Study to upgrade road.	12000030	Bandera	12100302	121003020203	12000088	0.02	#N/A	00000011	00000011,00000255,00000339	Yes	50000	Y	HDR Identification Process
121000136	Bandera 470 and Medina River Study	Blocks people of Tarpley from EMS and other lifelines in the city of Bandera. Study to upgrade road.	12000030	Bandera	12100302	121003020203	12000088	0.01	#N/A	00000011	00000011,00000255,00000339	Yes	50000	Y	HDR Identification Process
121000137	Natural capital inventory	Development of a dataset identifying lands under conservation easement. Project includes courthouse and deed records research to identify lands that are protected or have future development restrictions.	12000014	Atascosa,De Witt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,Aransas,Refugio,Calhoun,Goliad,Victoria,Karnes				4409.74	#N/A	00000282		No	300000	Y	HDR Identification Process
121000138	Evaluation and prioritization of new gauge locations	Study to identify stream gage locations in the San Antonio River Basin and cost effective/resilient monitoring technologies.	12000014	Atascosa,De Witt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,Aransas,Refugio,Calhoun,Goliad,Victoria,Karnes				4409.74	#N/A	00000282		Yes	50000	Y	HDR Identification Process
121000139	Future conditions data refinement study	Future conditions data refinement study,study future landuse and apply to future models	12000013	Atascosa,De Witt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,Aransas,Refugio,Calhoun,Goliad,Victoria,Karnes				4409.74	#N/A	00000282		No	500000	Y	HDR Identification Process
121000140	Port of San Antonio Floodproofing	Port SA, site specific, study flood mitigation for critial structures	12000028	Bexar	12100302	121003020406	12000105	0.03	#N/A	00000282	00000007,00000255,00000282,12003327	Yes	250000	Y	HDR Identification Process
121000141	River Authority WWTP Resilience	Study of all River Authority WWTP Resilience, finding alternatives for floodproofing	12000028	Atascosa,De Witt,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall,Kerr,Aransas,Refugio,Calhoun,Goliad,Victoria,Karnes				4409.74	#N/A	00000282		Yes	600000	Y	HDR Identification Process
121000142	Bandera Substation In Floodplain Study	Electrical sub-station is in 100 yr floodplain. Study to find solutions.	12000028	Bexar	12100302	121003020405	12000104	0	#N/A	00000011	00000007,00000255,00000282,12002511	Yes	150000	Y	HDR Identification Process
121000143	Garcia Creek Channel Stabilization	Preliminary Engineering to identify stabilization methods and sizing.	12000030	Medina	12100302	121003020501	12000081	0.02	#N/A	12003377	00000005,00000255,12003377	No	50000	Y	HDR Identification Process
121000144	Country Village Channel Improvements	Preliminary Engineering including an H&H study to size the channel improvements	12000030	Medina	12100302	121003020501	12000081	0.11	#N/A	12003377	00000005,00000255,12003377	No	50000	Y	HDR Identification Process
121000145	Lucas Creek at Cinco De Mayo Dr Bridge and Channel (DC-MRD)	Regional detention, channel improvements, and bridge/culvert upgrades, property acquisition	12000031	Bexar	12100302	121003020502,121003020503	12000107,12000108	0.97	#N/A	00000005	00000007,00000255,00000282,00000392	Yes	150000	Y	HDR Identification Process
121000146	Cagnon Rd at Polecat Creek (DC-MRN)	Replace the existing crossing with an approximately 320-foot long bridge.	12000031	Bexar	12100302	121003020503	12000108	0.04	#N/A	00000005	00000007,00000255,00000282,00000392	Yes	150000	Y	HDR Identification Process
121000147	Trumbo Rd at Palo Blanco Creek (DC-MRP)	Upgrades to Trumbo Rd and Loop 1604 crossings at Palo Blanco Creek with channel work.	12000031	Bexar	12100302	121003020509	12000094	0.25	#N/A	00000005	00000007,00000255,00000282,00000290,00000392	Yes	100000	Y	HDR Identification Process
121000148	Wet-Proof Wastewater System	This action proposes "wet-proofing" city sewer lines to the Wastewater Treatment Plant	12000028	Medina	12100302	121003020501,121003020503	12000081,12000108	0.63	#N/A	12002954	00000005,00000255,12002954	Yes	50000	Y	HDR Identification Process
121000149	Karnes Damage Center H	Raise bridge on Hwy 181/5th in Kenedy	12000030, 12000012	Karnes	12100303	121003030402	12000021	0.04	#N/A	00000095	00000095,00000255,00000282,00000519,12002975	Yes	150000	Y	HDR Identification Process
121000150	Additional flood proof at wastewater treatment plant	Study to evaluate removing the WWTP from flood and erosion risk	12000028	Wilson	12100304	121003040302	12000056	0.02	#N/A	12003180	00000100,00000255,00000282,00000392,12003180	Yes	150000	Y	HDR Identification Process
121000151	Bexar County Line LWC Engineering Study	Engineering Study to evaluate twelve LWC upgrades at county line	12000030	Atascosa,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall	12100301,12100303,12100304,12110110,12100302			1253.25	#N/A	00000007		Yes	600000	Y	
121000152	Recommend for Wilson Roadways - Project 7 - CR 119 & Mariana Creek	Study: Upgrade bridge so that it provides a safe evacuation route during large storm events.	12000030	Wilson	12100303	121003030104	12000032	0	#N/A	00000011	00000100,00000255,00000282	Yes	100000	Y	HDR Identification Process
121000153	Property acquisition and demolition and/or relocations	Property acquisition and demolition and/or relocations	12000022	Wilson	12100303	121003030102,121003030103	12000028,12000033	7.7	#N/A	12002925	00000100,00000255,00000282,12000592,12002925	No	1500000	Y	HDR Identification Process
121000154	Damage Center 2: Project 1 Channelization	The channelization project would add 8 feet to the left bank of the channel, and the depth would be kept at its existing elevation. The project would remove two structures adjacent to the stream from the floodplain.	12000026	Wilson	12100303	121003030103	12000033	0	#N/A	12002925	00000100,00000255,00000282,12002925	No	100000	Y	HDR Identification Process

Table 15. Flood Management Evaluations Recommended by RFPG

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s^	Watershed Names	**FME Study Area (sqmi)**	Flood Risk Type	Sponsor	Entities Oversight	Emergency Need	Etimated Study Cost	RFPG Recommendation	Reason for Recommendation
121000155	Damage Center 1: Project 1A, 1B, 1C	Detention upstream of Lost Springs Hollow along with some channel work. Upgrade Hwy 181 crossing at Lodi Branch and channelization (contingent of Project 1A).	12000030	Wilson	12100303	121003030103	12000033	0.13	#N/A	12002925	00000100,00000255,00000282,12002925	Yes	150000	Y	HDR Identification Process
121000156	Repetitive loss properties	Offer relocation/mitigation incentives to current flood hazard area property owners; initiate a community program to acquire repetitive loss structures identified by FEMA.	12000024	Wilson	12100304	121003040304,121003040302	12000053,12000056	1.72	#N/A	12003180	00000100,00000255,00000282,00000392,12001595,12003180	Yes	150000	Y	HDR Identification Process
121000157	Nichols Creek Stabilization	Restoration of Nichols Creek to improve stream function including conveyance of flow and sediment.	12000026	Karnes	12100303	121003030402	12000021	0.02	#N/A	00000282	00000095,00000255,00000282,00000519,12002975	No	1000000	Y	HDR Identification Process
121000158	Master Drainage Plan for Bexar County Unincorporated Areas	Engineering master plan to assess flood damage centers for Bexar County unincorporated areas.	12000024	Atascosa,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall	12100301,12100303,12100304,12110110,12100302			1253.25	#N/A	00000007		No	150000	Y	HDR Identification Process
121000159	Master Drainage Plan for Bexar County HALT Low Water	Engineering master plan to assess existing HALT sites for drainage improvements.	12000024	Atascosa,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall	12100301,12100303,12100304,12110110,12100302			1253.25	#N/A	00000007		No	150000	Y	HDR Identification Process
121000160	Culebra Creek RSWF	Engineering study to evaluate the Culebra Creek RSWF under the revised Green & Ampt hydrology.	12000030	Bexar	12100302	121003020402,121003020403,121003020404,121003020405	12000078,12000102,12000103,12000104	0.36	#N/A	00000007	00000007,00000255,00000282,00000392,12001484,12003327	Yes	50000	Y	HDR Identification Process
121000161	Gass Road at Culebra Creek Tributary D	Engineering study to assess the removal of Gass Road from the 100-Yr flood plain at Culebra Creek Tributary D for 100-Yr accessibility and driver safety at the crossing.	12000030	Bexar	12100302	121003020403	12000102	0	#N/A	00000007	00000007,00000255,00000282	No	100000	Y	HDR Identification Process
121000162	Rockwood Creek (SA-39)	Engineering study to assess the removal of properties and residential structures from the 100-Yr flood plain along Rockwood Creek upstream of the San Antonio River and River Side Golf Course.	12000026	Bexar	12100301	121003010203	12000011	0.13	#N/A	00000007	00000007,00000255,00000282,12003327	Yes	100000	Y	HDR Identification Process
121000163	Live Oak at Salitrillo Creek (CB-9)	Engineering study to assess removal of residential structures from the Salitrillo Creek 100-Yr flood plain upstream of Martinez Creek Dam No. 5.	12000026	Bexar	12100304	121003040205	12000071	0.78	#N/A	00000007	00000007,00000255,00000282,12002512,12002967	Yes	100000	Y	HDR Identification Process
121000164	Bexar County LWC Engineering Study	Engineering Study to evaluate seven LWC upgrades.	12000030	Atascosa,Wilson,Medina,Bexar,Guadalupe,Bandera,Comal,Kendall	12100301,12100303,12100304,12110110,12100302			1253.25	#N/A	00000007		Yes	300000	Y	HDR Identification Process
121000165	Update flood information and policies	Study to compile information on residential property in flood zones, establish a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process based on the 100-year flood event	12000030	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12100202,12100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	749.22	#N/A	00000011		Yes	100000	Y	HDR Identification Process

Table 16. Potentially Feasible Flood Mitigation Projects Recommended by RFPG

FMP ID	FMP Name	Description	Associated Goals (GO)	Counties	HUC 8s	HUC12s	Watersheds	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost ($)	Potential Funding Sources and Amount	Cost/ Structure removed	Percent Nature-based Solution (by cost)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Water Supply Benefit (Y/N)	Traffic Count for Low Water Crossings	Benefit-Cost Ratio	Social Vulnrability Index (SVI)	RFPG Recommendation (Y/N)	Reason for Recommendation
123000001	29010 Tivoli Way	Utilize existing stormwater infrastructure by regrading the roadway to slope towards existing inlets and open channels on the north and south side of Windermere Dr on the east side of Fair Oaks	12000029, 12000030	Bexar		0	12000063	Storm drain improvements, Infrastructure	0	Riverine,	12003327	12002436	#N/A	500000	0	0	0	#N/A	#N/A	#N/A	0	6.920000076		Y	Flood Risk Reduction
123000002	PROJECT 1A - ADLER ROAD AT CURREY CREEK AND UNNAMED TRIBUTARY A	Improve low water crossings along Adler Road, channel regrading, curbs, sidewalks, street reconstruction	12000029, 12000030	Kendall		0	12000062	Low water crossing improvements	0	Riverine,	12002855	12002855	#N/A	1700000	0	0	0	#N/A	#N/A	#N/A	0	2.5		Y	Flood Risk Reduction
123000003	PROJECT 2 - UNNAMED TRIBUTARY A REGIONAL DETENTION FACILITY	Inline detention facility with culvert improvements	12000029, 12000030	Kendall		0	12000062	Regional Detention, Infrastructure	0.03	Riverine,	12002855	12002855	#N/A	7400000	0	0	0	#N/A	#N/A	#N/A	0	0.540000021		Y	Flood Risk Reduction
123000004	PROJECT 3 - CURREY CREEK REGIONAL DETENTION FACILITY	Inline detention facility with additional stormdrain improvements	12000029, 12000030	Kendall		0	12000062	Regional Detention, Infrastructure	0.04	Riverine,	12002855	12002855	#N/A	9400000	0	0	0	#N/A	#N/A	#N/A	0	2.789999962		Y	Flood Risk Reduction
123000005	PROJECT 4 - SCHOOL STREET AT CIBOLO CREEK AND FREDERICK CREEK	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways	12000034	Kendall		0	12000058	Low water crossing improvements	0	Riverine,	12002855	12002855	#N/A	5300000	0	0	0	#N/A	#N/A	#N/A	0	0.400000006		Y	Flood Risk Reduction
123000006	PROJECT 5D - OLD SAN ANTONIO STREET AT MENGER CREEK	Elevated bridge, channel grading, street reconstruction, curb, sidewalks, and driveways	12000029, 12000030	Kendall		0	12000062	Bridge improvements; Infrastructure	0	Riverine,	12002855	12002855	#N/A	3700000	0	0	0	#N/A	#N/A	#N/A	0	0.5		Y	Flood Risk Reduction
123000007	PROJECT 6 - JOHNS ROAD NEAR CIBOLO CROSSING SUBDIVISION	Storm drain, channel, increase capacity of existing detention	12000029, 12000030	Kendall		0	12000058	Storm Drain improvement, Infrastructure	0.01	Riverine,	12002855	12002855	#N/A	1500000	0	0	0	#N/A	#N/A	#N/A	0	0.860000014		Y	Flood Risk Reduction
123000008	PROJECT 7 - SCHWEPPE AND HICKMAN STREET	Storm drain, and channel improvments	12000029, 12000030	Kendall		0	12000062	Storm Drain improvement, Infrastructure	0.01	Riverine,	12002855	12002855	#N/A	2100000	0	0	0	#N/A	#N/A	#N/A	0	0.819999993		Y	Flood Risk Reduction
123000009	PROJECT 8 - JOHNS AND LOHMANN STREET	Storm drain and channel improvements	12000029, 12000030	Kendall		0	12000058	Storm Drain improvement, Infrastructure	0	Riverine,	12002855	12002855	#N/A	1800000	0	0	0	#N/A	#N/A	#N/A	0	5.460000038		Y	Flood Risk Reduction
123000010	PROJECT 9 - UNNAMED TRIBUTARY A- SUBDIVISION FLOOD PROTECTION & MOBILITY PROJECT	Low water crossing improvemnts, channel improvements	12000029, 12000030	Kendall		0	12000062	Low water crossing improvements	0.01	Riverine,	12002855	12002855	#N/A	5100000	0	0	0	#N/A	#N/A	#N/A	0	0.479999989		Y	Flood Risk Reduction
123000011	PROJECT 10 - E. BLANCO ROAD AT UNNAMED TRIBUTARY A	Improve low water crossings along Blanco Road, channel regrading, curbs, sidewalks, street reconstruction	12000034	Kendall		0	12000062	Low water crossing improvements; Infrastructure	0	Riverine,	12002855	12002855	#N/A	1600000	0	0	0	#N/A	#N/A	#N/A	0	4.099999905		Y	Flood Risk Reduction
123000012	PROJECT 11 - RIVER ROAD AT UNNAMED TRIBUTARY A	Improve low water crossings along River Road, channel regrading, curbs, sidewalks, street reconstruction	12000034	Kendall		0	12000062	Low water crossing improvements; Infrastructure	0	Riverine,	12002855	12002855	#N/A	1400000	0	0	0	#N/A	#N/A	#N/A	0	3.099999905		Y	Flood Risk Reduction
123000013	PROJECT 13 - HERFF AND ESSER ROAD IMPROVEMENTS AT CURREY AND CIBOLO CREEK	Bridge at Currey Creek and Esser Road, Bridge at Cibolo Creek and River Road, Channel grading, Roadway reconstruction	12000029, 12000030	Kendall		0	12000062	Storm Drain improvement, Infrastructure	0.02	Riverine,	12002855	12002855	#N/A	15300000	0	0	0	#N/A	#N/A	#N/A	0	1.700000048		Y	Flood Risk Reduction
123000014	PROJECT 12 - PLANT CHANNEL IMPROVEMENT	Channel improvements	12000029, 12000030	Kendall		0	12000062	Regional Channel Improvements	0	Riverine,	12002855	12002855	#N/A	1300000	0	0	0	#N/A	#N/A	#N/A	0	0.400000006		Y	Flood Risk Reduction
123000015	PROJECT 14 - EAST BOERNE REGIONAL LID	Proposed inline extended detention facility that provides water quality benefits to the urbanized tributary of Cibolo Creek and properties downstream of Scenic Loop Road	12000029, 12000030	Kendall		0	12000062	Nature Based Project	0	Riverine,	12002855	12002855	#N/A	700000	0	0	0	#N/A	#N/A	#N/A	0	0.600000024		Y	Flood Risk Reduction
123000016	PROJECT 15 - NORTH CURREY CHANNEL IMPROVEMENTS	Channel regrading, curbs, sidewalks, street reconstruction. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 16 being implimented at the same time as this project to achieve the project benefits.	12000029, 12000030	Kendall		0	12000062	Regional Channel Improvements	0.01	Riverine,	12002855	12002855	#N/A	700000	0	0	0	#N/A	#N/A	#N/A	0	1.330000043		Y	Flood Risk Reduction
123000017	PROJECT 16 - SOUTH CURREY CREEK CHANNEL IMPROVEMENTS	Low water crossing improvemnts, channel improvements. This project is dependent on projects 1A, 3, 12, and 13 being completed and Project 15 being implimented at the same time as this project to achieve the project benefits.	12000029, 12000030	Kendall		0	12000062	Low water crossing; Infrastructure	0.01	Riverine,	12002855	12002855	#N/A	1500000	0	0	0	#N/A	#N/A	#N/A	0	1.330000043		Y	Flood Risk Reduction
123000018	Lewis Creek Alternative 1 Phase 1 & 2	Channel improvement, roadway improvement	12000029, 12000030, 12000033	Comal		0	12000061	Regional Channel Improvements	0.1	Riverine,	00000014	00000014	#N/A	5468250	0	0	0	#N/A	#N/A	#N/A	0	0.109999999		Y	Flood Risk Reduction
123000019	Seeling Drainage Improvements	Install box culverts, grass lined channel construction	12000029, 12000030	Bexar		0	12000010	Storm drain improvements, Infrastructure	0.26	Riverine,	12003327	12003327	#N/A	30790000	0	0	0	#N/A	#N/A	#N/A	0	0.620000005		Y	Flood Risk Reduction
123000020	Lewis Creek Tributary 2 Alternative 1 & 2	Channel widening/lowering, culvert improvement, roadway improvement	12000029, 12000030, 12000033	Comal		0	12000061	Regional Channel improvements, Detentions; Infrastructure	0.19	Riverine,	00000014	00000014	#N/A	2669190	0	0	0	#N/A	#N/A	#N/A	0	0.189999998		Y	Flood Risk Reduction
123000021	Lewis Creek Main	High water detection system. System includes warning signs, with flashers and automatic arm barricade.	12000005, 12000006	Comal		0	12000061	Flood Early Warning Systems	0.1	Riverine,	00000014	00000014	#N/A	150000	0	0	0	#N/A	#N/A	#N/A	0	0		Y	Flood Risk Reduction
123000022	Rock Creek - Alt 1	Reducing the height of the drop structure at the Olmos Creek outfall, Bridge replacements will be required for both the railroad crossing and West Ave.	12000029, 12000030	Bexar		0	12000008	Infrastructure	0.52	Riverine,	12003327	12003327	#N/A	15860000	0	0	0	#N/A	#N/A	#N/A	0	0.100000001		Y	Flood Risk Reduction
123000023	Judson and Lookout LWC Improvement	Upgrade the low water crossings and the connecting/downstream channel	12000029, 12000030	Bexar		0	12000004	Low water crossing, Infrastructure	0.03	Riverine,	12003327	12003327	#N/A	5665140	0	0	0	#N/A	#N/A	#N/A	0	0.899999976		Y	Flood Risk Reduction
123000024	Symphony Lane Voluntary Property Acquisition	Purchase 32 properties located west of the San Antonio River Symphony Reach, and along Pyron Ave and Symphony Lane.	12000025	Bexar		0	12000011	Property acquisition	0.42	Riverine,	12003327	12003327	#N/A	36730500	0	0	0	#N/A	#N/A	#N/A	0	0.400000006		Y	Flood Risk Reduction
123000025	Holbrook Road Improvements	Offset a portion of the roadway south of Woodburn Rd	12000033	Bexar		0	12000002	Infrastructure	0.05	Riverine,	12003327	12003327	#N/A	16250000	0	0	0	#N/A	#N/A	#N/A	0	0.01		Y	Flood Risk Reduction
123000026	Barbara Drive Drainage Improvements	Upsizing the boxes underneath Dellwood Drive and Oblate Drive. The improvements will also include reconstruction of the street and curb for the portion of Dellwood Drive and Oblate Drive within the project boundary	12000029, 12000030	Bexar		0	12000008	Storm drain improvements, Infrastructure	0.29	Riverine,	12003327	12003327	#N/A	29362000	0	0	0	#N/A	#N/A	#N/A	0	0.039999999		Y	Flood Risk Reduction
123000027	Thames Drainage Channel Replacement - Alt 1	Replace the existing culverts at Blanco Rd., San Pedro Ave, Thames Dr, Private Dr and Dorsets.	12000029, 12000030	Bexar		0	12000008	Storm drain improvements	0.19	Riverine,	12003327	12003327	#N/A	30590000	0	0	0	#N/A	#N/A	#N/A	0	0.029999999		Y	Flood Risk Reduction
123000028	Shady Lane Dr.Voluntary Property Acquisition	This project consist primarily of property buy-outs within the floodplain to mitigate structural flooding to those properties.	12000025	Bexar		0	12000076	Property acquisition	0	Riverine,	12003327	12003327	#N/A	1453880	0	0	0	#N/A	#N/A	#N/A	0	0.200000003		Y	Flood Risk Reduction
123000029	Concepcion Creek Improvements Project	Ph1. 54-ac detention, property acquisition and 10,000ft of storm drain systems and road reconstruction. Ph2. 1.36mi of Concepcion Creek channel improvements. Ph3. 2,300ft of (3)10x8 MBC systems	12000027 12000027					Other	0.96	#N/A	12003327		Y	240222000	0	87461	0	N	#N/A	N	0	1		Y	Flood Risk Reduction

Table 17: Potentially Feasible Flood Management Strategies Recommended by RFPG

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC8s	HUC12s	Watersheds	Project Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Esitimated Total Stategy Cost ($)	Potential Funding Sources and Amount	Cost/ Structure removed	Consideration of Nature-based Solution (Y/N)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Water Supply Benefit (Y/N)	RFPG Recommendation (Y/N)	Reason for Recommendation
122000001	Study the San Antonio River and its tributes	When the San Antonio River floods, the city is cutoff from the rest of the county (hospital and EMS) with islands lsating over a week. Install stream gauges and develop a study to identify solutions to flooding. SARA completed a study but County official	12000007	Karnes	12100303	121003030204,121003030202	12000027,12000030	Regulatory and Guidance	0.91	Riverine,	12002974	00000095,00000255,00000282,12002974	N	250000	0	0	Yes	N			Y	Halff Identification Process
122000002	San Antonio River drainage ownership study	Develop ownership and access understanding parcels fronting the San Antoinion River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030204,121003030202	12000027,12000030	Education and Outreach	0.91	Riverine,	12002974	00000095,00000255,00000282,12002974	N	30000	0	0	Yes	N			Y	Halff Identification Process
122000003	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antoinion River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030401,121003030402,121003030403,121003030205,121003030206	12000020,12000021,12000022,12000034,12000037	Education and Outreach	2.31	Riverine,	12002756	00000095,00000255,00000282,00000519,12002756	N	30000	0	0	Yes	N			Y	Halff Identification Process
122000004	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antoinion River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030402	12000021	Education and Outreach	3.67	Riverine,	12002975	00000095,00000255,00000282,00000519,12002975	N	30000	0	0	Yes	N			Y	Halff Identification Process
122000005	San Antonio River drainage ownership mapping	Develop ownership and access understanding parcels fronting the San Antoinion River and major tributaries to have better agreements and access to areas that need flood control mitigation and erosion control	12000001	Karnes	12100303	121003030306,121003030404	12000016,12000023	Education and Outreach	1.18	Riverine,	12002757	00000095,00000255,00000282,00001006,12002757	N	30000	0	0	Yes	N			Y	Halff Identification Process
122000006	Strengthen floodplain management ordinances	Adopt higher floodplain standards for new development	12000021, 12000022	Wilson	12100303	121003030204,121003030105	12000027,12000035	Regulatory and Guidance	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Y	25000	0	0	Yes	N			Y	Halff Identification Process
122000007	Education Signage	Install educational signage such as "Turn around don't drown" at high risk low water crossings.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Y	5000	0	0	Yes	N			Y	Halff Identification Process
122000008	Digital signage for communication	Coordinate with school district to use sign on US 181 for emergency info and safety directions during hazard events.	12000005	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Y	5000	0	0	Yes	N			Y	Halff Identification Process
122000009	Early warning system education	Alert the population through education material, media and other methods about enrolling in the early warning system	12000001	Wilson	12100303	121003030204,121003030105	12000027,12000035	Education and Outreach	3.18	Riverine,	12003181	00000100,00000255,00000282,12003181	Y	5000	0	0	Yes	N			Y	Halff Identification Process
122000010	Development of a Streamscaping Program for Flood Risk Management in Texas	Increase the number of public outreach and education activities to improve awareness of flood hazards and benefits of flood planning in the Flood Planning Region. Promote nature-based solution training	12000014	Wilson,Bexar	12100301,12100303,12100304,12110110,12102100		12000001,12000002,12000003,12000004,12000005,12000006,12000007,12000008,12000009,12000010,12000011,12000012,12000013,12000029,12000055,12000056,12000063,12000064,12000066,12000069,12000071,12000076,12000078,12000094,12000104,12000105	Education and Outreach	505.2	Riverine,	00000007		Y	129000	0	0	Yes	N			Y	Halff Identification Process
122000011	Automatic low water crossings and gauges	Add automatic low water crossings and gauges at various locations. This would include development of a plan to identify locations, followed by installation.	12000005	Bexar,Bandera,Comal,Kendall,Kerr	12100304,12100201,12100302		12000058,12000062,12000063,12000095,12000096	Flood Measurement and Warning	660.51	Riverine,	00000017		Y	0	0	0	Yes	N			Y	Halff Identification Process
122000012	Update flood information and policies	Identify and compile information on flood hazard areas and residential property in flood zones, establish and implement a volunteer acquisition / elevation program based on FEMA protocol in association with SARA studies, and review permitting process bas	12000021, 12000022	Karnes	12100303	121003030402	12000021	Regulatory and Guidance	3.67	Riverine,	12002975	00000095,00000255,00000282,00000519,12002975	N	100000	0	0	Yes	N			Y	Halff Identification Process
122000013	Shelter requirement for RV parks	Adopt and implement an ordinance to require RV Parks to provide shelter facilities.	12000005	Atascosa,De Witt,Wilson,Goliad,Karnes	12100204,12100303,12100304,12102100406,12110110,12110111		12000014,12000016,12000019,12000020,12000021,12000022,12000023,12000024,12000025,12000026,12000027,12000030,12000034,12000037,12000040,12000041,12000042,12000043,12000045,12000052,12000057,12000070	Regulatory and Guidance	749.22	#N/A	00000095		N	10000	0	0	Yes	N			Y	HDR Identification Process
122000014	Public Education & Outreach	Create a program to educate the public about specific mitigation actions for flooding hazards	12000001, 12000012	Medina	12100302	121003020501,121003020503	12000081,12000108	Education and Outreach	0.63	#N/A	12002954	00000005,00000255,12002954	N	35000	0	0	Yes	N			Y	HDR Identification Process
122000015	Public education and outreach	Implement public education and outreach programs to educate citizens about mitigation against (flood) hazards; seek partnership with county neighboring communities and San Antonio River Authority.	12000001	Wilson	12100304	121003040304,121003040302	12000053,12000056	Education and Outreach	1.72	#N/A	12003180	00000100,00000255,00000282,00000392,12001595,12003180	N	5000	0	0	Yes	N			Y	HDR Identification Process
122000016	Citizen flood education outreach	Educate citizens about mitigation strategies prior to any flood conditions, including dangers of debris flooding roads and how to best floodproof homes and businesses.	12000001	Wilson	12100303	121003030102,121003030103	12000028,12000033	Education and Outreach	7.7	#N/A	12002925	00000100,00000255,00000282,12000592,12002925	N	10000	0	0	Yes	N			Y	HDR Identification Process
122000017	Updating floodplain ordinances and development code	Updating floodplain ordinances and development code	12000011	Wilson	12100304	121003040304,121003040302	12000053,12000056	Regulatory and Guidance	1.72	#N/A	12003180	00000100,00000255,00000282,00000392,12001595,12003180	N	100000	0	0	Yes	N			Y	HDR Identification Process
122000020	Texas Forest Service	Mission of Service is to provide technical assistance, program delivery and science-based information to protect against wildland fires and other emergencies.	12000001	Atascosa,Medina,Bexar,Bandera	12110106,12110107,12110109,12110110		12000075,12000081,12000098,12000099,12000100,12000101,12000106,12000107,12000108	Education and Outreach	1332.93	#N/A	12000001		N	50000	0	0	Yes	N			Y	HDR Identification Process
122000021	Conservation Easement Program	Develop a Conservation Easement Program.	12000021	Medina,Bexar	12110107,12110109,12100302	121101070108,121101090101,121003020307,121003020501,121003020304,121003020305,121003020502,121003020503	12000075,12000081,12000099,12000100,12000107,12000108	Regulatory and Guidance	69.34	#N/A	00000005	00000005,00000255,00000290,00000299,12002954,12003377	N	100000	0	0	Yes	N			Y	HDR Identification Process
122000022	City of Floresville Floodplain Ordinance and Development Code Update	Create a floodplain ordinance and update development code	12000011	Wilson	12100303	121003030102,121003030103	12000028,12000033	Regulatory and Guidance	7.7	#N/A	12002925	00000100,00000255,00000282,12000592,12002925	Y	100000	0	0	Yes	N			Y	HDR Identification Process

Table 19. FMS, FMP, FME Funding Survey

Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
									Sponsor Funding		Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
						Non-construction costs	Construction-related costs	Total estimated cost	ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)		
12	Bandera County	FME	Highway 16 Bridge Upgrade	121000128	2030	$ 150,000.00	$0	$150,000	Grants	25%	75%	100%
12	Bandera County	FME	Bandera State Highway 173 Study	121000129	2030	$ 150,000.00	$0	$150,000	Grants	25%	75%	100%
12	Bandera County	FME	Bandera English Crossing Study	121000130	2030	$ 100,000.00	$0	$100,000	Grants	25%	75%	100%
12	Bandera County	FME	Bandera FM 2107 Study	121000131	2030	$ 300,000.00	$0	$300,000	Grants	25%	75%	100%
12	Bandera County	FME	Bandera Patterson Street Study	121000132	2030	$ 50,000.00	$0	$50,000	Grants	50%	50%	100%
12	Bandera County	FME	Bandera Lower Mason Creek and Bandera Creek at State Highway 16 Study	121000133	2030	$ 50,000.00	$0	$50,000	Grants	50%	50%	100%
12	Bandera County	FME	Bandera WWTP In Floodplain Study	121000134	2030	$ 150,000.00	$0	$150,000	Grants	25%	75%	100%
12	Bandera County	FME	Bandera 470 and Indian Creek Study	121000135	2030	$ 50,000.00	$0	$50,000	Grants	50%	50%	100%
12	Bandera County	FME	Bandera 470 and Medina River Study	121000136	2030	$ 50,000.00	$0	$50,000	Grants	50%	50%	100%
12	Bexar County	FME	Bexar County Line LWC Engineering Study	121000151	2030	$ 600,000.00	$0	$600,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Bandera Substation In Floodplain Study	121000142	2030	$ 150,000.00	$0	$150,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Rockwood Creek (SA-39)	121000162	2030	$ 100,000.00	$0	$100,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Gass Road at Culebra Creek Tributary D	121000161	2030	$ 100,000.00	$0	$100,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Culebra Creek RSWF	121000160	2030	$ 50,000.00	$0	$50,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Master Drainage Plan for Bexar County Unincorporated Areas	121000158	2030	$ 150,000.00	$0	$150,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Master Drainage Plan for Bexar County HALT Low Water	121000159	2030	$ 150,000.00	$0	$150,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Live Oak at Salitrillo Creek (CB-9)	121000163	2030	$ 100,000.00	$0	$100,000	Adjacent counties, grants	25%	75%	100%
12	Bexar County	FME	Bexar County LWC Engineering Study	121000164	2030	$ 300,000.00	$0	$300,000	Adjacent counties, grants	25%	75%	100%
12	City of Balcones Heights	FME	Woodlawn Lawn Lake Option 1 (Phases 1 - 3)	121000070	2030	$ 2,529,303.16	$8,743,469	$11,272,772				0%
12	City of Balcones Heights	FME	Woodlawn Lawn Lake Option 2	121000069	2030	$ 1,166,858.91	$5,121,688	$6,288,547				0%
12	City of Boerne	FMP	PROJECT 1A - ADLER ROAD AT CURREY CREEK AND UNNAMED TRIBUTARY A	123000002	In Design (2025)	$ 296,597.35	$1,128,545	$1,611,124	general revenue	25%	75%	100%
12	City of Boerne	FMP	PROJECT 2 - UNNAMED TRIBUTARY A REGIONAL DETENTION FACILITY	123000003	2030	$ 2,359,462.12	$4,653,664	$7,013,126	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 3 - CURREY CREEK REGIONAL DETENTION FACILITY	123000004	2030	$ 2,969,774.70	$5,938,791	$8,908,566	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 4 - SCHOOL STREET AT CIBOLO CREEK AND FREDERICK CREEK	123000005	2025	$ 1,688,854.66	$3,334,060	$5,022,915	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 5D - OLD SAN ANTONIO STREET AT MENGER CREEK	123000006	In Design (2025)	$ 812,921.20	$2,286,848	$3,506,563	general revenue	20%	80%	100%
12	City of Boerne	FMP	PROJECT 6 - JOHNS ROAD NEAR CIBOLO CROSSING SUBDIVISION	123000007	2025	$ 484,512.26	$937,067	$1,421,580	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 7 - SCHWEPPE AND HICKMAN STREET	123000008	2025	$ 681,292.06	$1,308,919	$1,990,212	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 8 - JOHNS AND LOHMANN STREET	123000009	2030	$ 609,952.45	$1,095,943	$1,705,896	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 9 - UNNAMED TRIBUTARY A-SUBDIVISION FLOOD PROTECTION & MOBILITY PROJECT	123000010	2035	$ 1,612,886.39	$3,220,484	$4,833,371	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 10 - E. BLANCO ROAD AT UNNAMED TRIBUTARY A	123000011	2025	$ 505,635.99	$1,010,716	$1,516,352	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 11 - RIVER ROAD AT UNNAMED TRIBUTARY A	123000012	2035	$ 477,595.80	$849,212	$1,326,808	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 12 - PLANT CHANNEL IMPROVEMENT	123000014	2030	$ 438,073.99	$793,962	$1,232,036	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 13 - HERFF AND ESSER ROAD IMPROVEMENTS AT CURREY AND CIBOLO CREEK	123000013	2035	$ 4,836,253.84	$9,663,859	$14,500,113	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 14 - EAST BOERNE REGIONAL LID	123000015	2030	$ 275,976.00	$387,428	$663,404	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 15 - NORTH CURREY CHANNEL IMPROVEMENTS	123000016	2030	$ 278,321.61	$385,082	$663,404	taxes, grants, loans	20%	80%	100%
12	City of Boerne	FMP	PROJECT 16 - SOUTH CURREY CREEK CHANNEL IMPROVEMENTS	123000017	2030	$ 507,030.08	$914,550	$1,421,580	taxes, grants, loans	20%	80%	100%
12	City of Bulverde	FMP	Lewis Creek Tributary 2 Alternative 1 & 2	123000020	2030	$ 314,950.58	$2,624,430	$2,939,381	taxes, grants, loans	20%	80%	100%
12	City of Bulverde	FMP	Lewis Creek Alternative 1 Phase 1 & 2	123000018	2030	$ 645,318.33	$5,376,460	$6,021,778	taxes, grants, loans	20%	80%	100%
12	City of Bulverde	FMP	Lewis Creek Main at Smithson Valley Road and Scenic Oak Drive	123000021	2030	$ -	$165,184	$165,184	taxes, grants, loans	20%	80%	100%
12	City of Bulverde	FME	FM 1863 at Cibolo Creek LWC	121000098	2030	$ 1,841,453.22	$3,335,823	$5,177,276	taxes, grants, loans	25%	75%	100%
12	City of Bulverde	FME	Cibolo Creek Tributary 19 Mapping Improvements	121000032	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	City of Bulverde	FME	Indian Creek Mapping Improvements	121000033	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	City of Castroville	FME	North Lorenzo, Athens Street, Naples Street Storm Drainage Improvements	121000121	2030	$ 300,000.00	$0	$300,000	bonds, **grants, drainage fees**	50%	50%	100%
12	City of Castroville	FME	Flat Creek Study	121000108	2030	$ 500,000.00	$0	$500,000	bonds, **grants, drainage fees**	50%	50%	100%
12	City of Castroville	FME	Kempf Creek Watershed Study	121000111	2030	$ 150,000.00	$0	$150,000	bonds, **grants, drainage fees**	50%	50%	100%
12	City of Castroville	FME	Garcia Creek Channel Stabilization	121000143	2030	$ 50,000.00	$0	$50,000	bonds, **grants, drainage fees**	50%	50%	100%
12	City of Castroville	FME	Country Village Channel Improvements	121000144	2030	$ 50,000.00	$0	$50,000	bonds, **grants, drainage fees**	50%	50%	100%
12	City of Fair Oaks Ranch	FMP	29010 Tivoli Way	123000001	2030	$ 103,952.03	$415,808	$519,760	taxes, grants, loans	20%	80%	100%
12	City of Fair Oaks Ranch	FME	7420 Rolling Acres Trail	121000005	2030	$ 733,169.93	$551,830	$1,185,000	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	7820 Rolling Acres Trail	121000002	2030	$ 290,210.57	$514,083	$804,293	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	7840 Silver Spur Trail	121000048	2030	$ 295,351.39	$514,083	$809,434	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	7900 Fair Oaks Parkway	121000003	2030	$ 50,000.00	$0	$60,282	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	8402 Battle Intense	121000006	2030	$ 1,105,087.04	$2,512,733	$3,617,820	taxes, grants, loans	25%	75%	100%

Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
									Sponsor Funding			
						Non-construction costs	Construction-related costs	Total estimated cost	ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)	Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
12	City of Fair Oaks Ranch	FME	8410 Noble Lark Dr	121000049	2030	$ 165,561.98	$163,787	$329,349	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	Ammann Road Low Water Crossing	121000004	2030	$ 213,657.50	$1,042,344	$1,256,001	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	Battle Intense LWC Flow-activated Sensors	121000007	2030	$ 179,792.25	$0	$179,792	taxes, grants, loans	25%	75%	100%
12	City of Fair Oaks Ranch	FME	Rolling Acres Trail LWC Flow-activated Sensors	121000008	2030	$ 359,584.50	$0	$359,585	taxes, grants, loans	25%	75%	100%
12	City of Falls City	FME	Karnes County Damage Centers Karnes A	121000013	2030	$ 50,000.00	$0	$4,243,043				0%
12	City of Falls City	FME	Karnes County Damage Centers Karnes B	121000014	2030	$ 50,000.00	$0	$4,243,043				0%
12	City of Falls City	FME	Inventory of residences in floodplain	121000034	2030	$ 50,000.00	$0	$50,000				0%
12	City of Falls City	FMS	San Antonio River drainage ownership study	122000002	2030	$ 30,000.00	$0	$30,000				0%
12	City of Falls City	FMS	Study the San Antonio River and its tributes	122000001	2030	$ 250,000.00	$0	$250,000				0%
12	City of Falls City	FME	Update flood information and policies	121000039	2030	$ 100,000.00	$0	$100,000				0%
12	City of Floresville	FMS	Citizen flood education outreach	122000016	2030	$ 10,000.00	$0	$10,000	grants and loans	0%	100%	100%
12	City of Floresville	FME	Property acquisition and demolition and/or relocations	121000153	2030	$ 1,500,000.00	$0	$1,500,000	grants and loans	0%	100%	100%
12	City of Floresville	FME	Damage Center 1: Project 1A, 1B, 1C	121000155	2030	$ 150,000.00	$0	$150,000	grants and loans	0%	100%	100%
12	City of Floresville	FME	Damage Center 2: Project 1 Channelization	121000154	2030	$ 100,000.00	$0	$100,000	grants and loans	0%	100%	100%
12	City of Floresville	FME	City of Floresville Flood Study	121000127	2030	$ 100,000.00	$0	$100,000	grants and loans	0%	100%	100%
12	City of Floresville	FMS	City of Floresville Floodplain Ordinance and Development Code Update	122000022	2030	$ 100,000.00	$0	$100,000	grants and loans	0%	100%	100%
12	City of Karnes City	FME	Inventory of residences in floodplain	121000040	2030	$ 50,000.00	$0	$50,000				0%
12	City of Karnes City	FMS	San Antonio River drainage ownership mapping	122000003	2030	$ 30,000.00	$0	$30,000				0%
12	City of Karnes City	FME	Update flood information and policies	121000035	2030	$ 100,000.00	$0	$100,000				0%
12	City of Kenedy	FME	Karnes Hwy at Escondido Creek	121000009	2030	$ 100,000.00	$0	$417,398				0%
12	City of Kenedy	FME	Inventory of residences in floodplain	121000036	2030	$ 50,000.00	$0	$50,000				0%
12	City of Kenedy	FMS	San Antonio River drainage ownership mapping	122000004	2030	$ 30,000.00	$0	$30,000				0%
12	City of Kenedy	FMS	Update flood information and policies	122000012	2030	$ 100,000.00	$0	$100,000				0%
12	City of La Coste	FMS	Public Education & Outreach	122000014	2030	$ 35,000.00	$0	$35,000	grants	0%	100%	100%
12	City of La Coste	FME	New Drainage Analysis to Update/Revise Flood Maps	121000117	2030	$ 100,000.00	$0	$100,000	grants	0%	100%	100%
12	City of La Coste	FME	Wet-Proof Wastewater System	121000148	2030	$ 50,000.00	$0	$50,000	grants	0%	100%	100%
12	City of La Vernia	FME	Additional flood proof at wastewater treatment plant	121000150	2030	$ 150,000.00	$0	$150,000	Fees, loans, grants	25%	75%	100%
12	City of La Vernia	FMS	Public education and outreach	122000015	2030	$ 5,000.00	$0	$5,000	Fees, loans, grants	50%	50%	100%
12	City of La Vernia	FME	Issue #5 (HWY 87 Crossing & CR 342 Crossing)	121000122	2030	$ 150,000.00	$0	$150,000	Fees, loans, grants	25%	75%	100%
12	City of La Vernia	FME	Repetitive loss properties	121000156	2030	$ 150,000.00	$0	$150,000	Fees, loans, grants	25%	75%	100%
12	City of La Vernia	FMS	Updating floodplain ordinances and development code	122000017	2030	$ 50,000.00	$0	$50,000	Fees, loans, grants	50%	50%	100%
12	City of La Vernia	FME	Issue #2 and #3 (City Park/La Vernia ISD)	121000123	2030	$ 150,000.00	$0	$150,000	Fees, loans, grants	25%	75%	100%
12	City of Leon Valley	FME	Huebner Creek Flood Control Project Segment 1	121000018	2030	$ 22,471,309.73	$0	$22,471,310				0%
12	City of Poth	FME	Damage Center 1 Project1 – Detention in East Branch Poth Creek	121000010	2030	$ 100,000.00	$0	$1,689,053	taxes, grants, loans	25%	75%	100%
12	City of Poth	FME	Damage Center 1 Project2A – Improved crossing at U.S. Highway 181	121000051	2030	$ 50,000.00	$0	$1,928,035	taxes, grants, loans	25%	75%	100%
12	City of Poth	FME	Damage Center 2- Project 2 Road connection from Mosspoint to Sunshine	121000053	2030	$ 50,000.00	$0	$198,959	taxes, grants, loans	25%	75%	100%
12	City of Poth	FME	Damage Center 2-Project 1 Culvert Improvements at Menchaca	121000052	2030	$ 50,000.00	$0	$276,877	taxes, grants, loans	25%	75%	100%
12	City of Poth	FME	Build Detention Pond	121000044	2030	$ 203,952.03	$0	$203,952	taxes, grants, loans	25%	75%	100%
12	City of Poth	FMS	Digital signage for communication	122000008	2030	$ 5,000.00	$0	$5,000	taxes, grants, loans	25%	75%	100%
12	City of Poth	FME	Drainage Study Marcelinas Creek and its major tributary	121000043	2030	$ 250,726.81	$0	$250,727	taxes, grants, loans	20%	80%	100%
12	City of Poth	FMS	Early warning system education	122000009	2030	$ 5,000.00	$0	$5,000	taxes, grants, loans	20%	80%	100%
12	City of Poth	FMS	Education Signage	122000007	2030	$ 5,000.00	$0	$5,000	taxes, grants, loans	20%	80%	100%
12	City of Poth	FME	Install early warning systems	121000042	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	20%	80%	100%
12	City of Poth	FME	Install pipe gates to close off streets	121000099	2030	$ 250,000.00	$0	$250,000	taxes, grants, loans	20%	80%	100%
12	City of Poth	FME	Mitigate local flooding in identified problem areas	121000037	2030	$ 5,000.00	$0	$5,000	taxes, grants, loans	20%	80%	100%
12	City of Poth	FMS	Strengthen floodplain management ordinances	122000006	2030	$ 25,000.00	$0	$25,000	taxes, grants, loans	20%	80%	100%
12	City of Runge	FME	Inventory of residences in floodplain	121000058	2030	$ 50,000.00	$0	$50,000				0%
12	City of Runge	FMS	San Antonio River drainage ownership mapping	122000005	2030	$ 30,000.00	$0	$30,000				0%
12	City of Runge	FME	Study the San Antonio River, Ojo de Agua Creek and its tributaries	121000001	2030	$ 250,000.00	$0	$250,000				0%
12	City of Runge	FME	Update flood information and policies	121000041	2030	$ 100,000.00	$0	$100,000				0%
12	City of San Antonio	FMP	Seeling Drainage Improvements	123000019	2030	$ 9,862,734.96	$18,504,720	$28,367,455	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FMP	Barbara Drive Drainage Improvements	123000026	2030	$ 3,706,395.59	$24,120,553	$27,826,948	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FMP	Thames Drainage Channel Improvements	123000027	2030	$ 8,818,036.90	$20,172,711	$28,990,748	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FMP	Rock Creek - Alt 1	123000022	2030	$ 5,938,555.98	$11,702,161	$17,640,717	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FMP	Symphony Lane Voluntary Property Acquisition	123000024	2030	$ 33,019,314.45	$0	$33,019,314	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FMP	Judson and Lookout LWC Improvement	123000023	2030	$ 2,895,982.82	$3,405,221	$6,301,204	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FMP	Holbrook Road Improvements	123000025	2030	$ 11,119,519.69	$3,488,601	$14,608,120	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FMP	Shady Lane Dr. Voluntary Property Acquisition	123000028	2030	$ 1,306,981.79	$0	$1,306,982	taxes, grants, loans	25%	75%	100%

Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
									Sponsor Funding			
						Non-construction costs	Construction-related costs	Total estimated cost	ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)	Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
12	City of San Antonio	FME	Leon Creek NWWC with Ingram Road Bridge Improvements (LC-8) and Huebner Creek Flood Protection Barrier (LC-17)	121000063	2030	$ 22,480,288.41	$13,200,844	$35,681,133	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 3-Lorence Creek	121000065	2030	$ 2,473,246.63	$6,619,756	$9,093,003	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 5-Salado Creek Trib F	121000064	2030	$ 7,617,754.05	$19,227,279	$26,845,034	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	DC13/14: Walzem Creek	121000066	2030	$ 2,034,307.84	$5,000,898	$7,035,206	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	DC19: Salado Creek Tributary B	121000019	2030	$ 5,336,253.40	$14,454,210	$19,790,464	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC# 101 Rittiman Creek @ Gibbs Sprawl	121000100	2030	$ 3,994,964.80	$6,978,475	$10,973,440	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 32-Six Mile Creek	121000093	2030	$ 9,392,588.96	$10,735,318	$20,127,907	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 38-Olmos Creek Lower Reach Near Montview	121000084	2030	$ 100,000.00	$0	$623,497	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 39-Olmos Creek and Olmos Creek East Channel	121000083	2030	$ 100,000.00	$0	$601,643	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 4- Apache Creek	121000030	2030	$ 8,787,565.29	$6,289,908	$15,077,473	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 43-Olmos Creek Middle Reach near DeZavala	121000029	2030	$ 100,000.00	$0	$8,878,636	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 44-San Antonio River Near Center Road	121000081	2030	$ 50,000.00	$0	$7,618,557	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 6- Martinez Creek	121000086	2030	$ 150,000.00	$0	$40,552,312	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 7- Zarzamora Creek	121000087	2030	$ 100,000.00	$0	$14,775,612	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	D/O Center A (Old Pearsall road at Medio Creek)	121000050	2030	$ 1,959,013.75	$18,571,346	$20,530,359	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	D/O Center M(HWY 1604 East of Somerset Community)	121000011	2030	$ 360,290.02	$4,196,285	$4,556,575	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Culebra Creek Tributary A at Tezel Road Enhanced Conveyance	121000060	2030	$ 3,729,219.95	$5,440,594	$9,169,814	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 2- Martinez Creek	121000068	2030	$ 12,459,064.42	$12,653,145	$25,112,209	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 20-Matinez Creek	121000091	2030	$ 22,251,473.14	$44,314,311	$66,565,784	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 23-New Braunfels, Austin Hwy, Broadway Drain	121000092	2030	$ 23,560,933.03	$32,054,647	$55,615,580	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 3- Zarzamora Creek	121000085	2030	$ 32,730,102.67	$11,684,208	$44,414,311	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 34-State Hospital Creek	121000094	2030	$ 2,005,668.31	$4,036,230	$6,041,898	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 40-San Antonio River DS Reach near Roosevelt	121000082	2030	$ 100,000.00	$0	$12,536,093	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 9- Alazan Creek	121000088	2030	$ 19,406,183.49	$46,217,795	$65,623,978	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	French Creek at Guilbeau Road NWWC	121000017	2030	$ 3,823,238.44	$6,004,761	$9,827,999	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	French Creek RSWF	121000059	2030	$ 5,975,658.72	$13,141,428	$19,117,087	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Helotes Creek at Bandera Road Enhanced Conveyance	121000061	2030	$ 907,127.20	$1,704,354	$2,611,481	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Helotes Creek RSWF	121000062	2030	$ 5,173,548.25	$3,805,097	$8,978,646	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Upper Martinez Creek Improvements	121000102	2030	$ 1,673,872.15	$2,426,984	$4,100,856	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 14- Airport Trib	121000089	2030	$ 11,145,381.94	$17,611,050	$28,756,432	taxes, grants, loans	10%	90%	100%
12	City of San Antonio	FME	Damage Center 19- San Pedro Creek	121000090	2030	$ 8,615,588.04	$3,237,314	$11,852,902	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	Damage Center 31-Rockwood Creek	121000097	2030	$ 150,000.00	$0	$150,000	general revenue	100%	0%	100%
12	City of San Antonio	FME	DC20: Rosillo Creek Unnamed Tributary 1	121000020	2030	$ 50,000.00	$0	$50,000	general revenue	100%	0%	100%
12	City of San Antonio	FME	DC26: Salado Creek, Downstream of IH 10	121000067	2030	$ 100,000.00	$0	$100,000	general revenue	100%	0%	100%
12	City of San Antonio	FME	Mahncke Park Outfall	121000080	2030	$ 1,526,935.61	$9,265,737	$10,792,673	taxes, grants, loans			0%
12	City of San Antonio	FME	Normoyle Ditch - Alt 1	121000071	2030	$ 150,000.00	$0	$150,000	general revenue	100%	0%	100%
12	City of San Antonio	FME	Apache Creek & Elmendorf Lake Dam (Needs PER)	121000031	2030	$ 350,000.00	$0	$350,000	general revenue	100%	0%	100%
12	City of San Antonio	FME	LWC #13 West Ave. @ Interpark	121000076	2030	$ 1,374,679.98	$4,385,273	$5,759,953	taxes, grants, loans	100%	0%	100%
12	City of San Antonio	FME	LWC #15 Copperhill Between Parkstone & Happy Hollow	121000075	2030	$ 238,773.32	$233,215	$471,988	general revenue	100%	0%	100%
12	City of San Antonio	FME	LWC #159.1 Southton Rd	121000026	2030	$ 963,772.04	$5,138,907	$6,102,679	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC #34 Sleepy Hollow @ Sunburst	121000028	2030	$ 938,002.72	$4,483,086	$5,421,088	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC #71 Danville and Overbrook	121000078	2030	$ 100,000.00	$0	$2,890,500	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC 100, Blakeley Area Drainage Improvement	121000023	2030	$ 269,346.07	$403,432	$672,778	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC 112.1 Pvt Rd. 300' North of Marbach Rd.	121000022	2030	$ 100,000.00	$0	$100,000	general revenue	100%	0%	100%
12	City of San Antonio	FME	LWC No 113-116 and Associated Channel Improvements	121000073	2030	$ 917,273.93	$2,748,766	$3,666,040	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC# 91 Weidner 500 ft N of Schertz	121000074	2030	$ 699,298.91	$2,419,306	$3,118,605	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC#156 New Sulphur Springs Rd – btwn S. Foster & Gardner	121000025	2030	$ 2,290,161.37	$20,555,629	$22,845,791	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC#158.1 –Nancy Carole Way, E. of Bobby Allen	121000027	2030	$ 100,000.00	$0	$1,858,645	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC#41 Vance Jackson 200ft south of Scenic	121000021	2030	$ 283,546.00	$729,754	$1,013,300	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC#42 Dreamland south of RR Xing	121000072	2030	$ 770,000.00	$10,700,000	$11,470,000	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	LWC#72 Spencer Lane, east of Balcones Rd.	121000079	2030	$ 487,969.59	$1,401,362	$1,889,332	taxes, grants, loans	25%	75%	100%

Funding Survey

RFPG #	Sponsor Entity Name	FMS or FMP or FME	FMS FMP FME - Name	Regional plan's unique FMS/FMP/FME identification number	Target year of full implementation	Estimated costs in plan			Estimated percent (share) of total FMS, FMP, or FME estimated cost			
									Sponsor Funding			
						Non-construction costs	Construction-related costs	Total estimated cost	ANTICIPATED SOURCE of Sponsor funding (e.g., taxes; general revenue; dedicated revenue incl. fees)	FUNDING TO BE FINANCED BY SPONSOR (incl. those local, county, or regional mechanisms available but not yet fully utilized)	Other Funding Needed (including state, federal and/ or other funding)	TOTAL (auto) sum must = 100%
12	City of San Antonio	FME	LWC157 New Sulphur Springs Rd – East of Beck Rd	121000024	2030	$ 340,796.64	$601,951	$942,748	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FME	New Sulphur Springs – East of Lodi Rd	121000077	2030	$ 430,557.79	$1,887,226	$2,317,784	taxes, grants, loans	25%	75%	100%
12	City of San Antonio	FMP	Concepcion Creek Improvements Project	123000029	2030			$240,222,000	taxes, grants, loans	10%	90%	100%
12	City of Selma	FME	Master Drainage plan	121000015	2030	$ 577,600.00	$0	$577,600				0%
12	City of Stockdale	FME	Damage Center 1 (Stockdale Creek)	121000012	2030	$ 50,000.00	$0	$3,569,335				0%
12	City of Stockdale	FME	Damage Center 2 (South Tributary to Stockdale Creek)	121000054	2030	$ 50,000.00	$0	$660,768				0%
12	City of Stockdale	FME	Detention/Retention pond on school property	121000047	2030	$ 1,604,360.85	$0	$1,604,361				0%
12	City of Stockdale	FME	Develop and implement a Stormwater Management Plan for Stockdale Creek	121000038	2030	$ 1,203,488.68	$0	$1,203,489				0%
12	City of Stockdale	FME	Drainage improvements to wastewater treatment plants	121000045	2030	$ 852,325.78	$0	$852,326				0%
12	City of Stockdale	FME	Maintain Drainage System	121000101	2030	$ 67,600.00	$0	$2,073,414				0%
12	City of Stockdale	FME	New Bridges on 6th and 8th Streets	121000046	2030	$ 150,000.00	$0	$651,454				0%
12	City of Helotes	FME	Antonio Drive Drainage Improvements	121000016	2030	$ 150,000.00	$2,549,339	$3,466,811				0%
12	City of Helotes	FME	Detailed Study of Culebra Creek Trib C	121000057	2030	$ 65,000.00	$0	$65,000				0%
12	City of Helotes	FME	Detailed Study of Unnamed Trib 3 to Helotes Creek	121000056	2030	$ 40,000.00	$0	$40,000				0%
12	City of Helotes	FME	Parrigin Road Drainage Improvements	121000055	2030	$ 295,579.52	$975,648	$1,271,228				0%
12	Goliad County	FME	Goliad Damage Center A	121000109	2030	$ 50,000.00	$0	$50,000				0%
12	Goliad County	FME	Goliad Damage Center B	121000110	2030	$ 100,000.00	$0	$100,000				0%
12	Greater Edwards Aquifer Alliance	FMS	Development of a Streamscaping Program for Flood Risk Management in Texas	122000010	2030	$ 129,000.00	$0	$129,000	taxes, grants, loans	25%	75%	100%
12	Karnes County	FME	Low Water Crossing Upgrades	121000118	2030	$ 305,000.00	$0	$305,000				0%
12	Karnes County	FME	Early warning flood systems	121000119	2030	$ 150,000.00	$0	$150,000				0%
12	Karnes County	FME	Update flood information and policies	121000165	2030	$ 100,000.00	$0	$100,000				0%
12	Karnes County	FMS	Shelter requirement for RV parks	122000013	2030	$ 10,000.00	$0	$10,000				0%
12	Karnes County	FME	Improve bridge at CR 337	121000107	2030	$ 500,000.00	$0	$500,000				0%
12	Karnes County	FME	Karnes Damage Center H	121000149	2030	$ 150,000.00	$0	$150,000				0%
12	Karnes County	FME	Karnes Dam Rehabilitation	121000124	2030	$ 300,000.00	$0	$300,000				0%
12	Kendall County	FMS	Automatic low water crossings and gauges	122000011	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	Kendall County	FME	LWC at Ammann Rd and Post Oak Creek	121000095	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	Kendall County	FME	LWC at Old Fredericksburg Rd and Balcones Creek	121000096	2030	$ 100,000.00	$0	$100,000	taxes, grants, loans	25%	75%	100%
12	Medina County	FMS	Conservation Easement Program	122000021	2030	$ 50,000.00	$0	$50,000				0%
12	Medina County	FMS	Texas Forest Service	122000020	2030	$ 50,000.00	$0	$50,000				0%
12	Medina County	FME	Lucas Creek at Cinco De Mayo Dr Bridge and Channel (DC-MRD)	121000145	2030	$ 150,000.00	$0	$150,000				0%
12	Medina County	FME	Cagnon Rd at Polecat Creek (DC-MRN)	121000146	2030	$ 150,000.00	$0	$150,000				0%
12	Medina County	FME	Trumbo Rd at Palo Blanco Creek (DC-MRP)	121000147	2030	$ 100,000.00	$0	$100,000				0%
12	San Antonio River Authority	FME	Holistic Watershed based master planning consistent with Nature Based Solutions	121000116	2030	$ 2,247,403.14	$0	$2,247,403	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Lower Basin Predictive Flood Model	121000112	2030	$ 1,000,000.00	$0	$1,000,000	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Nichols Creek Stabilization	121000157	2030	$ 1,000,000.00	$0	$1,000,000	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Evaluation and prioritization of new gauge locations	121000138	2030	$ 50,000.00	$0	$50,000	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Natural capital inventory	121000137	2030	$ 300,000.00	$0	$300,000	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Future conditions data refinement study	121000139	2030	$ 500,000.00	$0	$500,000	inner local agreement loans and grants, bond	25%	75%	100%
12	San Antonio River Authority	FME	Port San Antonio Floodproofing	121000140	2030	$ 250,000.00	$0	$250,000	inner local agreement, grant	0%	100%	100%
12	San Antonio River Authority	FME	River Authority WWTP Resilience	121000141	2030	$ 600,000.00	$0	$600,000	utility revenue, grant	25%	75%	100%
12	San Antonio River Authority	FME	Holistic Watershed based master planning consistent with Nature Based Solutions	121000116	2030	$ 2,247,403.14	$0	$2,247,403	taxes, grants, loans	25%	75%	100%
12	Tivoli Community	FME	Culvert improvement on Hatch St in Tivoli	121000113	2030	$ 150,000.00	$0	$150,000				0%
12	Tivoli Community	FME	Culvert Improvement on Highway 239 in Tivoli	121000114	2030	$ 150,000.00	$0	$150,000				0%
12	Tivoli Community	FME	Miller Creek on the Smoky Creek Ranch Drainage Improvements	121000115	2030	$ 150,000.00	$0	$150,000				0%
12	Wilson County	FME	Recommend for Wilson Roadways - Project 3 - CR 122 & Mariana Creek	121000120	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	25%	75%	100%
12	Wilson County	FME	Recommend for Wilson Roadways - Project 4 - Mariana Rd & Mariana Creek	121000103	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	25%	75%	100%
12	Wilson County	FME	Recommend for Wilson Roadways - Project 5 - CR 108 & Mariana Creek	121000104	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	50%	50%	100%
12	Wilson County	FME	Recommend for Wilson Roadways - Project 7	121000152	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	25%	75%	100%
12	Wilson County	FME	Erosion at CR 401 and Cibolo Creek	121000105	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	50%	50%	100%
12	Wilson County	FME	Erosion on CR 202 East and Marcelina Creek	121000106	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	50%	50%	100%
12	Wilson County	FME	Wilson 10 - Acquisitions of Flooded Structures	121000126	2030	$ 100,000.00	$0	$100,000	taxes, fees, loans, grants	25%	75%	100%
12	Wilson County	FME	Wilson County LWC Study	121000125	2030	$ 300,000.00	$0	$300,000	taxes, fees, loans, grants	25%	75%	100%

Appendix B. Maps

Map 1: Existing Flood Infrastructure (2.1 Task 1 – Planning Area Description)

Map 2: Proposed or Ongoing Flood Mitigation Projects (2.1 Task 1 – Planning Area Description)

Map 3: Non-Functional or Deficient Flood Mitigation Features or Infrastructure (2.1 Task 1 – Planning Area Description)

Map 4: Existing Condition Flood Hazard (2.2.A.1 Existing Condition Flood Hazard Analysis)

Map 5: Existing Condition Flood Hazard - Gaps in Inundation Boundary Mapping including Identification of Known Flood-Prone Areas (2.2.A.1 Existing Condition Flood Hazard Analysis)

Map 6: Existing Condition Flood Exposure (2.2.A.2 Existing Condition Flood Exposure Analysis)

Map 7: Existing Condition Flood Vulnerability including Critical Infrastructure (2.2A.3 Existing Condition Vulnerability Analysis)

Map 8: Future Condition Flood Hazard (2.2.B.1 Future Condition Flood Hazard Analysis)

Map 9: Future Condition Flood Hazard - Gaps in Inundation Boundary Mapping including Identification of Known Flood-Prone Areas (2.2.B.1 Future Condition Flood Hazard Analysis)

Map 10: Extent of Increase of Flood Hazard Compared to Existing Condition (2.2.B.1 Future Condition Flood Hazard Analysis)

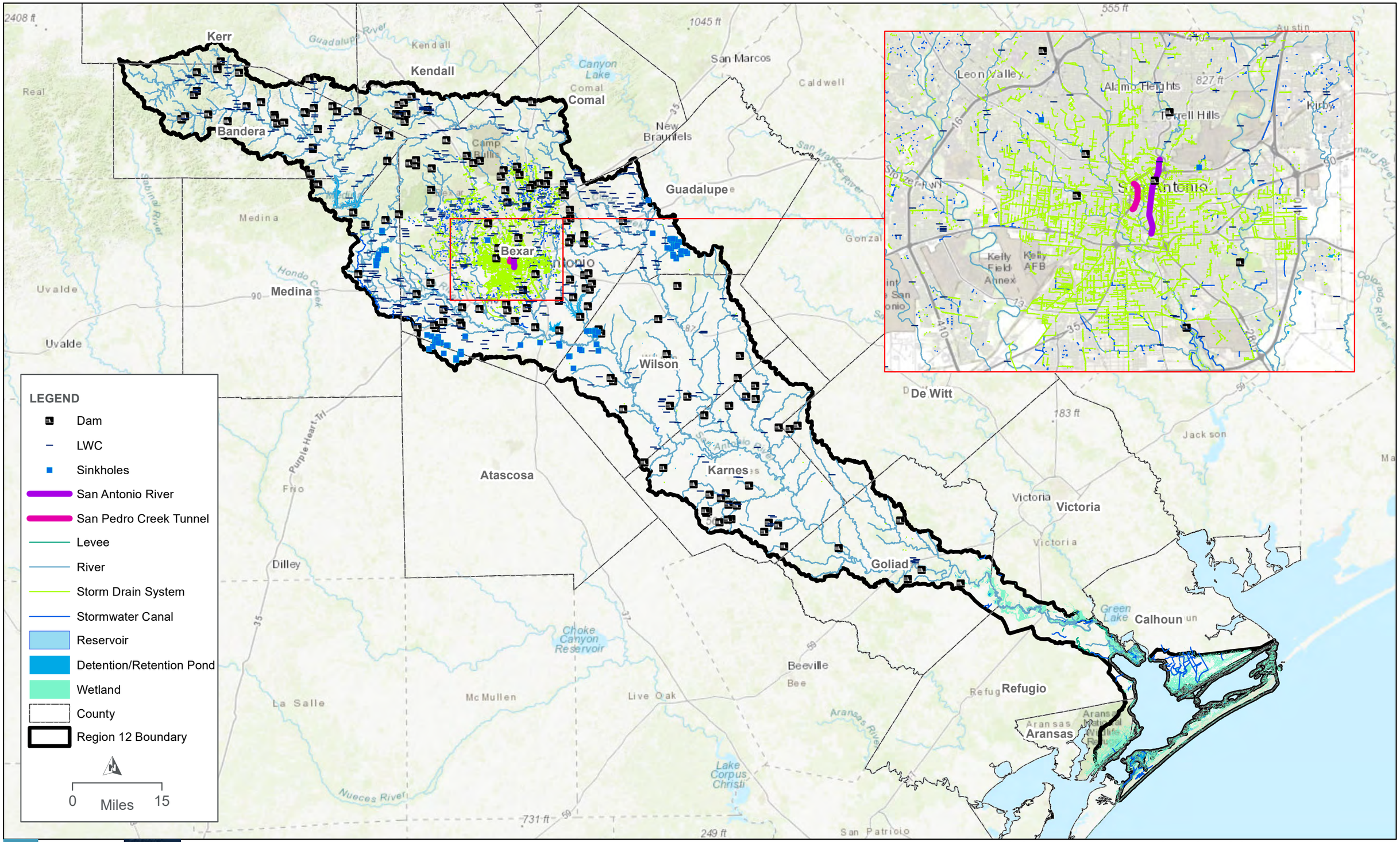
Map 11: Future Condition Flood Exposure (2.2.B.2 Future Condition Flood Exposure Analysis)

Map 12: Future Condition Flood Vulnerability including Critical Infrastructure (2.2.B.3 Future Condition Vulnerability Analysis)

Map 13: Floodplain Management (2.3.A Task 3A – Evaluation and Recommendations on Floodplain Management Practices)

Map 14: Greatest Gaps in Flood Risk Information (2.4.A Task 4A – Flood Mitigation Needs Analysis)

Map 15: Greatest Flood Risk (2.4.A Task 4A – Flood Mitigation Needs Analysis)



REGION 12 - MAP 1 - EXISTING FLOOD INFRASTRUCTURE

DRAFT

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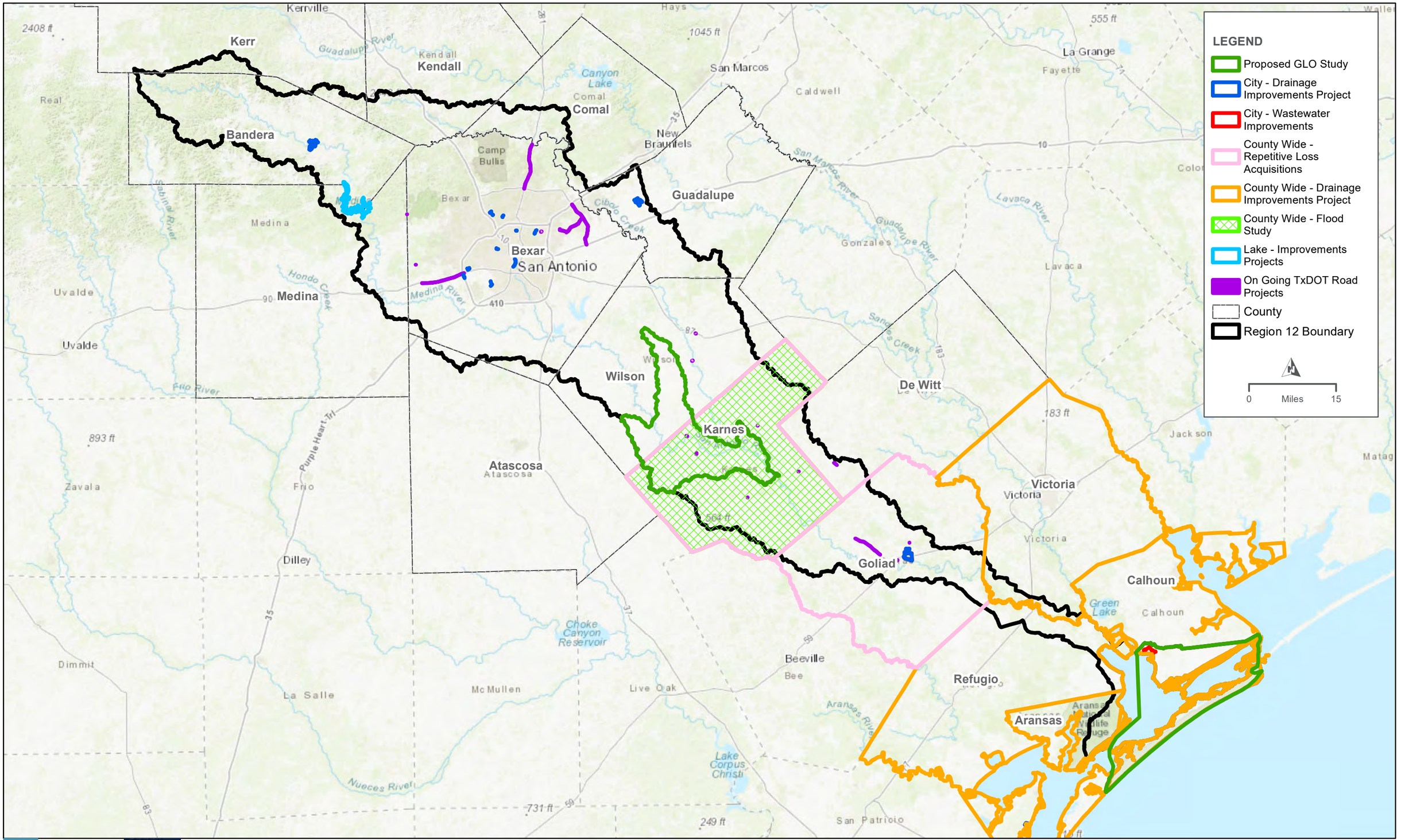
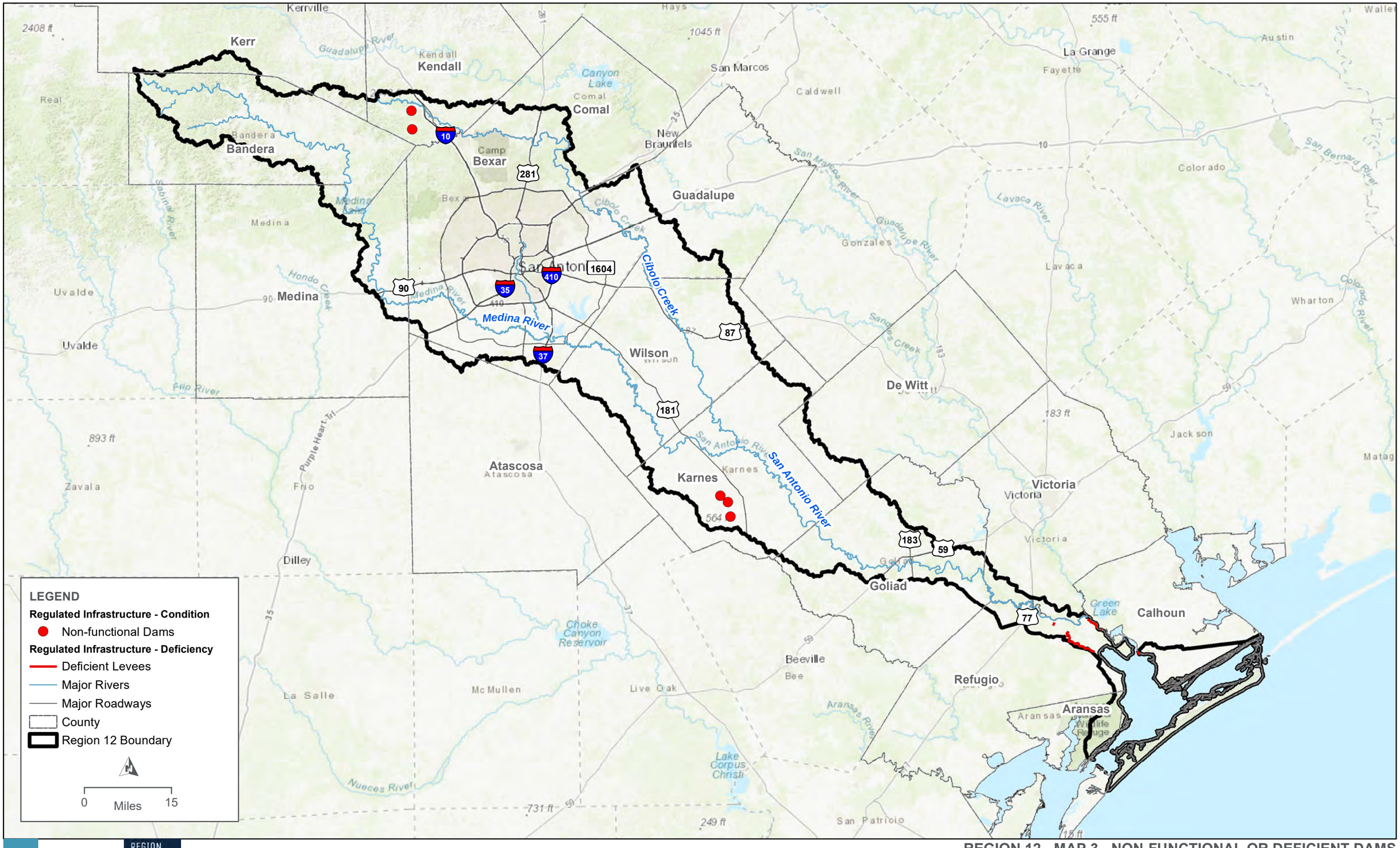


REGION 12 - MAP 2 - PROPOSED OR ONGOING FLOOD MITIGATION PROJECTS

DRAFT

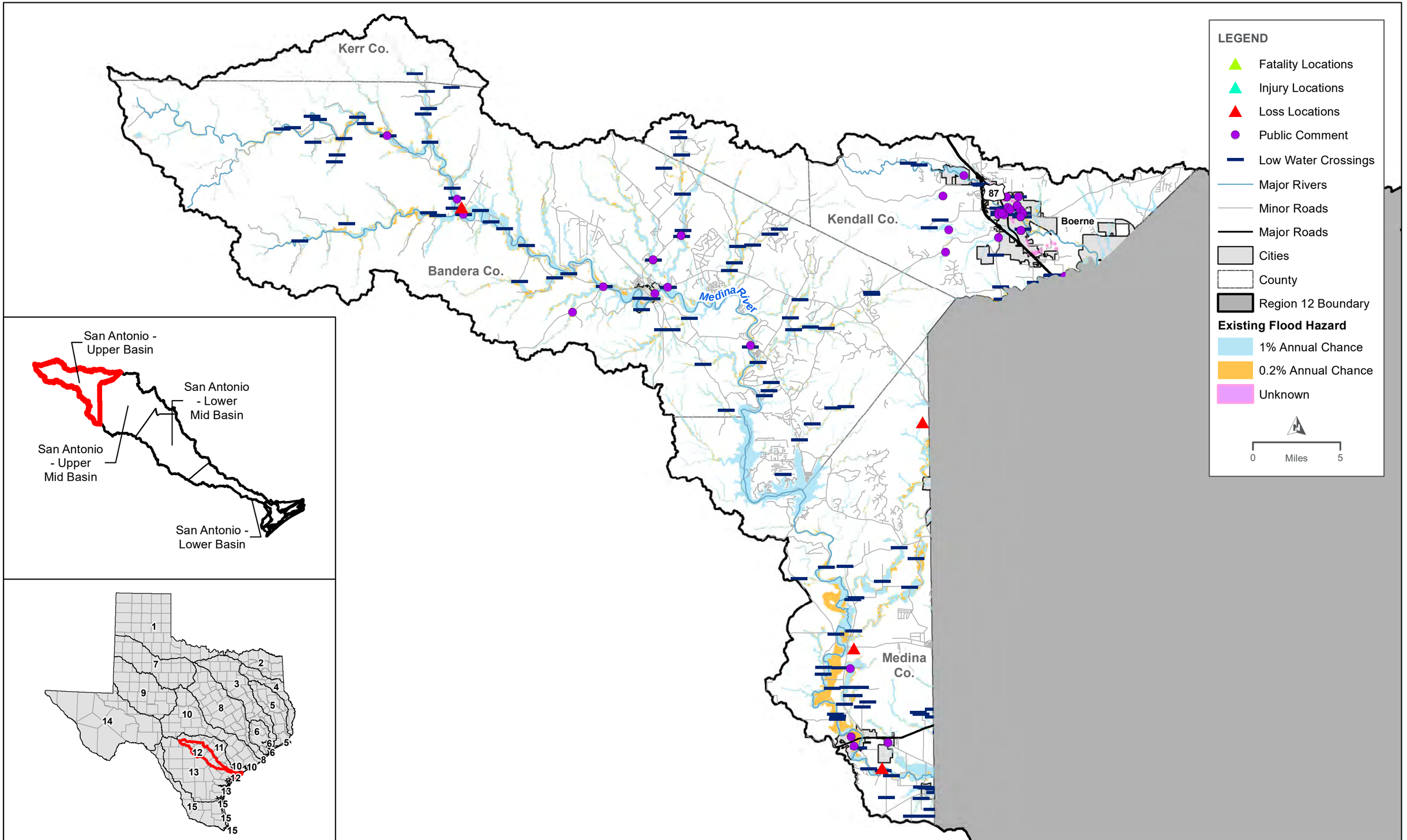
PATH: Z:\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP2_PROPOSED_ONGOING_FLOOD_MITIGATION_PROJECTS _11X17.MXD - USER: CAMARAL - DATE: 7/27/2022



REGION 12 - MAP 3 - NON-FUNCTIONAL OR DEFICIENT DAMS

DRAFT

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP3_NONFUNCTIONALORDEFICIENT_INFRA_11X17.MXD

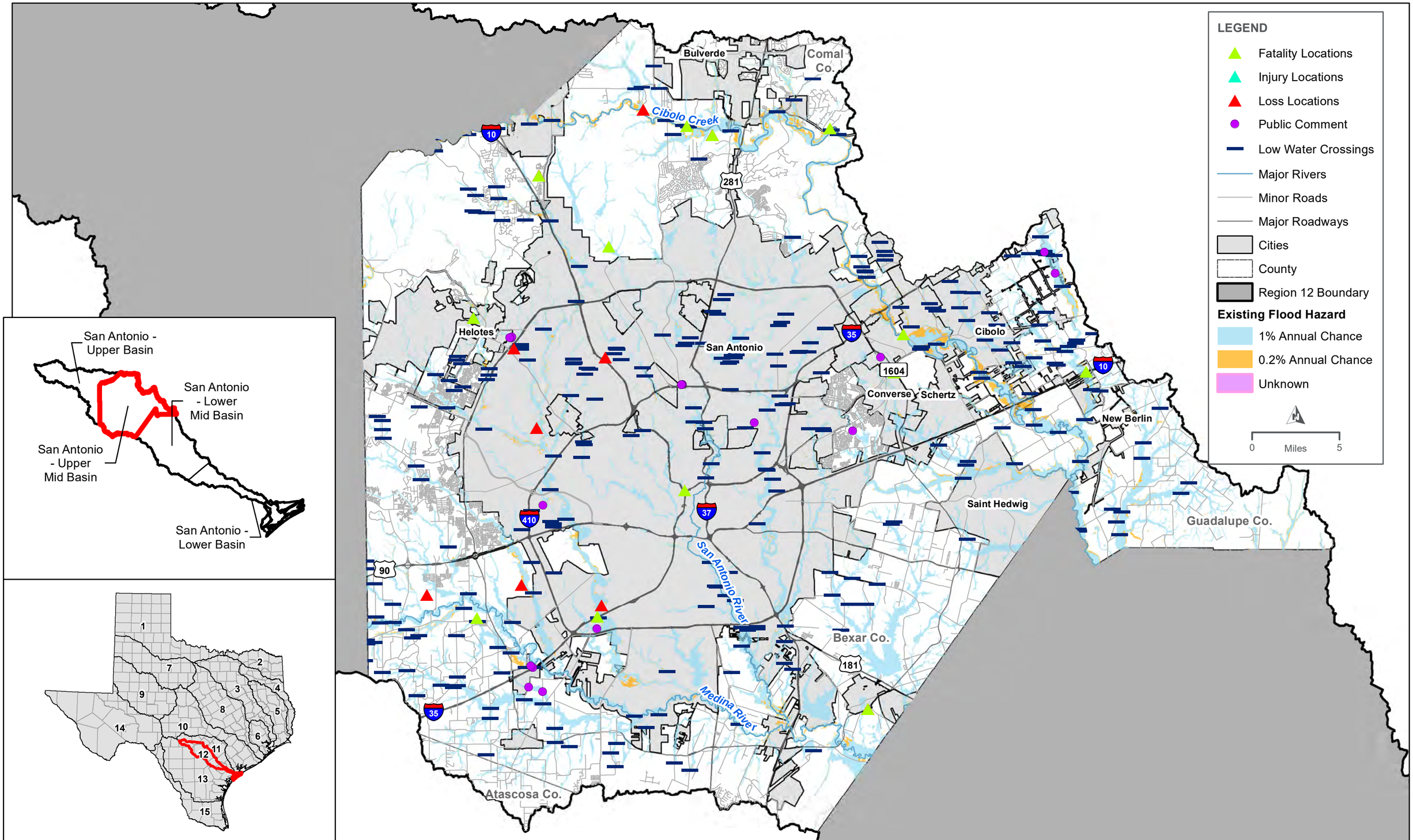


REGION 12 - MAP 4A - SAN ANTONIO UPPER BASIN - EXISTING FLOOD HAZARD

DRAFT

FIGURE 1

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP4\MAP4_EXISTINGFLDHAZARD_GROUPA_11X17_FIG1.MXD - USER: CHESTER - DATE: 7/28/2022

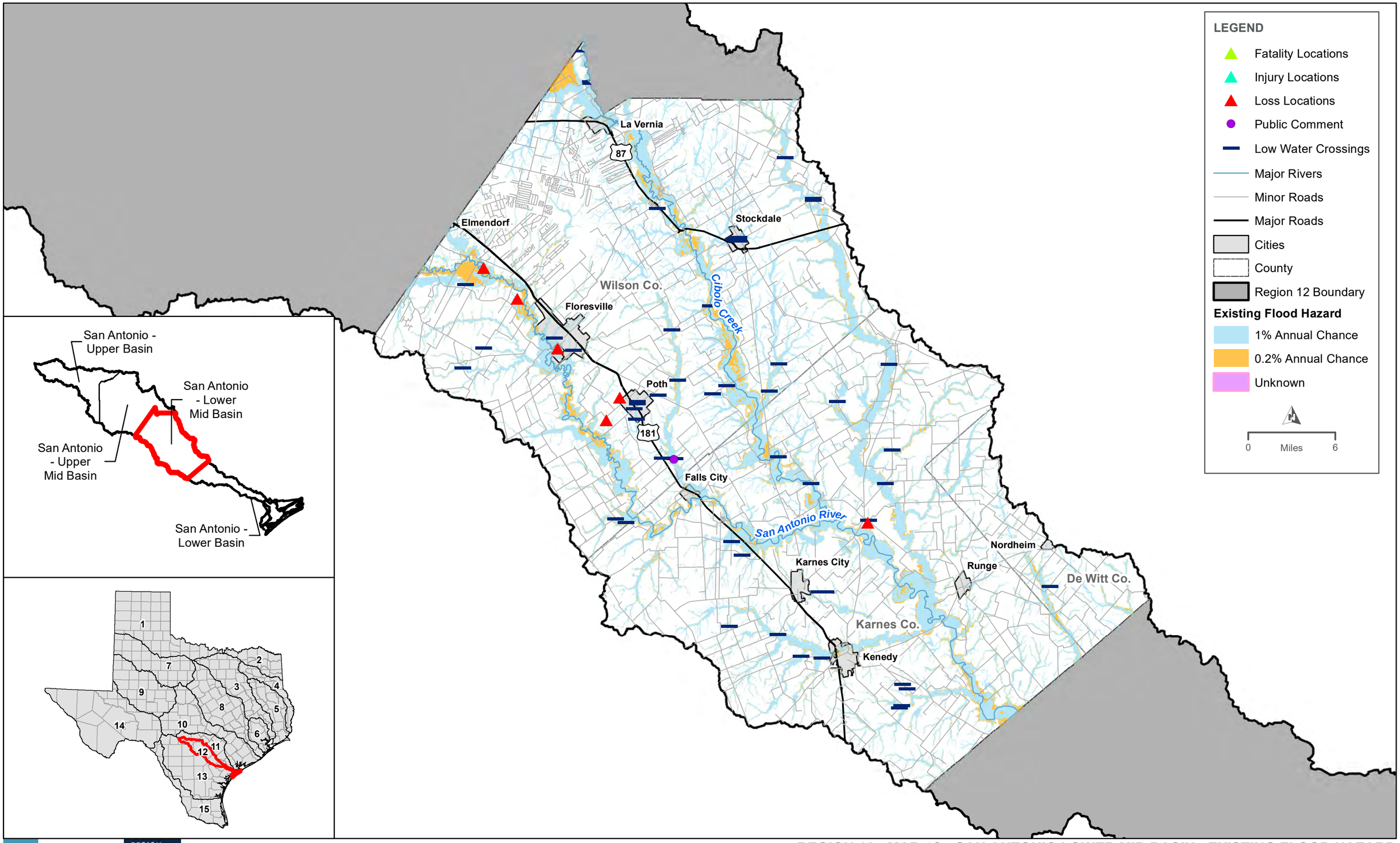


REGION 12 - MAP 4B - SAN ANTONIO UPPER MID BASIN - EXISTING FLOOD HAZARD

DRAFT

FIGURE 2

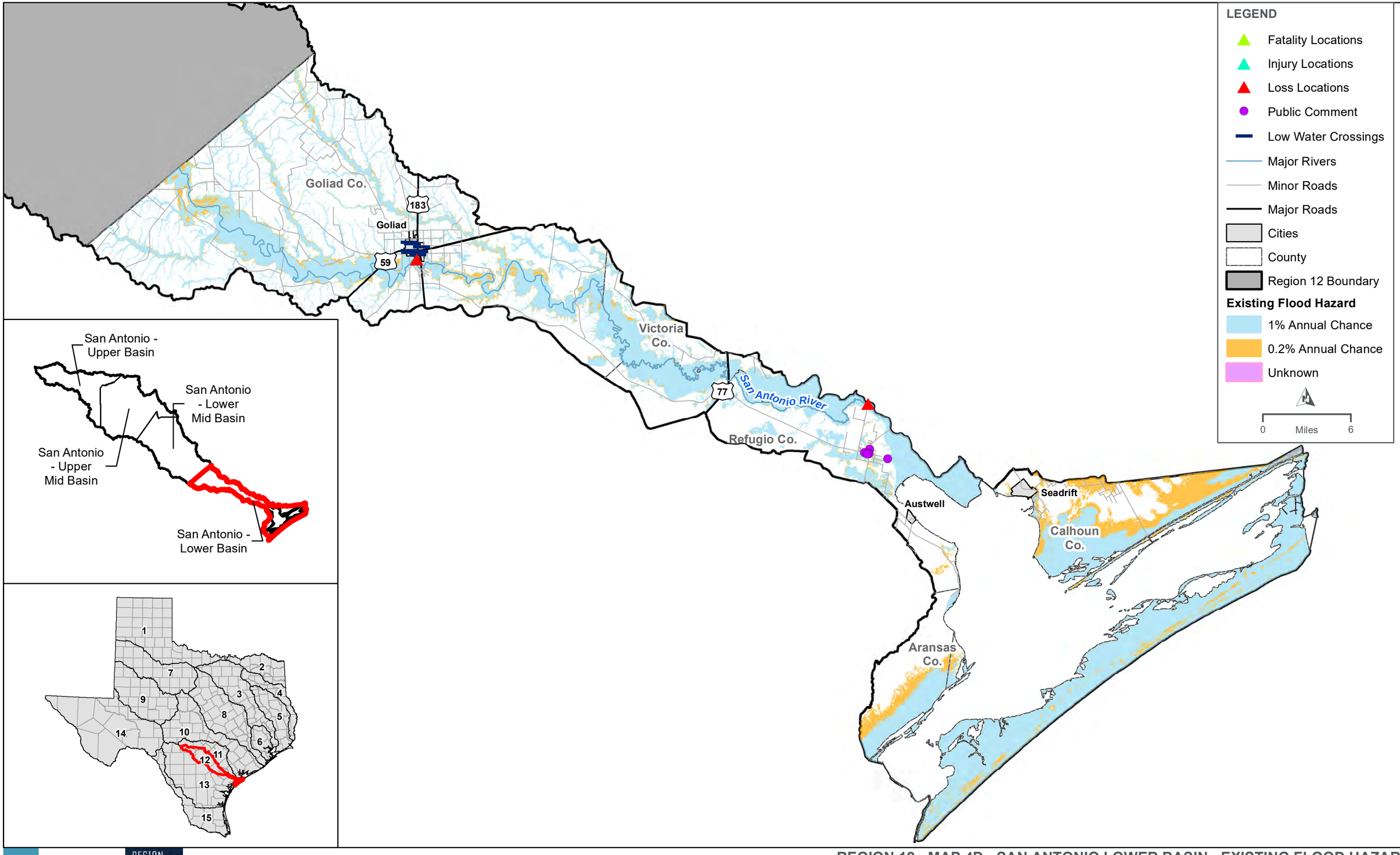
PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP4\MAP4_EXISTINGFLDHAZARD_GROUPB_11X17_FIG2.MXD - USER: CHESTER - DATE: 7/28/2022



REGION 12 - MAP 4C - SAN ANTONIO LOWER MID BASIN - EXISTING FLOOD HAZARD

DRAFT

FIGURE 3

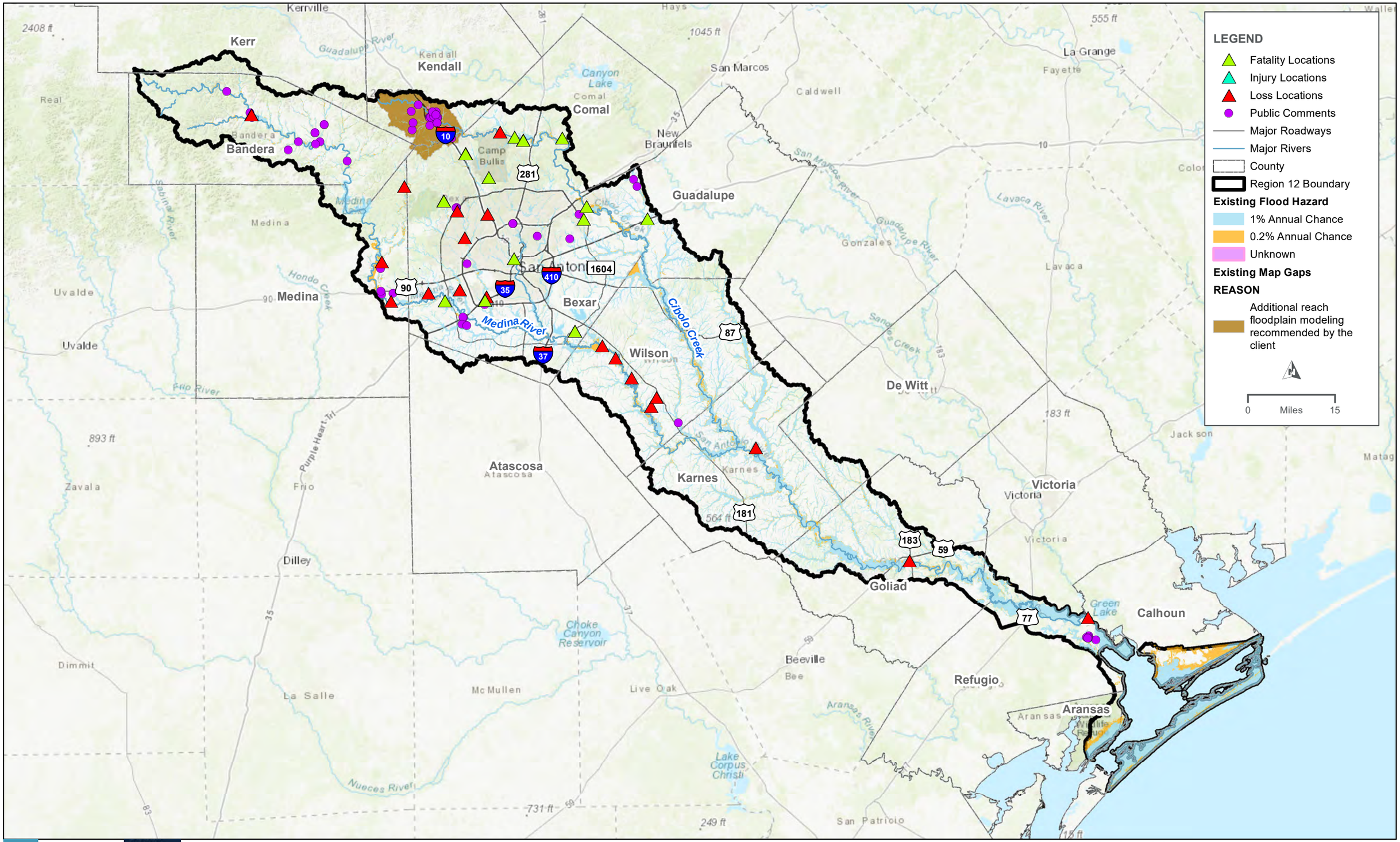


REGION 12 - MAP 4D - SAN ANTONIO LOWER BASIN - EXISTING FLOOD HAZARD

DRAFT

FIGURE 4

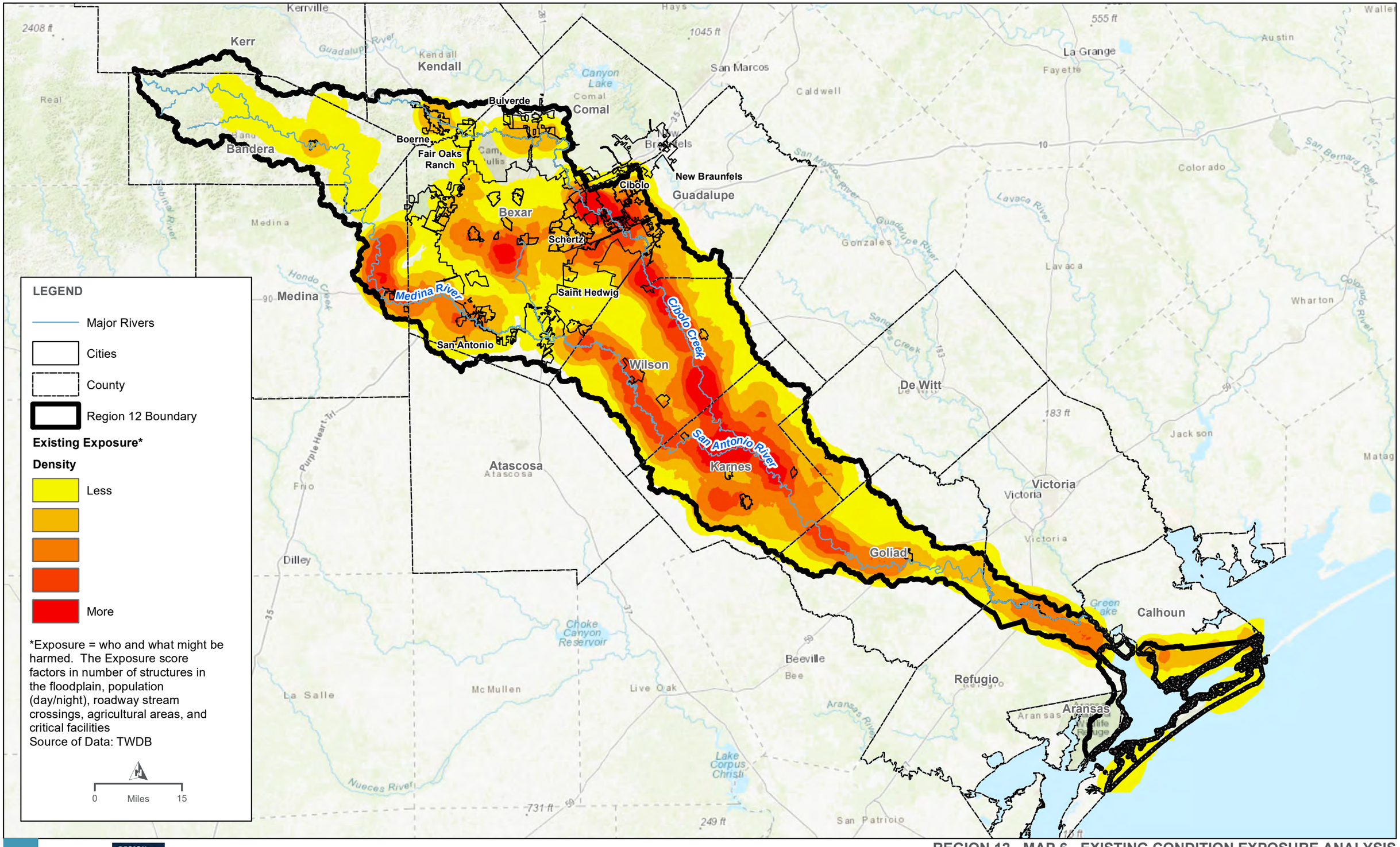
PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP4\MAP4_EXISTINGFLDHAZARD_GROUPD_11X17_FIG4.MXD - USER: CHESTER - DATE: 7/28/2022



REGION 12 - MAP 5 - EXISTING CONDITIONS FLOOD HAZARD KNOWN DATA GAPS

DRAFT

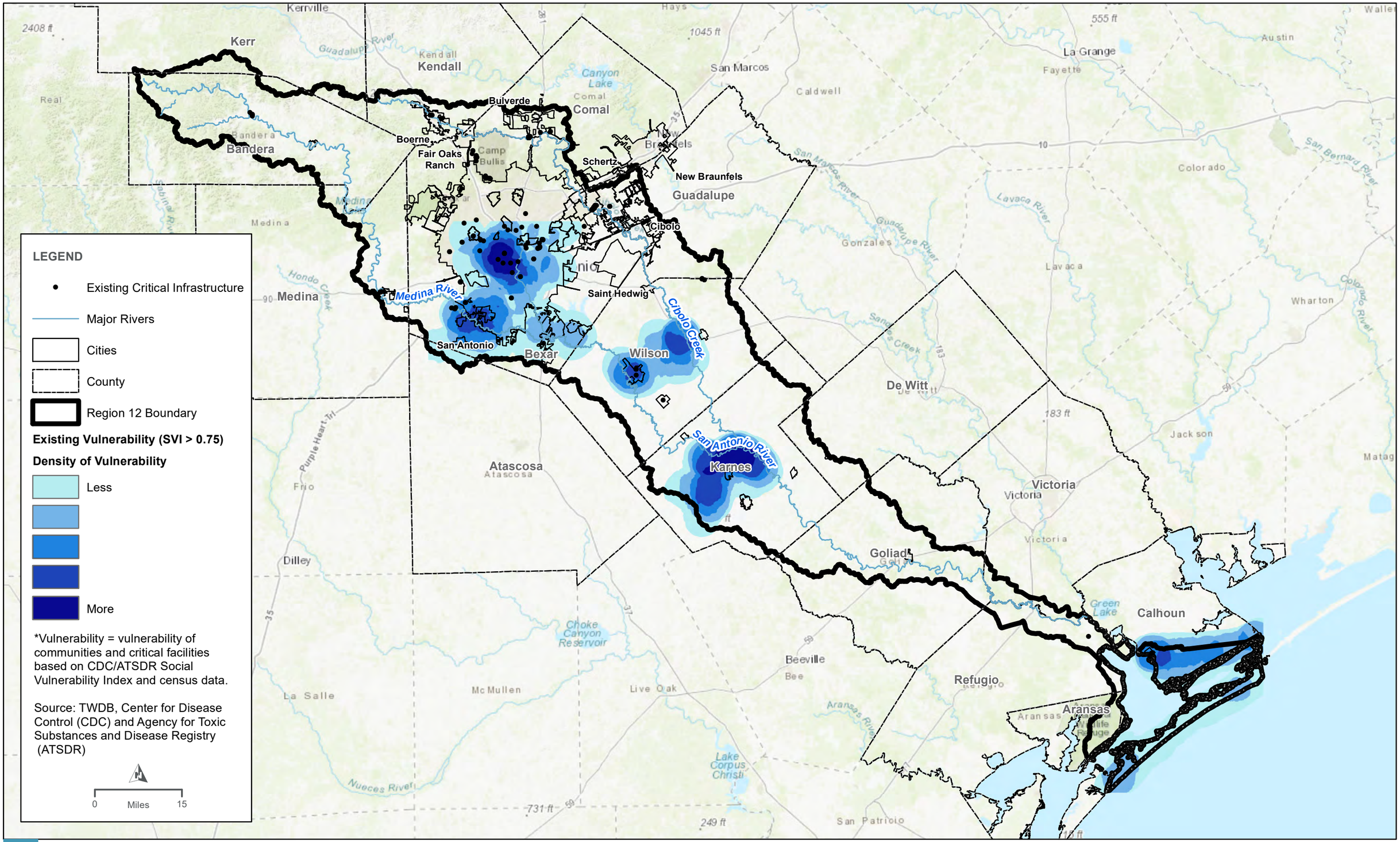
PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP5_EXISTGAPMAP_11X17.MXD - USER: CHESTER - DATE: 7/28/2022



REGION 12 - MAP 6 - EXISTING CONDITION EXPOSURE ANALYSIS

DRAFT

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP6_REGIONAL_HEATMAP_EXISTING_EXPOSURE_11X17.MXD



REGION 12 - MAP 7 - EXISTING CONDITION FLOOD VULNERABILITY ANALYSIS (SVI > 0.75)

DRAFT

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP7_REGIONAL_HEATMAP_EXISTING_VULNERABILITY_GREATERTHAN0-75_11X17.MXD

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

Kerr Co.

Bandera Co.

Kendall Co.

Medina Co.

Boerne

87

Medina River

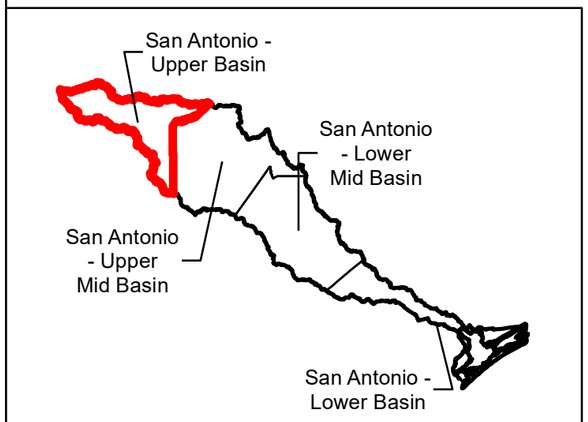
LEGEND

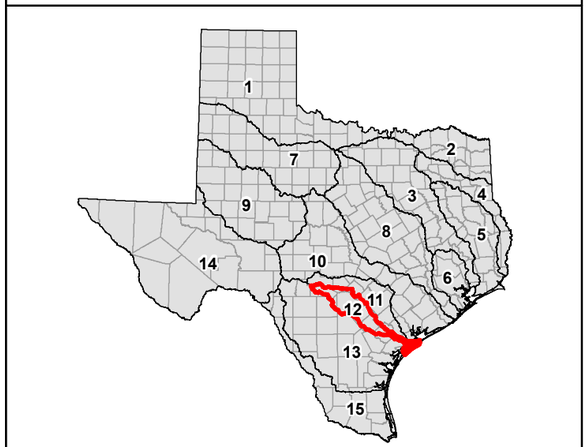
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

Future Flood Hazard

- 1% Annual Chance
- 0.2% Annual Chance
- Unknown

0 Miles 5





REGION 12 - MAP 8A - SAN ANTONIO UPPER BASIN - FUTURE FLOOD HAZARD

DRAFT

FIGURE 1

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP8\MAP8_FUTUREFLDHAZARD_GROUPA_11X17_FIG1.MXD - USER: CHESTER - DATE: 7/28/2022

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

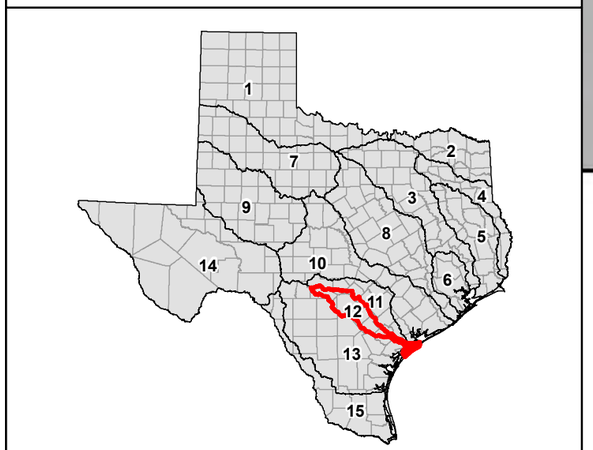
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roadways
- Cities
- County
- Region 12 Boundary

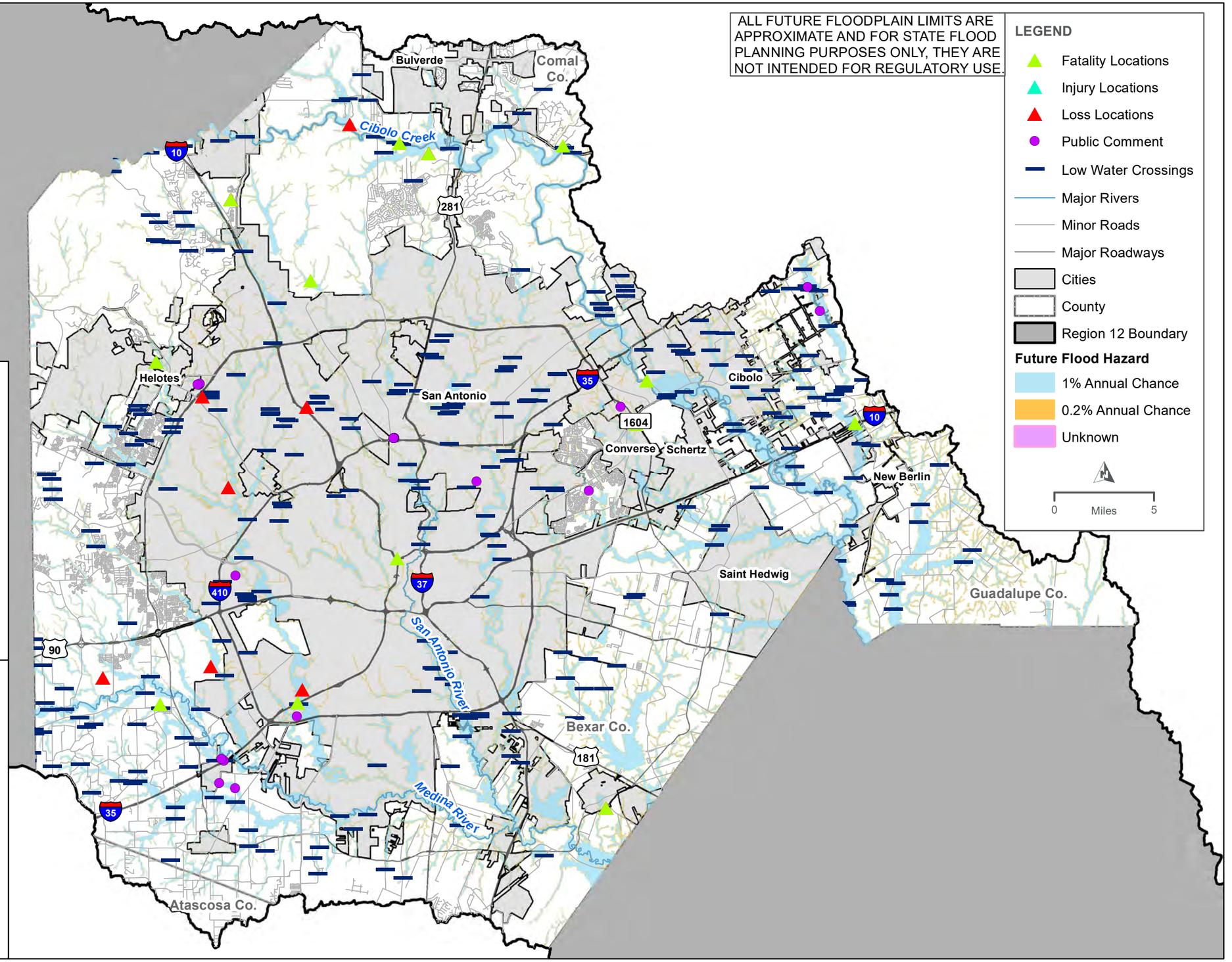
Future Flood Hazard

- 1% Annual Chance
- 0.2% Annual Chance
- Unknown

N

0 Miles 5





REGION 12 - MAP 8B - SAN ANTONIO UPPER MID BASIN - FUTURE FLOOD HAZARD

DRAFT

FIGURE 2

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

Future Flood Hazard

- 1% Annual Chance
- 0.2% Annual Chance
- Unknown

N

0 Miles 6

La Vernia
87
Elmendorf
Stockdale
Wilson Co.
Floresville
Cibolo Creek
Poth
181
Falls City
San Antonio River
Nordheim
Runge
Karnes City
De Witt Co.
Karnes Co.
Kenedy

San Antonio - Upper Basin
San Antonio - Lower Mid Basin
San Antonio - Upper Mid Basin
San Antonio - Lower Basin

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

REGION 12

REGION 12 - MAP 8C - SAN ANTONIO LOWER MID BASIN - FUTURE FLOOD HAZARD

DRAFT

FIGURE 3

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

Future Flood Hazard

- 1% Annual Chance
- 0.2% Annual Chance
- Unknown

0 Miles 6

Goliad Co.
183
Goliad
59
Victoria Co.
77
San Antonio River
Refugio Co.
Austwell
Seadrift
Calhoun Co.
Aransas Co.

San Antonio - Upper Basin
San Antonio - Lower Mid Basin
San Antonio - Upper Mid Basin
San Antonio - Lower Basin

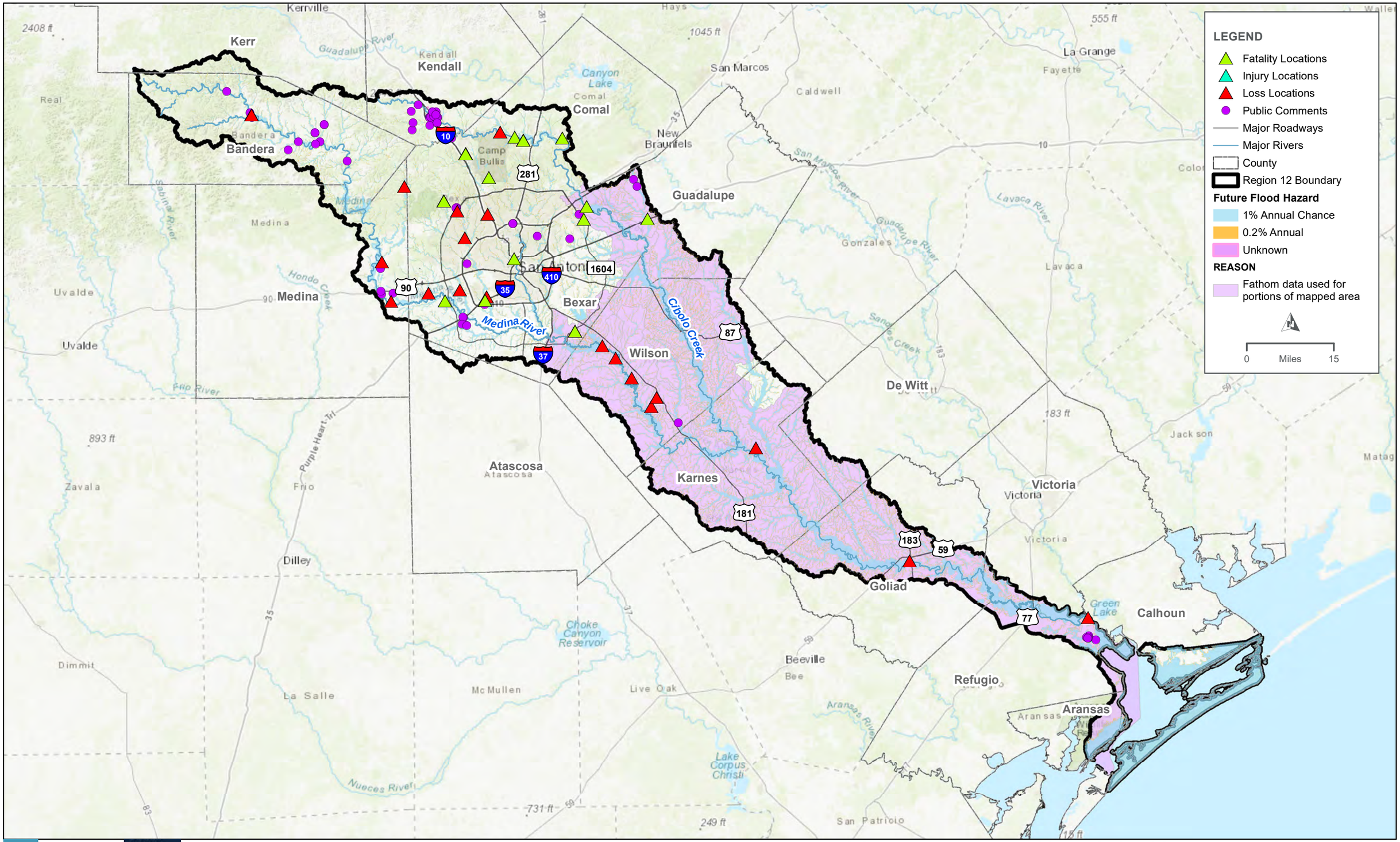
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

REGION 12 SAN ANTONIO RIVER AUTHORITY

REGION 12 - MAP 8D - SAN ANTONIO LOWER BASIN - FUTURE FLOOD HAZARD

DRAFT

FIGURE 4



REGION 12 - MAP 9 - FUTURE CONDITIONS FLOOD HAZARD KNOWN DATA GAPS

DRAFT

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP9_FUTUREGAPMAP_11X17.MXD - USER: CHESTER - DATE: 7/28/2022

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

Kerr Co.

Bandera Co.

Kendall Co.

Medina Co.

Boerne

87

Medina River

LEGEND

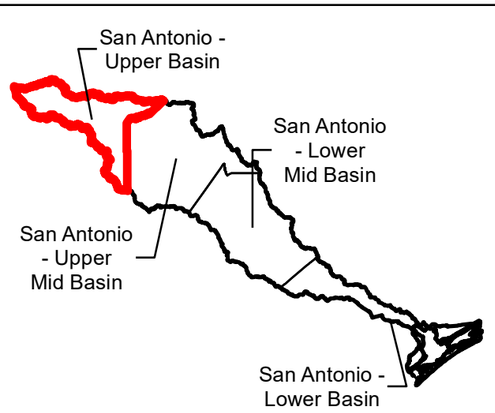
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

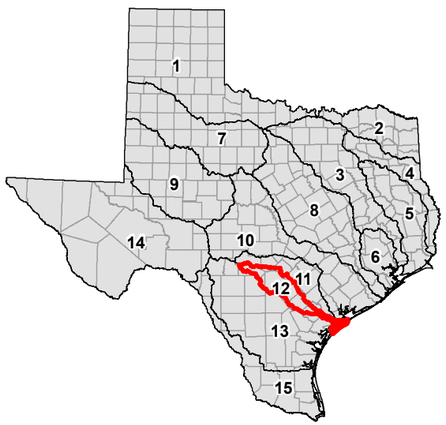
1% Annual Flood Hazard

- Existing
- Future

N

0 Miles 5





REGION 12 - MAP 10A - SAN ANTONIO UPPER BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITONS

DRAFT

FIGURE 1

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10A_EXTENT_OF_INCREASE_11X17.MXD - USER: CHESTER - DATE: 7/28/2022

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

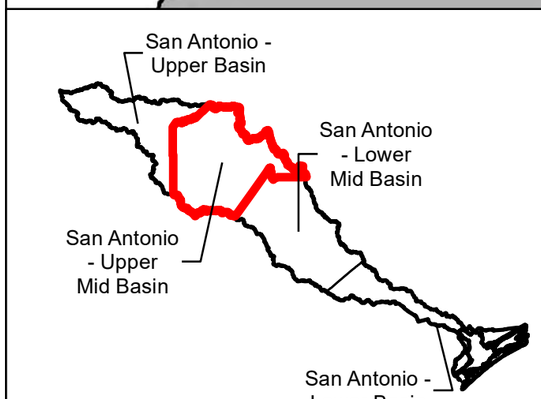
LEGEND

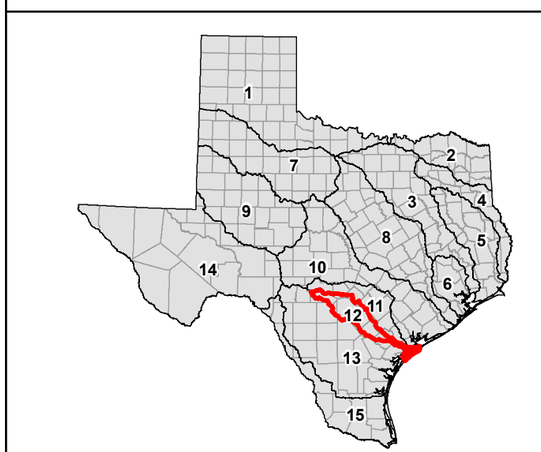
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roadways
- Cities
- County
- Region 12 Boundary

1% Annual Flood Hazard

- Existing
- Future

0 Miles 5





Bulverde
Comal Co.
Cibolo Creek
281
10
Helotes
San Antonio
35
1604
Converse
Schertz
Cibolo
New Berlin
Saint Hedwig
Guadalupe Co.
410
37
90
San Antonio River
Bexar Co.
181
Medina River
Atascosa Co.

REGION 12 - MAP 10B - SAN ANTONIO UPPER MID BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

DRAFT

FIGURE 2

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10B_EXTENT_OF_INCREASE_11X17.MXD - USER: CHESTER - DATE: 7/28/2022

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

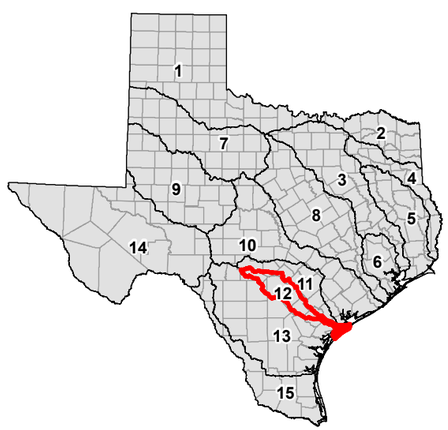
1% Annual Flood Hazard

- Existing
- Future

0 Miles 6

La Vernia
87
Elmendorf
Stockdale
Wilson Co.
Floresville
Cibolo Creek
Poth
181
Falls City
San Antonio River
Nordheim
Runge
Karnes City
De Witt Co.
Karnes Co.
Kenedy

San Antonio - Upper Basin
San Antonio - Lower Mid Basin
San Antonio - Upper Mid Basin
San Antonio - Lower Basin



REGION 12 - MAP 10C - SAN ANTONIO LOWER MID BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

DRAFT

FIGURE 3

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

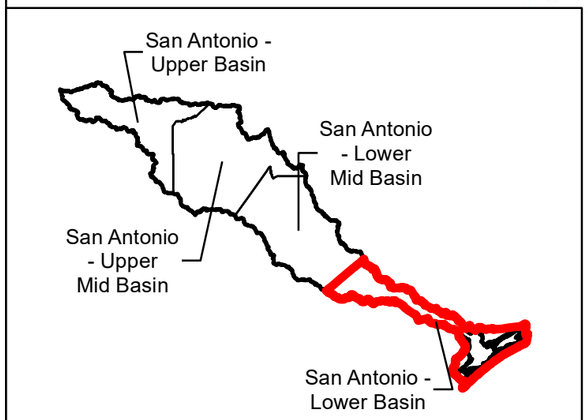
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

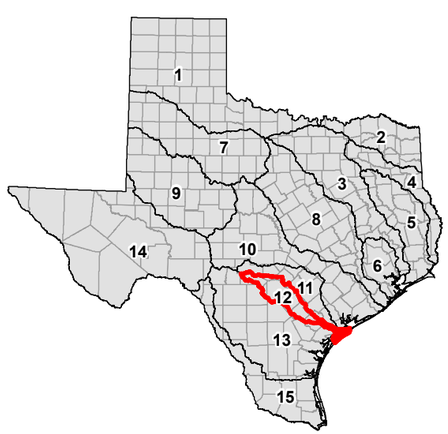
1% Annual Flood Hazard

- Existing
- Future

0 Miles 6

Goliad Co.
183
Goliad
59
Victoria Co.
77
San Antonio River
Refugio Co.
Austwell
Seadrift
Calhoun Co.
Aransas Co.





REGION 12 - MAP 10D - SAN ANTONIO LOWER BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

DRAFT

FIGURE 4

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10D_EXTENT_OF_INCREASE_11X17.MXD - USER: CHESTER - DATE: 7/28/2022

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

Kerr Co.

Bandera Co.

Kendall Co.

Medina Co.

Medina River

Boerne

87

LEGEND

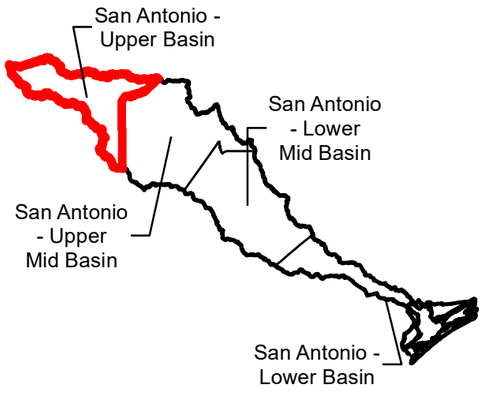
- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

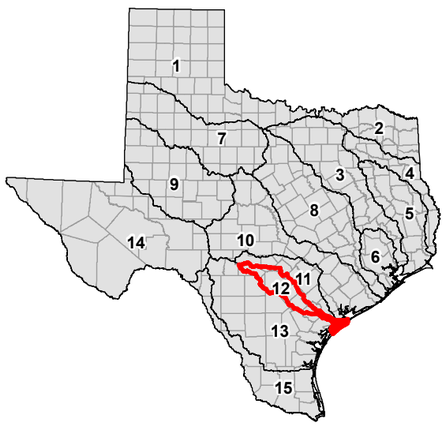
0.2% Annual Flood Hazard

- Existing
- Future

N

0 Miles 5





REGION 12 - MAP 10E - SAN ANTONIO UPPER BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

DRAFT

FIGURE 1

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10E_EXTENT_OF_INCREASE_11X17.MXD - USER: CHESTER - DATE: 7/28/2022

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

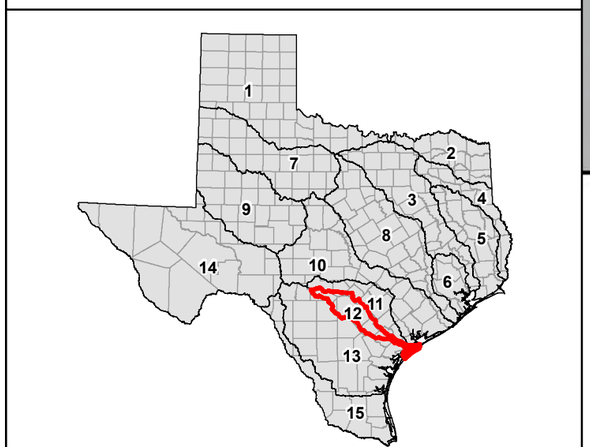
LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roadways
- Cities
- County
- Region 12 Boundary

0.2% Annual Flood Hazard

- Existing
- Future

0 Miles 5



Bulverde
Comal Co.
Cibolo Creek
Helotes
San Antonio
Cibolo
Converse
Schertz
New Berlin
Saint Hedwig
Guadalupe Co.
San Antonio River
Bexar Co.
Medina River
Atascosa Co.
10
281
35
1604
410
37
90
181

REGION 12 - MAP 10F - SAN ANTONIO UPPER MID BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

DRAFT

FIGURE 2

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10F_EXTENT_OF_INCREASE_11X17.MXD - USER: CHESTER - DATE: 7/28/2022

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

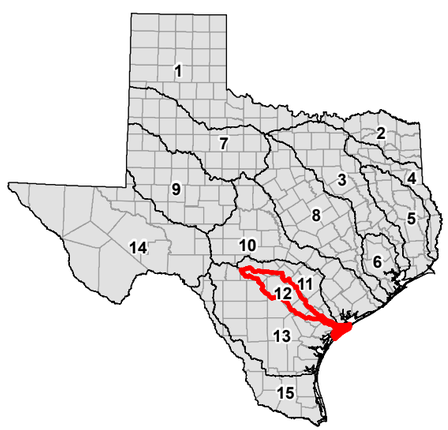
0.2% Annual Flood Hazard

- Existing
- Future

0 Miles 6

La Vernia
87
Elmendorf
Stockdale
87
Wilson Co.
Cibolo Creek
Floresville
Poth
181
Falls City
San Antonio River
Nordheim
Runge
Karnes City
181
De Witt Co.
Karnes Co.
Kenedy

San Antonio - Upper Basin
San Antonio - Lower Mid Basin
San Antonio - Upper Mid Basin
San Antonio - Lower Basin



REGION 12 - MAP 10G - SAN ANTONIO LOWER MID BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

DRAFT

FIGURE 3

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10G_EXTENT_OF_INCREASE_11X17.MXD - USER: CHESTER - DATE: 7/28/2022

ALL FUTURE FLOODPLAIN LIMITS ARE APPROXIMATE AND FOR STATE FLOOD PLANNING PURPOSES ONLY, THEY ARE NOT INTENDED FOR REGULATORY USE.

LEGEND

- Fatality Locations
- Injury Locations
- Loss Locations
- Public Comment
- Low Water Crossings
- Major Rivers
- Minor Roads
- Major Roads
- Cities
- County
- Region 12 Boundary

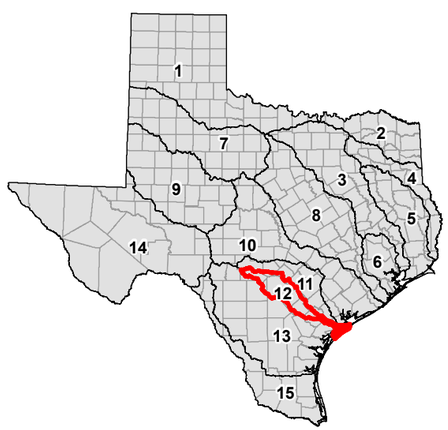
0.2% Annual Flood Hazard

- Existing
- Future

0 Miles 6

Goliad Co.
183
Goliad
59
Victoria Co.
77
San Antonio River
Refugio Co.
Austwell
Seadrift
Calhoun Co.
Aransas Co.

San Antonio - Upper Basin
San Antonio - Lower Mid Basin
San Antonio - Upper Mid Basin
San Antonio - Lower Basin

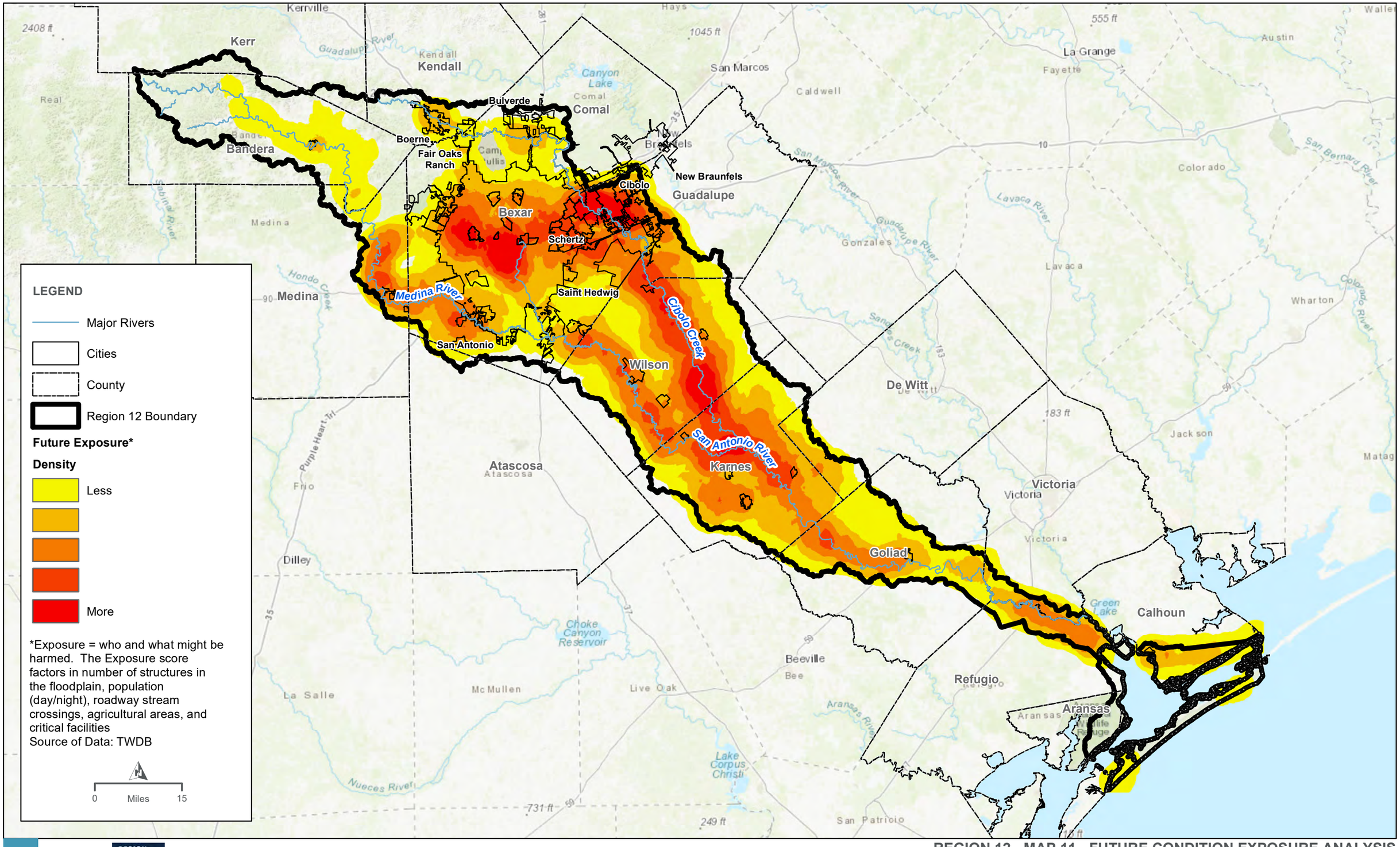


REGION 12 - MAP 10H - SAN ANTONIO LOWER BASIN - EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

DRAFT

FIGURE 4

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP10\MAP10H_EXTENT_OF_INCREASE_11X17.MXD - USER: CHESTER - DATE: 7/28/2022



REGION 12 - MAP 11 - FUTURE CONDITION EXPOSURE ANALYSIS

DRAFT

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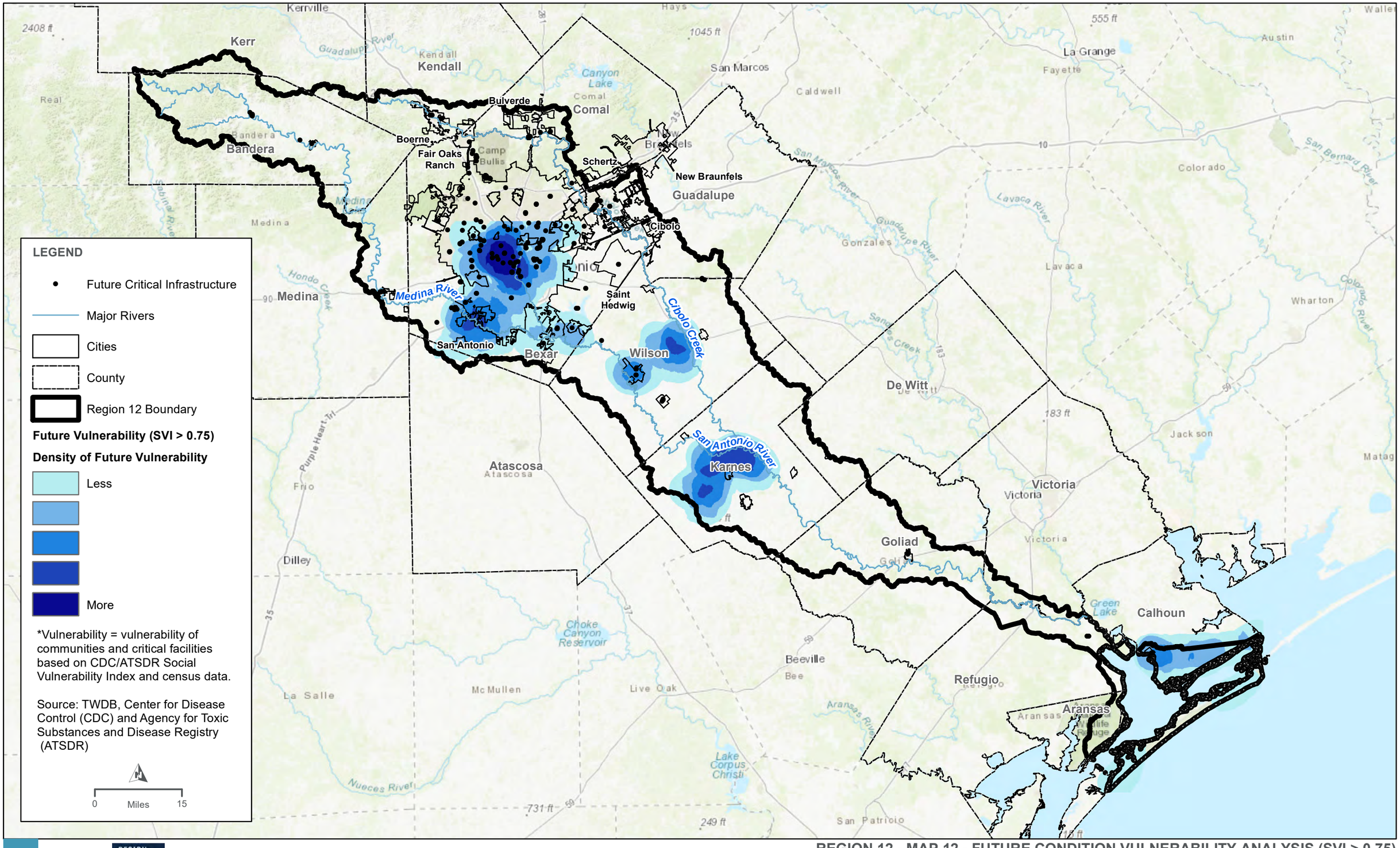
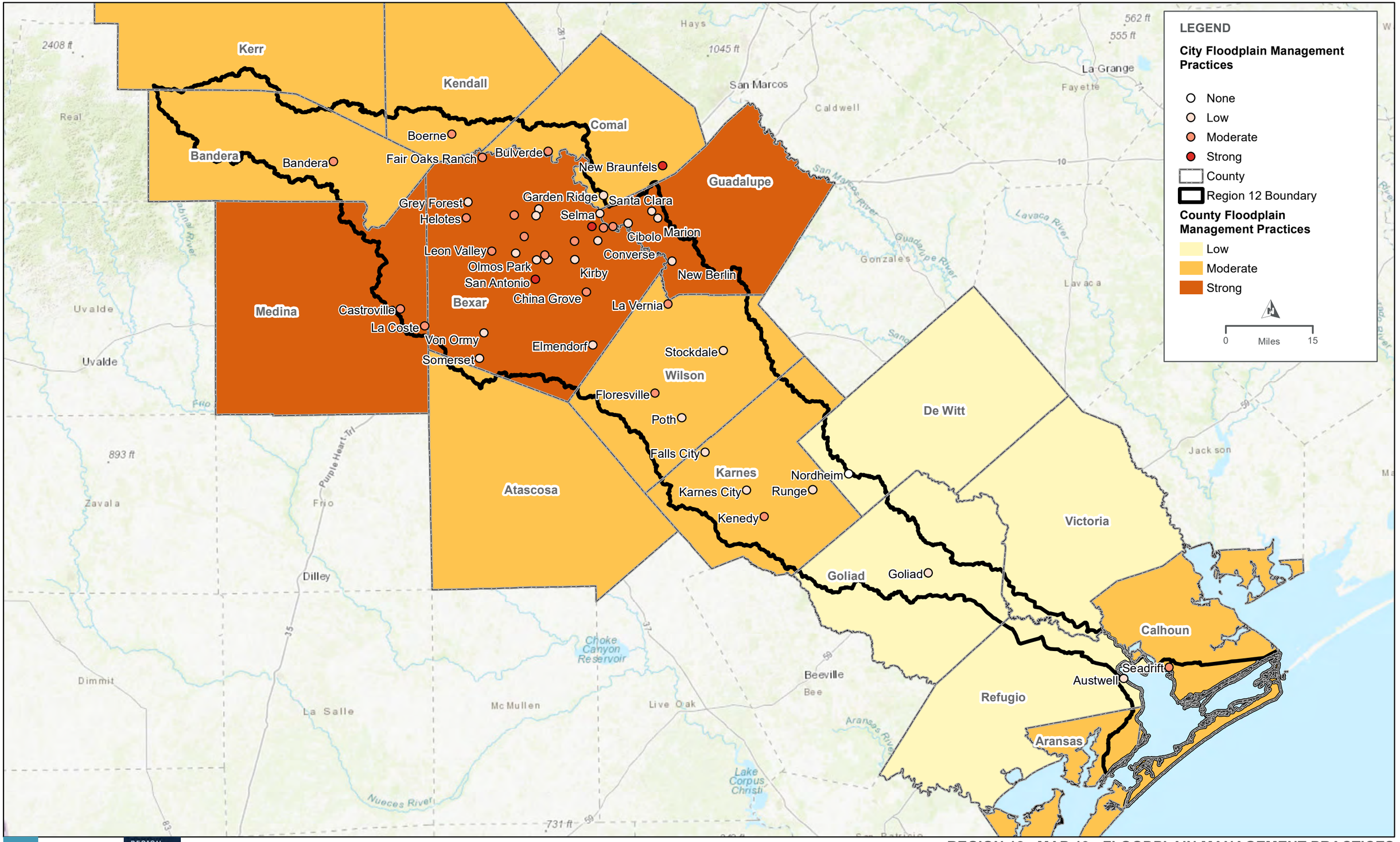


REGION 12 - MAP 12 - FUTURE CONDITION VULNERABILITY ANALYSIS (SVI > 0.75)

DRAFT

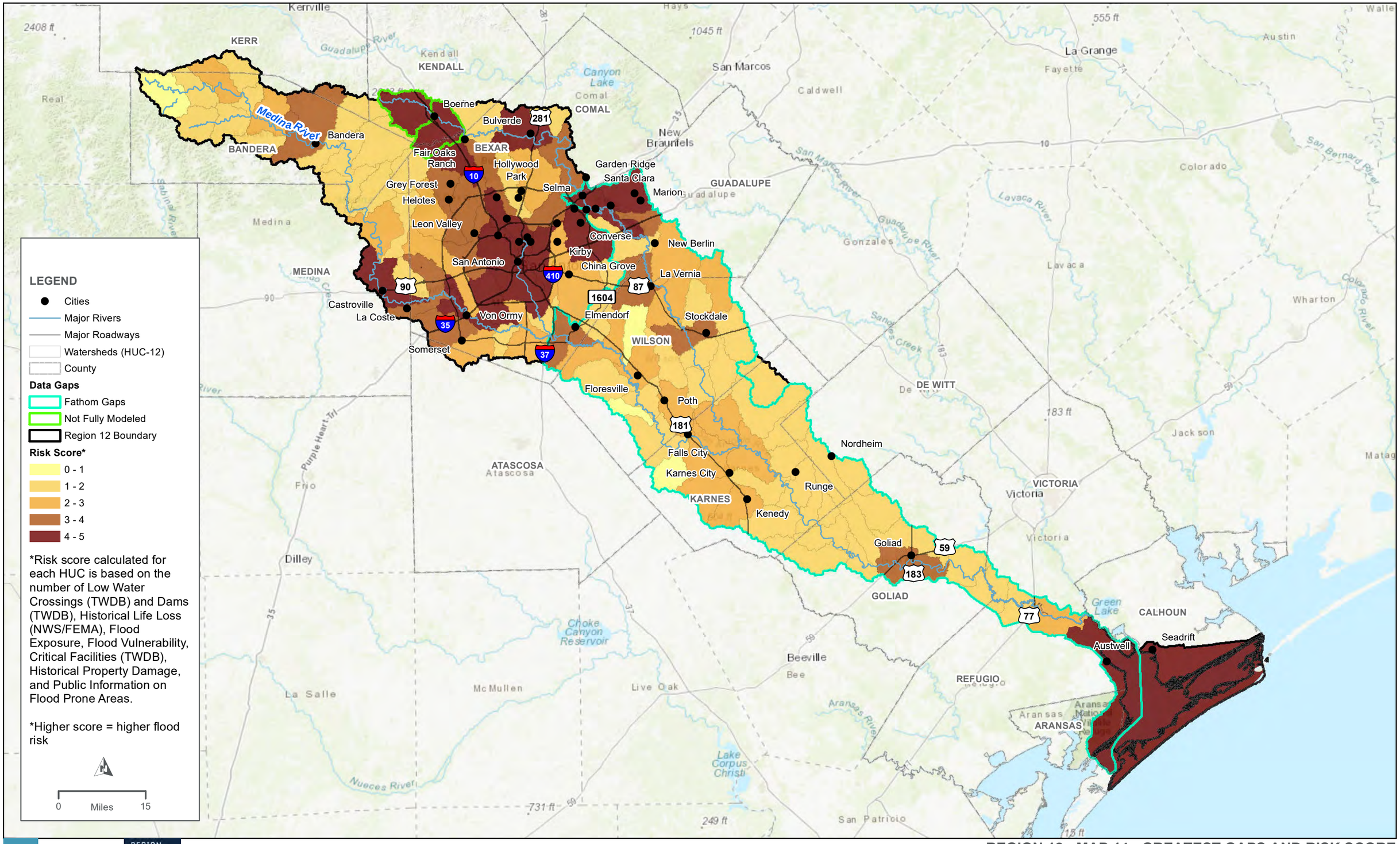
DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP12_REGIONAL_HEATMAP_FUTURE_VULNERABILITY_GREATERTHAN0-75_11X17.MXD



REGION 12 - MAP 13 - FLOODPLAIN MANAGEMENT PRACTICES

DRAFT

PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP13_FLOODPLAINMANAGEMENTPRACTICESMAP_11X17.MXD - USER: CHESTER - DATE: 7/28/2022



REGION 12 - MAP 14 - GREATEST GAPS AND RISK SCORE

DRAFT

(DISCLAIMER)

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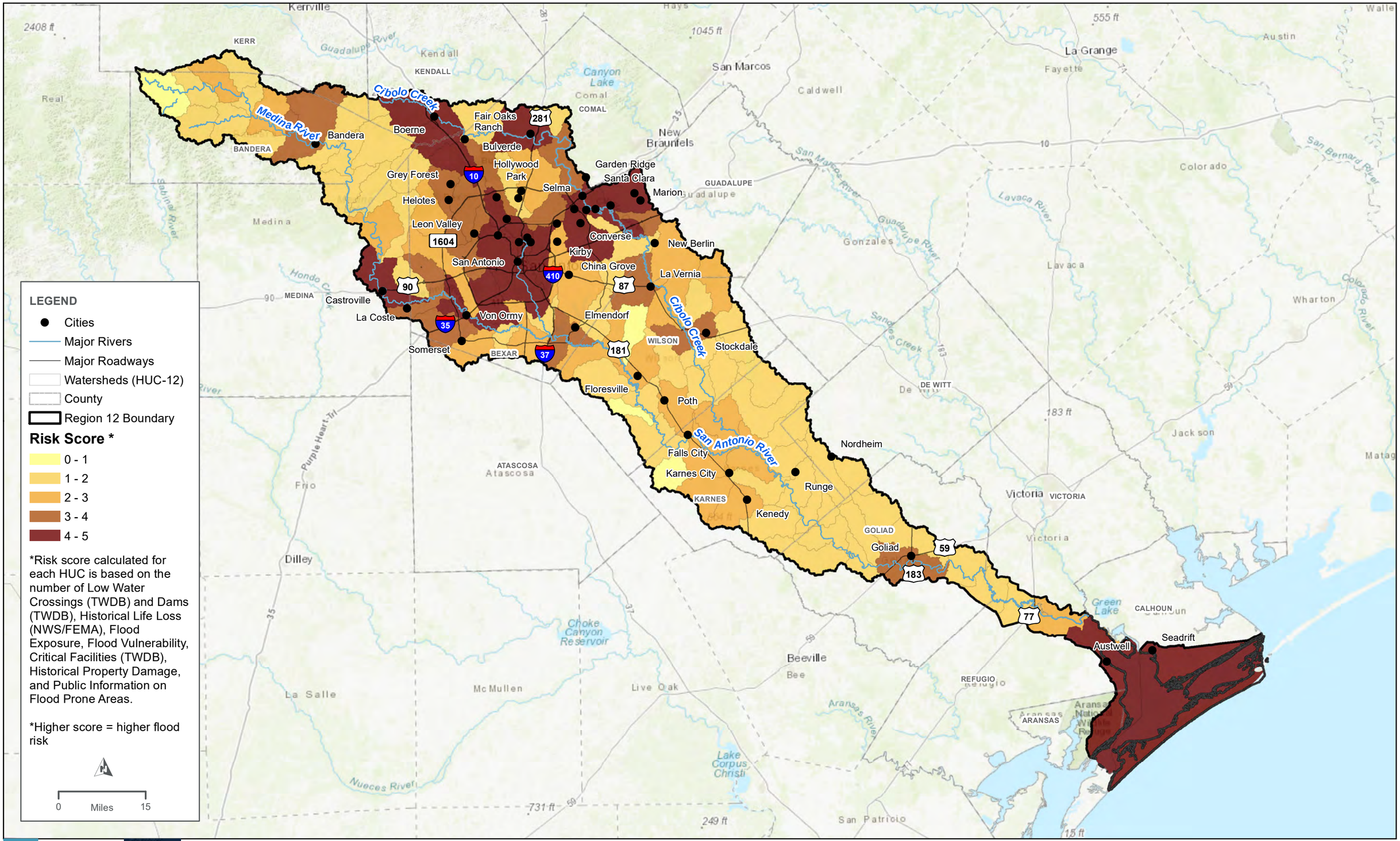
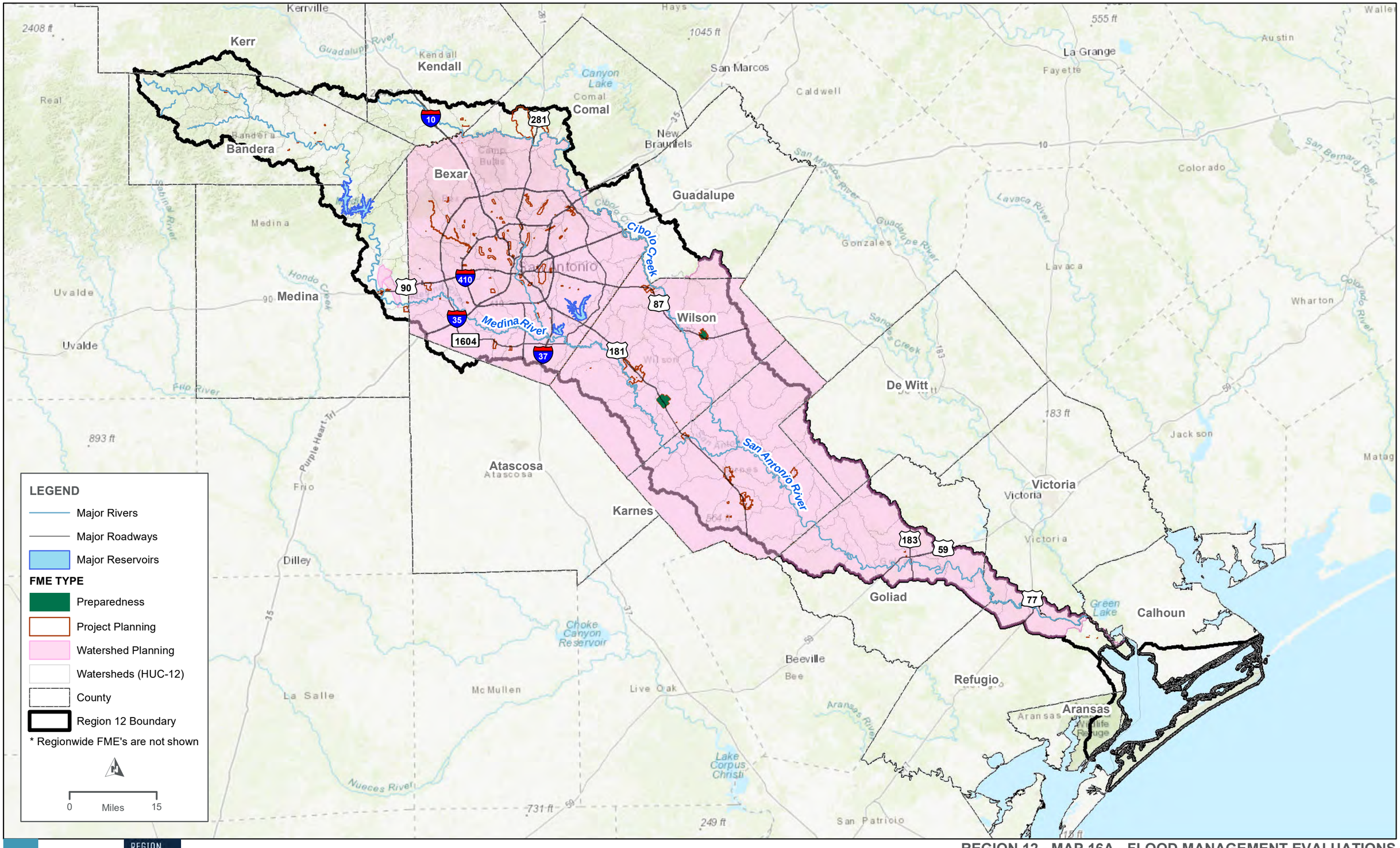


REGION 12 - MAP 15 -HIGHEST FLOOD RISK

DRAFT

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP15_REGIONAL_HIGHEST_FLD_RISK_11X17.MXD



REGION 12 - MAP 16A - FLOOD MANAGEMENT EVALUATIONS

DRAFT

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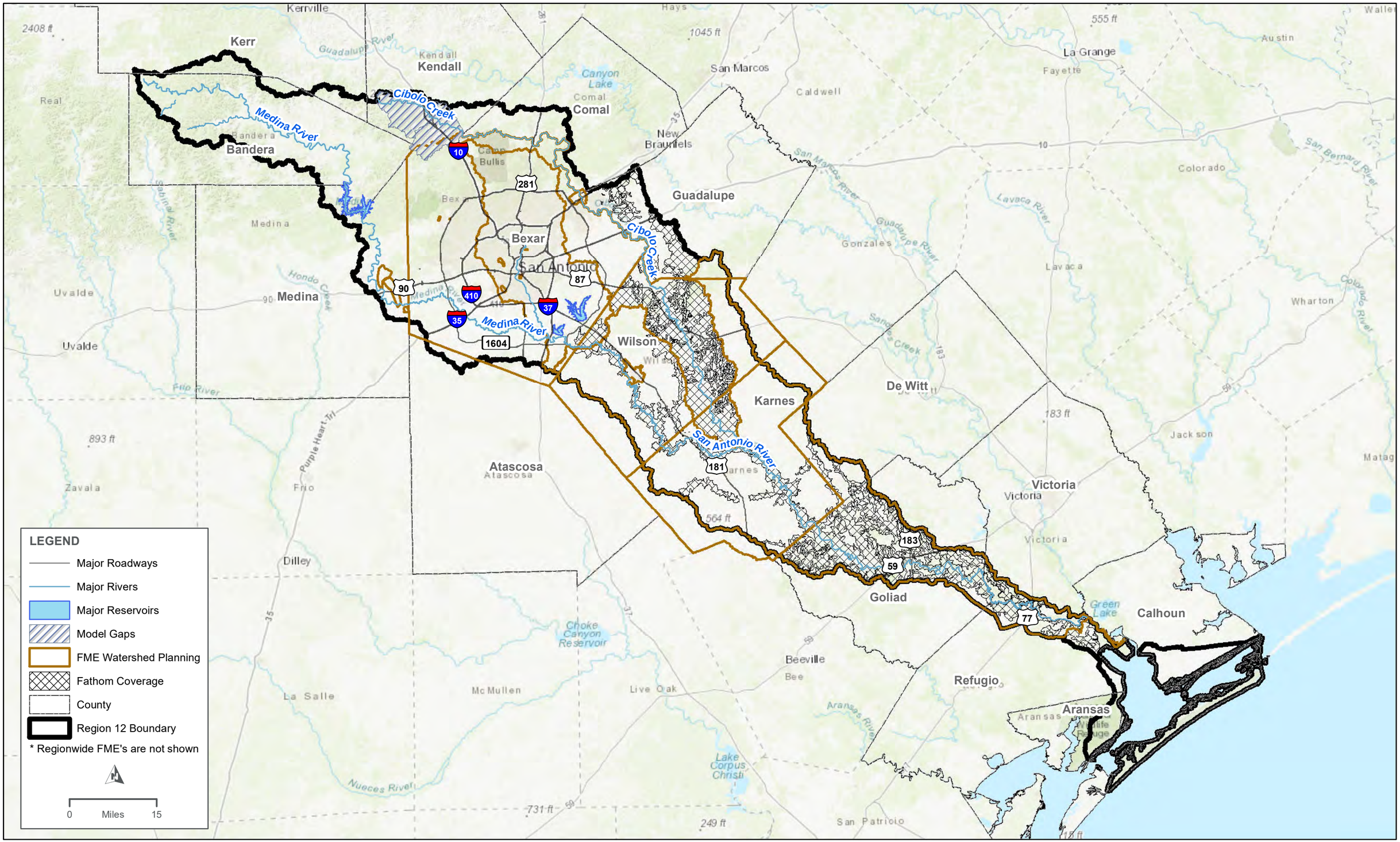

REGION 12 - MAP 16B - MODELING GAPS AND FLOOD MANAGEMENT EVALUATIONS

DRAFT

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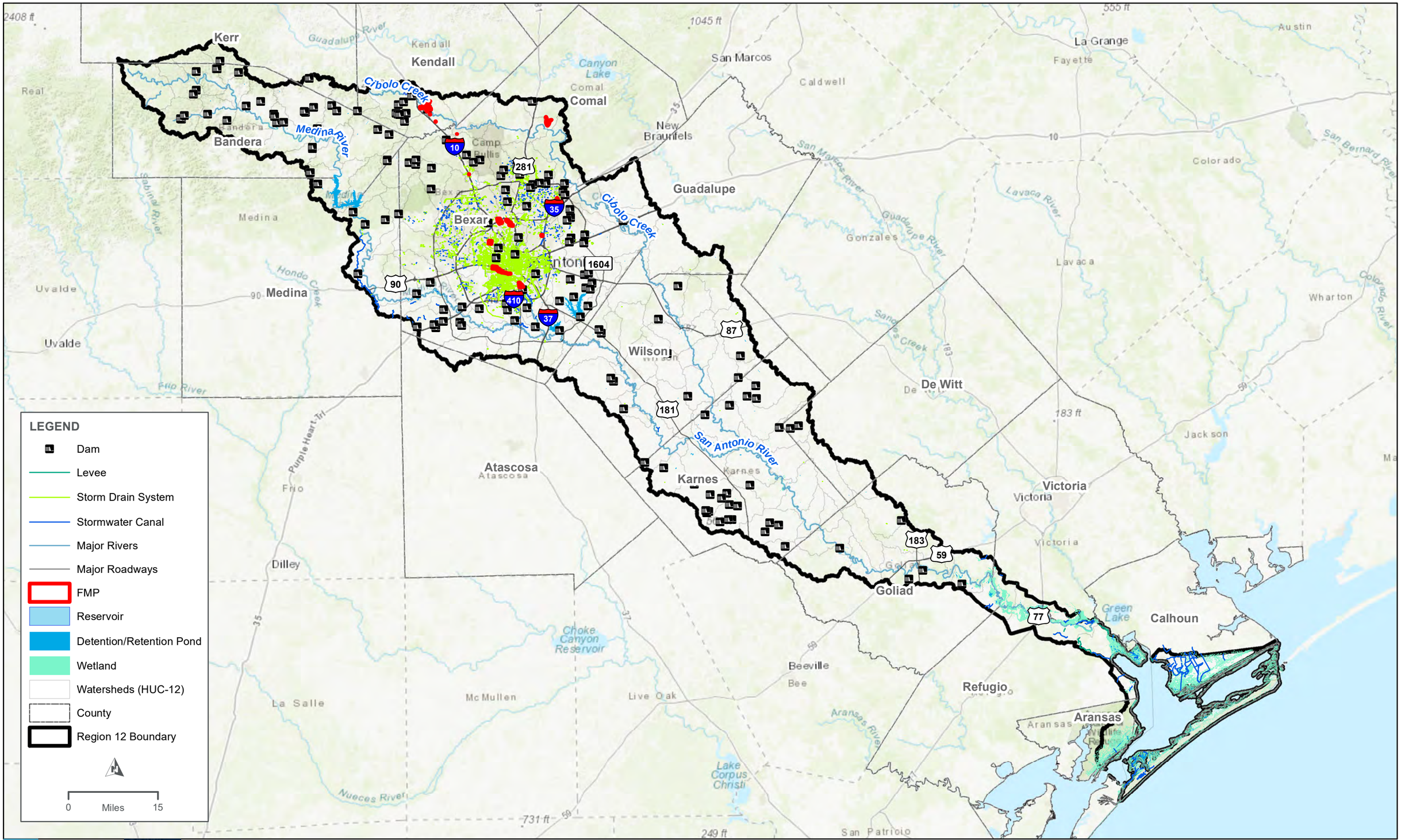
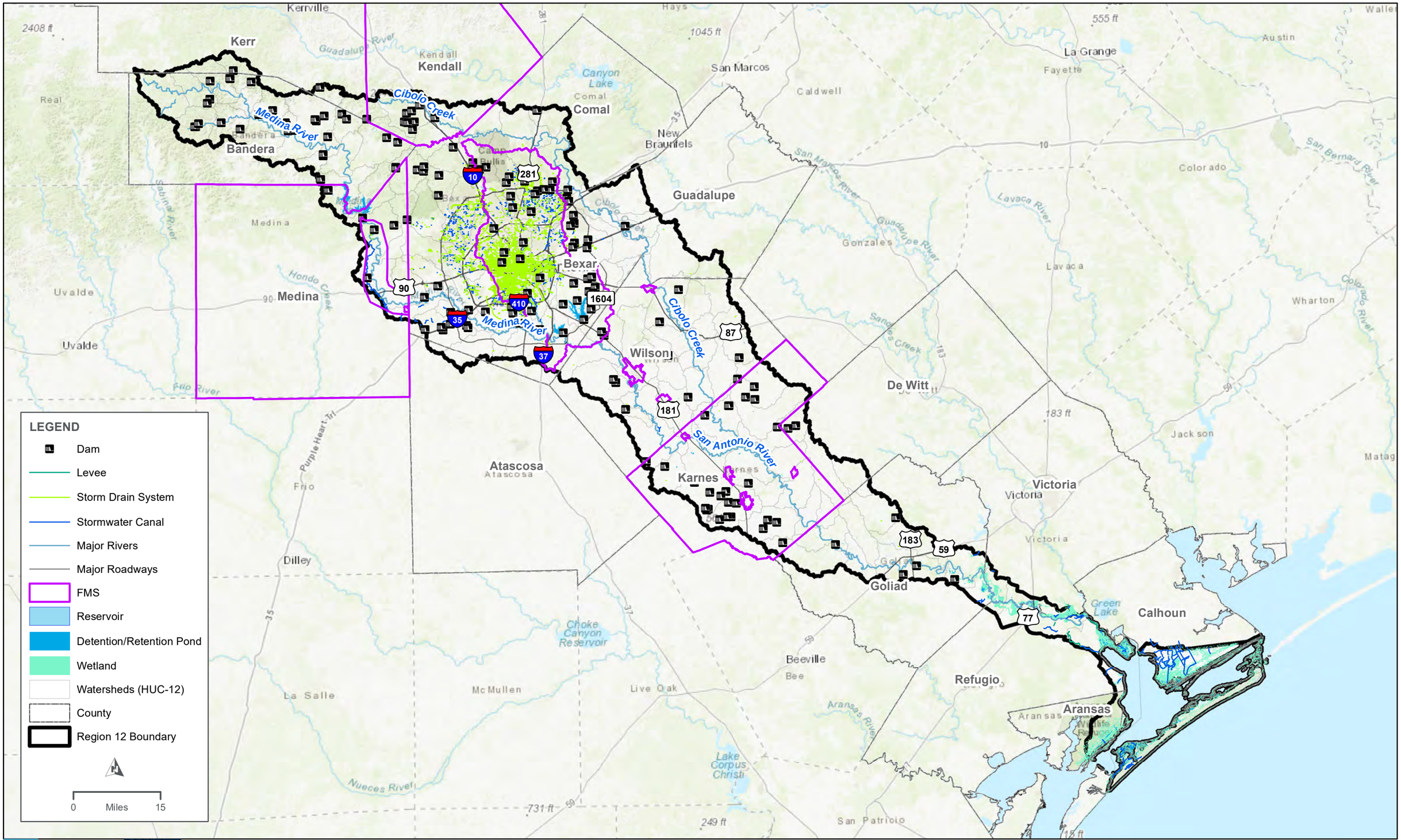


REGION 12 - MAP 17 - FLOOD MITIGATION PROJECTS

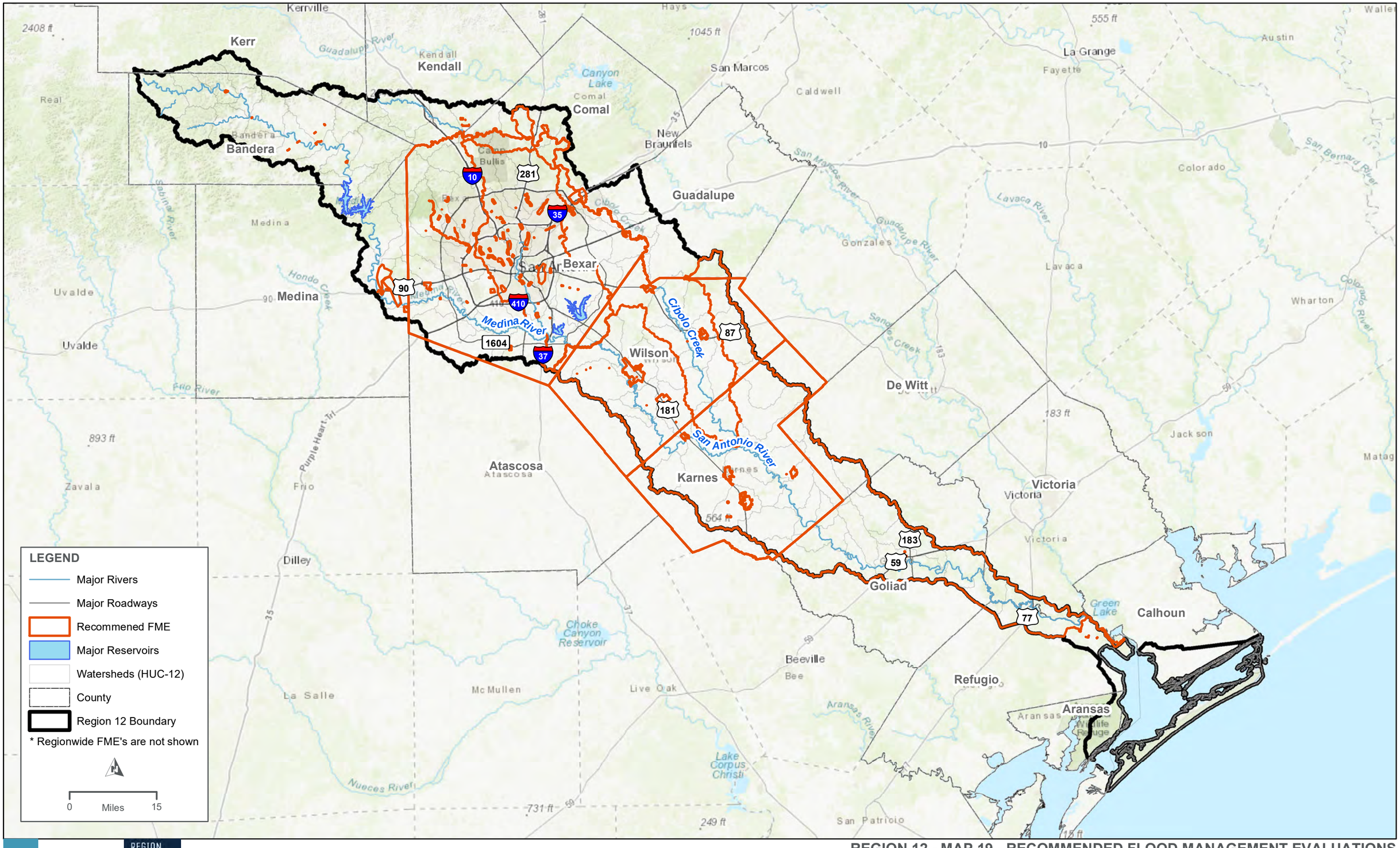
DRAFT

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP17_REGIONAL_FMP_11X17.MXD



REGION 12 - MAP 18 - FLOOD MANAGEMENT STRATEGIES

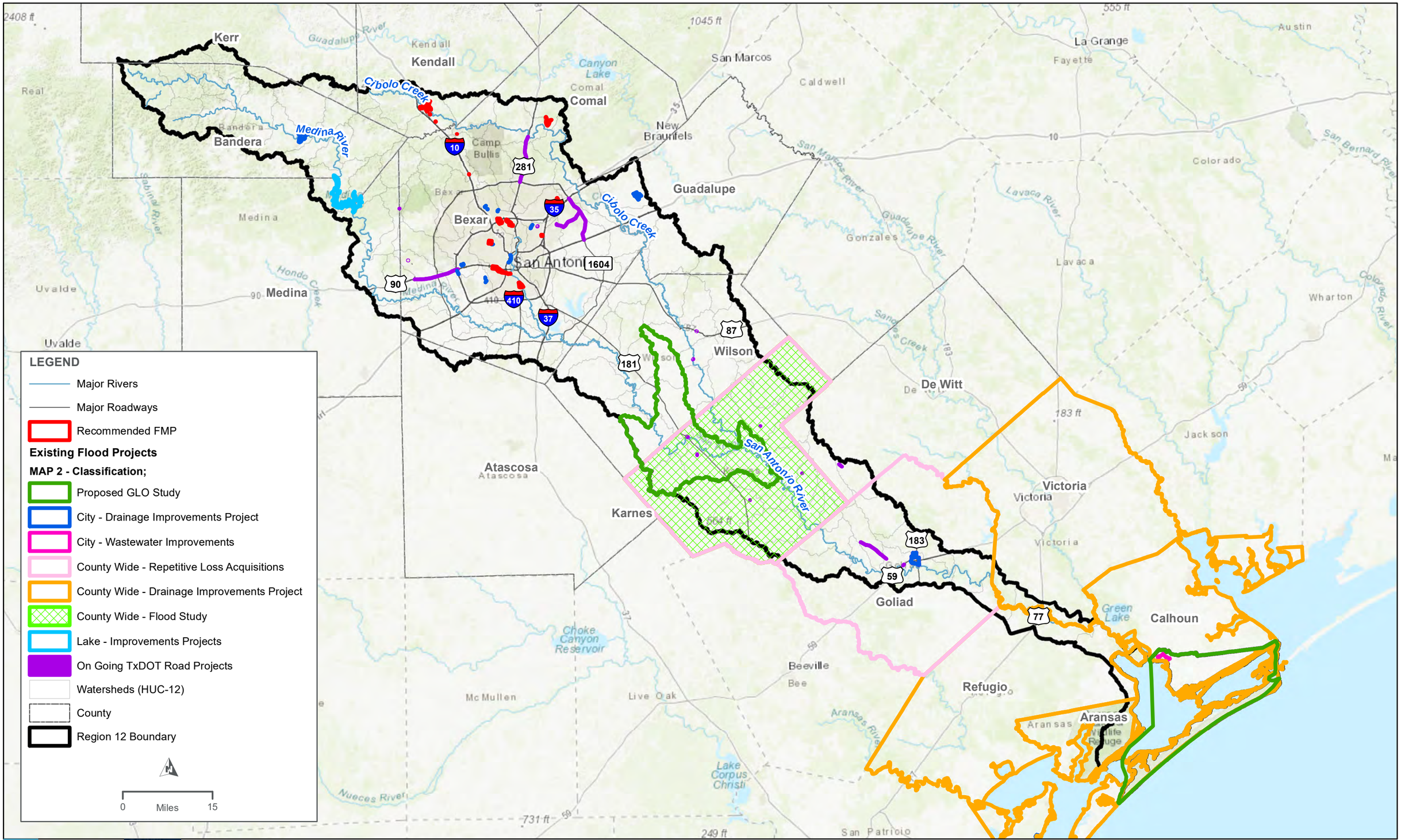
DRAFT



REGION 12 - MAP 19 - RECOMMENDED FLOOD MANAGEMENT EVALUATIONS

DRAFT

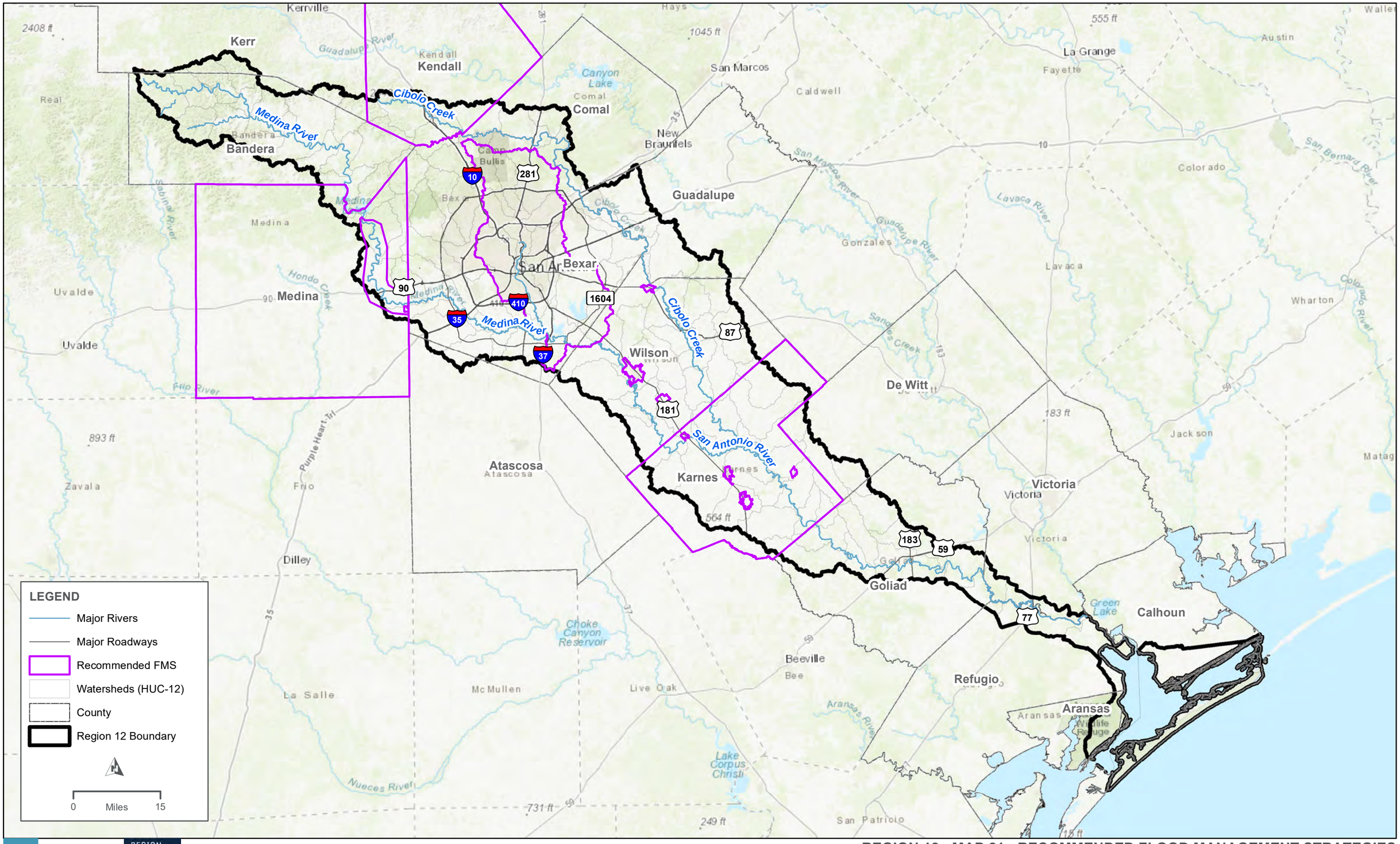
DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP19_REGIONAL_RECOMMENDEDFME_11X17.MXD



REGION 12 - MAP 20 - RECOMMENDED FLOOD MANAGEMENT PROJECTS

DRAFT

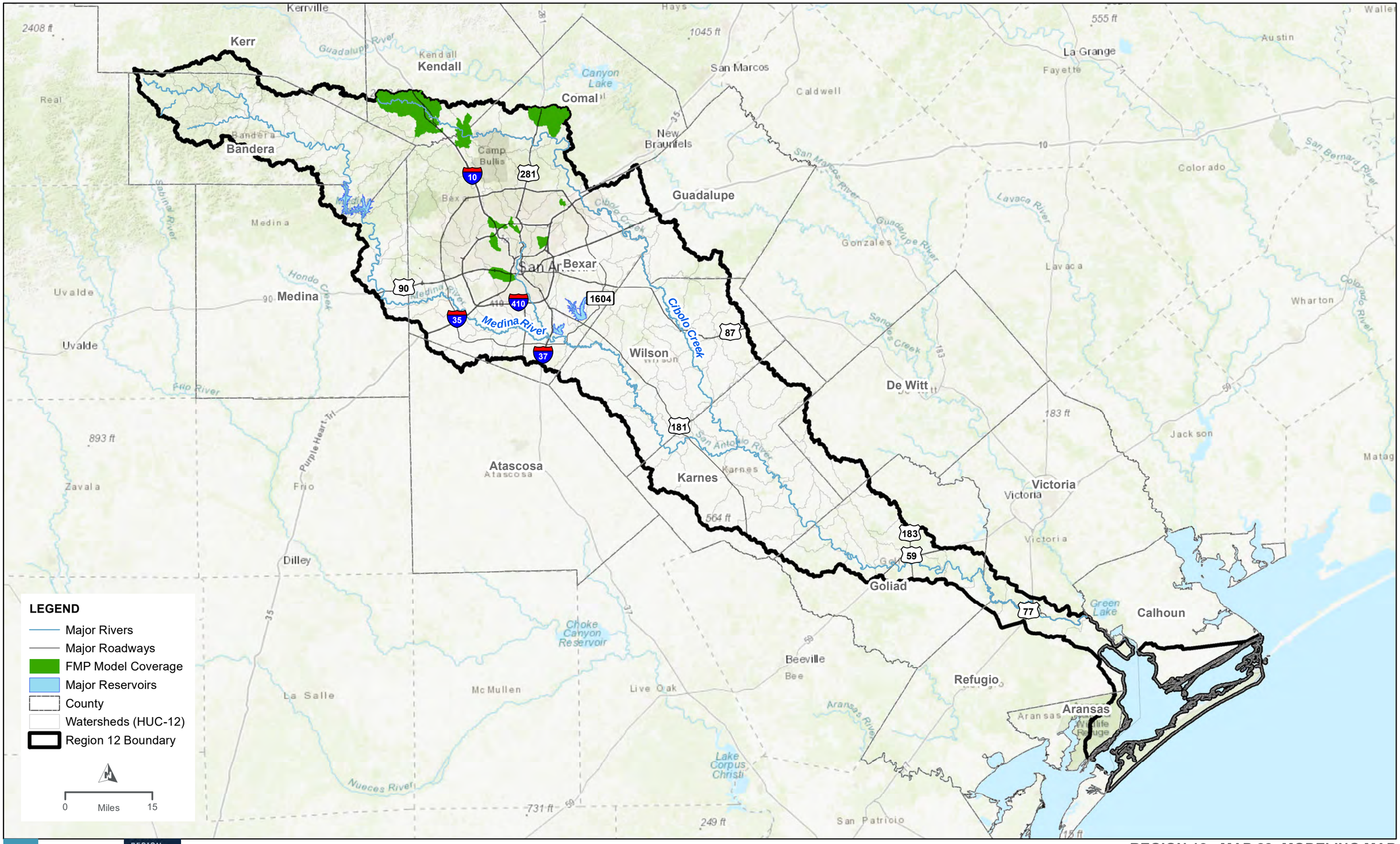
DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP20_REGIONAL_RECOMMENDEDFMP_11X17.MXD



REGION 12 - MAP 21 - RECOMMENDED FLOOD MANAGEMENT STRATEGIES

DRAFT

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP21_REGIONAL_RECOMMENDEDFMS_11X17.MXD



REGION 12 - MAP 22 -MODELING MAP

DRAFT

DOCUMENT PATH: \\OMAPI-GISAPP03\PROJECTS\PROJECTS\TWDB\TWDB_RFPG\RFP2023_REGION12_ELECTRONICFILES_HDR_WORKING\MAP_DOCS\EXHIBITS\TM_FIGURES\MAP22_MODELINGMAP_11X17.MXD

Appendix C. Public Outreach Meeting Reports

SARFPG Public Meeting – Bandera County

SARFPG Public Meeting – St. Hedwig

SARFPG Public Meeting – Virtual

SARFPG Public Meeting – San Antonio

SARFPG Public Meeting – Schertz

SARFPG Public Meeting – Floresville

San Antonio Regional Flood Planning Group
Public Meeting Documentation

Planning Region

Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

Meeting Location, Time, and Date

Thursday, December 9, 2021
10 a.m. – 11:30 a.m.
Bandera County River Authority and Conservation District (BCRAGD)

Presenters

Ronald Branson, P.E, Project Manager, HDR, Inc.
Troy Dorman, P.E., Assistant Project Manager, Halff, Inc.
David Mauk, CFM, General Manager, BCRAGD
Larry Thomas, CFM, Natural Resource Specialist, BCRAGD

Elected Officials in Attendance

3

Total Number of Attendees (approx.)

10

Number of Comments Submitted at Meeting

3

Contents

A. Comments Received

The following comments were submitted at the Public Meeting. To view these comments, plus those submitted online, go to the "Comment Map" section at https://www.region12texas.org/, and click on comment submission link.

REGION 12

PUBLIC COMMENT FORM

Sticker Number *(from in-person map)* _____

1. **What type of flooding concern is occurring?**
   - ☐ Road (i.e. street, highway, impacts travel)
   - ☑ Land (i.e. yard, parking lot, field, etc.)
   - ☐ Building (i.e. interior of home or other type of building is flooded)
   - ☐ Channel (i.e. drainage channel)
   - ☐ Other (i.e. unsure or don't know)

2. **How frequently does flooding occur?**
   - ☐ Once
   - ☐ Few occasions
   - ☑ Frequently
   - ☐ Unknown

3. **When did flooding occur? Please provide date if known.** July 2002, Oct 1997

4. **Description of flood concern or additional comments for the team.**

   Email photos or videos to the project consultant at Carolynn.Calabrese@hdrinc.com.

5. **What is the closest street/intersection to this flooding?** _____

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
Region12Texas.org
(210) 227-1373

REGION 12

PUBLIC COMMENT FORM

6. **How long have you lived or worked in the area (in years)?** 30

7. **Can we contact you to obtain more information on the flooding?**

   ☐ Yes

   ☑ No

   Name: _____ Phone Number: _____

   Email Address: _____

8. **Can we post your results publicly? (Name, phone number, and email will be removed.)**

   ☑ Yes

   ☐ No

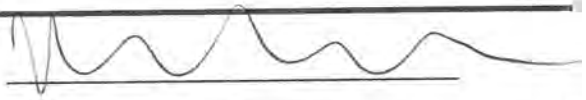
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

Region12Texas.org

(210) 227-1373

REGION 12

PUBLIC COMMENT FORM

Sticker Number *(from in-person map)* 

1. **What type of flooding concern is occurring?**
   - ☑ Road (i.e. street, highway, impacts travel)
   - ☑ Land (i.e. yard, parking lot, field, etc.)
   - ☐ Building (i.e. interior of home or other type of building is flooded)
   - ☐ Channel (i.e. drainage channel)
   - ☐ Other (i.e. unsure or don't know)

2. **How frequently does flooding occur?**
   - ☐ Once
   - ☐ Few occasions
   - ☑ Frequently
   - ☐ Unknown

3. **When did flooding occur? Please provide date if known.** August 2, 2021

4. **Description of flood concern or additional comments for the team.**

   Email photos or videos to the project consultant at Carolynn.Calabrese@hdrinc.com.

   Flooding getting worse every year due to upstream development

5. **What is the closest street/intersection to this flooding?** Cascade Caverns Road Boerne, TX 78015

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

Region12Texas.org
(210) 227-1373

REGION 12

PUBLIC COMMENT FORM

6. **How long have you lived or worked in the area (in years)?** 12 years

7. **Can we contact you to obtain more information on the flooding?**

   ☑ Yes

   ☐ No

   Name: Lance Kyle Phone Number: (703) 785-7953

   Email Address: LBKyle1@gmail.com

8. **Can we post your results publicly? (Name, phone number, and email will be removed.)**

   ☑ Yes

   ☐ No

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

Region12Texas.org

(210) 227-1373

REGION 12

PUBLIC COMMENT FORM

Sticker Number *(from in-person map)* _____

1. What type of flooding concern is occurring?

- ☐ Road (i.e. street, highway, impacts travel)
- ☐ Land (i.e. yard, parking lot, field, etc.)
- ☐ Building (i.e. interior of home or other type of building is flooded)
- ☐ Channel (i.e. drainage channel)
- ☐ Other (i.e. unsure or don't know)

2. How frequently does flooding occur?

- ☐ Once
- ☐ Few occasions
- ☐ Frequently
- ☐ Unknown

3. When did flooding occur? Please provide date if known. _____

4. Description of flood concern or additional comments for the team.

Email photos or videos to the project consultant at Carolynn.Calabrese@hdrinc.com.

I attended to support Low Impact Development solutions + Land Stewardship solutions that slow water down + sink it in, while also addressing water quality concerns. I also support the protection of natural infrastructure like healthy riparian habitat. Finally, the counties needs regulatory authority to properly manage floodways + mitigate future flood impacts!

5. What is the closest street/intersection to this flooding? _____

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
Region12Texas.org
(210) 227-1373

REGION 12

PUBLIC COMMENT FORM

6. **How long have you lived or worked in the area (in years)?** _____

7. **Can we contact you to obtain more information on the flooding?**

   ☑ Yes

   ☐ No

   Name: Ben Eldridge Phone Number: 210-633-7150

   Email Address: Ben@cibolo.org

8. **Can we post your results publicly? (Name, phone number, and email will be removed.)**

   ☑ Yes

   ☐ No

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

Region12Texas.org

(210) 227-1373

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B. Notice to the Public (newspaper ad, flyer, social media, and other outreach)

HOLIDAY, CONTINUED *from 1*

decorated up in a red Santa cape and holiday attire.

Entrants in the parade sported holiday Santa hats in red and green, with some candy stripes thrown in. The most unusual costume came from a pair of cowgirls who dressed as gingerbread cookies with sprinkled glitter on their horses as well. They had big smiles as they rode down Main Street.

Ms. Kelly's Dance Studio brought a large contingent of big and little cheerleaders and dancers. They twirled down the parade route stopping to perform for the crowd. The Bandera High School Cheerleaders brought a bulldog blue Christmas to the crowd as they marched proudly down Main.

Plenty of dog owners brought their pooches to the parade. Even the Lake Shore Firedog, a lovely large Dalmatian, was on hand to look over the event and keep the crowd safe. He took the look out from the passenger's seat as their fire truck slowly rolled through town.

To end the parade, Santa drove into town in a bright red Trans Am to the excitement of the crowd. Sporting a Bandera appropriate cowboy hat, Santa waved to the crowd as the children munched on candy and adults sighed over the beginning of the holiDAY SEASON.

Everyone wandered off to either visit the Main Street market vendors in front of the Courthouse or do some more holiday shopping on Main Street.

Cowboy Christmas Parade

BULLETIN PHOTO/Tracy Thayer

BULLETIN PHOTO/Tracy Thayer

BULLETIN PHOTO/Tracy Thayer

BULLETIN PHOTO/Tracy Thayer

BULLETIN PHOTO/Tracy Thayer

BULLETIN PHOTO/Tracy Thayer

BULLETIN PHOTO/Tracy Thayer

BACKROADS, CONTINUED *from 1*

and parks and everything in between.

Backroads Reservations, which does not charge a booking fee, highlights Bandera, Boerne, Concan, Hondo, Comfort, Ingram, Kerrville, Leakey, Lakehills, Medina, Medina Lake, Pipe Creek, Tarpley, Utopia and Vanderpool.

Listings and area highlights are arranged by town, complete with maps and directions to places of interest.

The app also highlights pet-friendly and kid-oriented businesses and attractions.

Once users have booked their lodging, the Backroads Reservation App will provide a recommended checklist for things to bring to get the most out of the property, as well as provide check-in information, photos of locations, a list of amenities, general property guidelines and more.

An anonymous chat feature allows users to connect with locals before and during the visit.

For more information, visit http://bkrds.com/app

REGION 12 FLOOD PLANNING PUBLIC MEETING

HELP US PLAN FOR FLOOD EVENTS OVER THE SHORT & LONG TERM THROUGHOUT OUR REGION

ABOUT REGION 12

The San Antonio Regional Flood Planning Group (SARFPG) is currently updating the Region 12 flood plan. Region 12 includes parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson Counties.

COME TD OUR PUBUC MEETING!

WHEN:	Thursday, December 9, 2021, 10 a.m. to 11 :30 a.m.
WHERE:	Bandera County River Authority & Groundwater Conservation District (BCRAGD) 440 FM 3240, Bandera, TX 78003
WHAT:	• View a BCRAGD presentation on the Flood Inundation Module (FIM), part of the Upper Medina Flood Early Warning System. The FIM is an interactive map showing the different levels of flooding for the Upper Medina River. • View a SARFPG presentation on flood planning. • Take a survey to share your flooding concerns.

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
Region12Texas.org
(210) 227-1373

Thank You!

A huge "Thank You" to all the entities who contributed to the successful 19th Annual
BANDERA HONORS VETERANS CELEBRATION
In honor of our veterans & their families
"Veterans Strengthening America"
Bandera American Legion Post 157

Bandera American Legion Auxiliary Unit 157
Bandera Bulletin
Bandera County Commissioners Court
Bandera Economic Development Council
Bandera High School Junior Naval ROTC
Bandera Prophet
Bandera Professional Rodeo Association
Boy Scout Troop 146
Buddy's Septic & Water Well Service
Circle M Ice Company
E & M Technologies
Hondo National Bank
JBSA – Lackland Honor Guard
JM Artisan Baked Goods
Leathernecks Motorcycle Club
Lions Club of Bandera
San Antonio Pipes & Drums
Sid Gibson Family & Friends

VOLUNTEERS & VETERANS
U R THE BEST!

MEETING FLYER EMAILED TO SARFPG MEMBERS & STAKEHOLDERS FOR THEIR DISTRIBUTION. ALSO POSTED ON SARFPG WEBSITE.

REGION 12 FLOOD PLANNING PUBLIC MEETING

HELP US PLAN FOR FLOOD EVENTS OVER THE SHORT & LONG TERM THROUGHOUT OUR REGION

ABOUT REGION 12

The San Antonio Regional Flood Planning Group (SARFPG) is currently updating the Region 12 flood plan. Region 12 includes parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson Counties.

COME TO OUR PUBLIC MEETING!

WHEN:	Thursday, December 9, 2021, 10 a.m. to 11:30 a.m.
WHERE:	Bandera County River Authority & Groundwater Conservation District (BCRAGD) 440 FM 3240, Bandera, TX 78003
WHAT:	• View a BCRAGD presentation on the Flood Inundation Module (FIM), part of the Upper Medina Flood Early Warning System. The FIM is an interactive map showing the different levels of flooding for the Upper Medina River. • View a SARFPG presentation on flood planning. • Take a survey to share your flooding concerns.

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

Region12Texas.org

(210) 227-1373

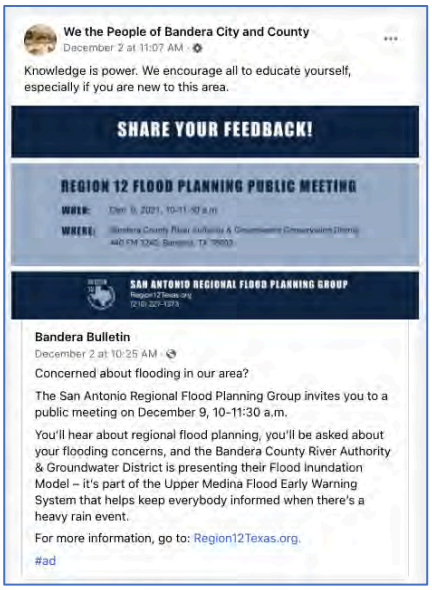
Bandera County - Social Media Outreach

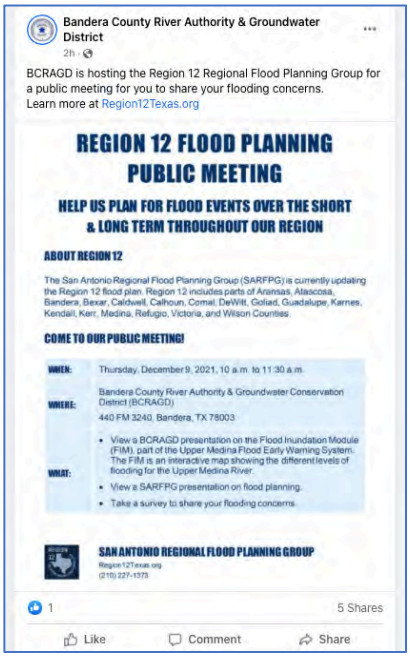
Outreach for the Bandera County SARFPG Public Meeting included the distribution of a social media package to partners. The package included content and graphics for Facebook, Twitter and Nextdoor, as shown below.

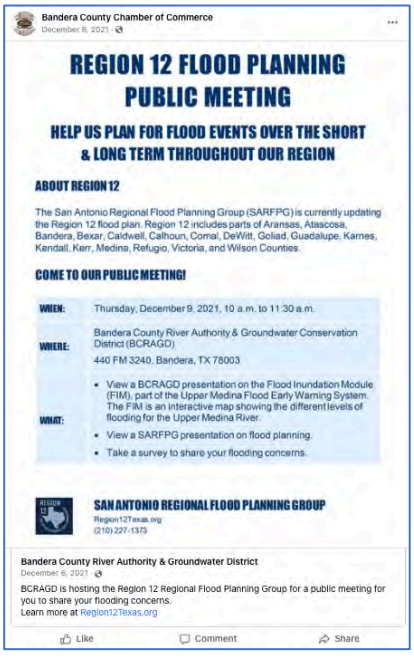
Social Media Post	Copy
#1: Before meeting	Attention, Bandera & surrounding counties! Join the San Antonio Regional Flood Planning Group for a public meeting and share your flooding concerns. WHEN: Dec. 9, 10-11:30 AM WHERE: Bandera County River Authority and Groundwater District, 440 FM 3240 Learn more: Region12Texas.org
#2: Day before meeting	REMINDER: Attention, Bandera & surrounding counties! Join the San Antonio Regional Flood Planning Group for a public meeting tomorrow morning and share your flooding concerns. Learn more: Region12Texas.org

Facebook posts by:

- We the People of Bandera City and County
- Bandera Bulletin
- Bandera County River Authority & Groundwater District
- Bandera County Chamber of Commerce





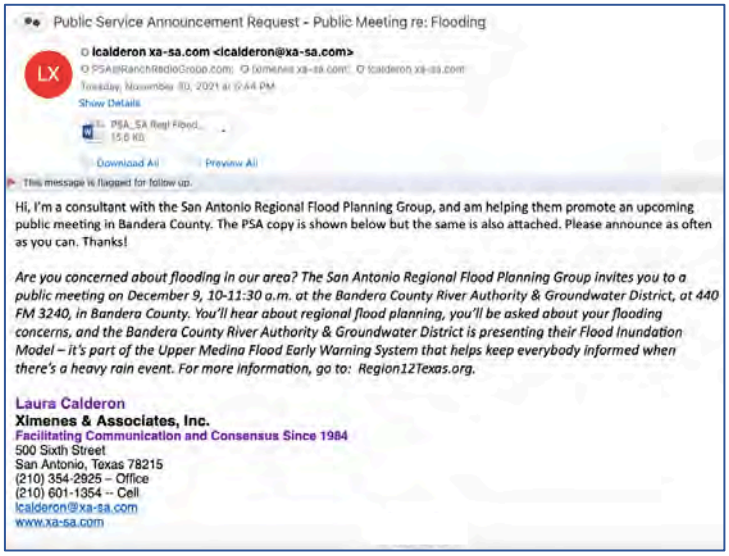


Twitter post by:

- Bandera County River Authority & Groundwater District. Posted Dec. 2, 4, 6 and 9, 2021.

SARFPG outreach for the Bandera County meeting included media alerts emailed to:

- 92.3 Radio at Ranch Radio Group
- Bandera Prophet online newspaper
- Boerne Star – submitted online request for Community Calendar



Public Service Announcement Request - Public Meeting re: Flooding

lcalderon xa-sa.com <lcalderon@xa-sa.com>

Show Details

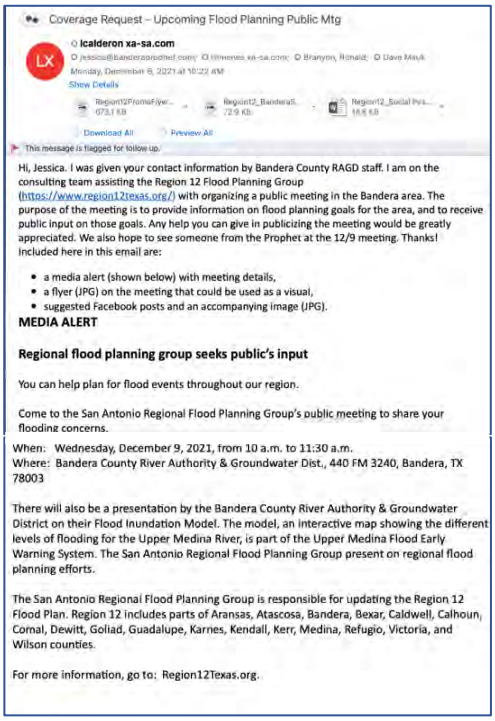
Download All Preview All

This message is flagged for follow up.

Hi, I'm a consultant with the San Antonio Regional Flood Planning Group, and am helping them promote an upcoming public meeting in Bandera County. The PSA copy is shown below but the same is also attached. Please announce as often as you can. Thanks!

Are you concerned about flooding in our area? The San Antonio Regional Flood Planning Group invites you to a public meeting on December 9, 10-11:30 a.m. at the Bandera County River Authority & Groundwater District, at 440 FM 3240, in Bandera County. You'll hear about regional flood planning, you'll be asked about your flooding concerns, and the Bandera County River Authority & Groundwater District is presenting their Flood Inundation Model – it's part of the Upper Medina Flood Early Warning System that helps keep everybody informed when there's a heavy rain event. For more information, go to: Region12Texas.org.

Laura Calderon
Ximenes & Associates, Inc.
Facilitating Communication and Consensus Since 1984
500 Sixth Street
San Antonio, Texas 78215
(210) 354-2925 – Office
(210) 601-1354 -- Cell
lcalderon@xa-sa.com
www.xa-sa.com



Coverage Request – Upcoming Flood Planning Public Mtg

lcalderon xa-sa.com

Show Details

Download All Preview All

This message is flagged for follow up.

Hi, Jessica. I was given your contact information by Bandera County RAGD staff. I am on the consulting team assisting the Region 12 Flood Planning Group (https://www.region12texas.org/) with organizing a public meeting in the Bandera area. The purpose of the meeting is to provide information on flood planning goals for the area, and to receive public input on those goals. Any help you can give in publicizing the meeting would be greatly appreciated. We also hope to see someone from the Prophet at the 12/9 meeting. Thanks! Included here in this email are:

- a media alert (shown below) with meeting details,
- a flyer (JPG) on the meeting that could be used as a visual,
- suggested Facebook posts and an accompanying image (JPG).

MEDIA ALERT

Regional flood planning group seeks public's input

You can help plan for flood events throughout our region.

Come to the San Antonio Regional Flood Planning Group's public meeting to share your flooding concerns.

When: Wednesday, December 9, 2021, from 10 a.m. to 11:30 a.m.
Where: Bandera County River Authority & Groundwater Dist., 440 FM 3240, Bandera, TX 78003

There will also be a presentation by the Bandera County River Authority & Groundwater District on their Flood Inundation Model. The model, an interactive map showing the different levels of flooding for the Upper Medina River, is part of the Upper Medina Flood Early Warning System. The San Antonio Regional Flood Planning Group present on regional flood planning efforts.

The San Antonio Regional Flood Planning Group is responsible for updating the Region 12 Flood Plan. Region 12 includes parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, Calhoun, Comal, Dewitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

For more information, go to: Region12Texas.org.

C. Sign-in Sheets

WELCOME! PLEASE SIGN IN

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

THURSDAY, DECEMBER 9, 2021 - 10 A.M. – 11:30 A.M.
BANDERA COUNTY RIVER AUTHORITY & GROUNDWATER DISTRICT

PLEASE PRINT

Name	Address/Zip Code	Email Address
Lauck Kyle	226 Cascade Cavern Rd (Boerne)	[redacted]
NEIL BOULTINGHOUSE (EO)	25705 FM 470 78006	penebo@swtex.net
Lynn Post	3414 FM 3240 78003	[redacted]
Jerry Russe (EO)	760 Hwy 16 S 78003	jerryrusse@gmail.com
Rufus Stephens	205 Bess St. Boerne 78006	[redacted]
Ben Eldredge (EO)	202 Shane Ln. Boerne 78006	Ben@cibolo.org
Donna Taylor	31043 Keeneland Fair Oaks 78015	[redacted]
Darla Reich	140 City Park Boerne 78006	[redacted]
MARK GILL	2040 PEACEFUL VALLEY RD 78003	[redacted]
[illegible]		

MEDIA SIGN IN SHEET

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
Thursday, December 9, 2021 - 10 a.m. – 11:30 a.m.
Bandera County River Authority & Groundwater District

Name	Affiliation	Email Address
JESSICA GOODE	THE BANDERA PROPHET	jessica@banderaprophet.com

STAFF/ CONSULTANTS SIGN IN SHEET

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
Thursday, December 9, 2021 - 10 a.m. – 11:30 a.m.
Bandera County River Authority & Groundwater District

Name	Affiliation	Email Address
Lauren G Calderon	X & A	lcalderon@XA-SA.com
Linda Ximenes	X & A	lximenes@xa-sa.com
Diane Irvin	BCRAGD	dirvin@bcragd.org
Corrina Fox	BCRAGD	cfox@bcragd.org
Dave Mauk	BCRAGD	dmauk@bcragd.org
Luke Whitmire	BCRAGD	lwhitmire@bcragd.org
Troy Dorman	Halff	tdorman@halff.com
Ludivine Varga	HDR	Ludivine.varga@HDRinc.com
Ron Branyon	HDR	Ron.Branyon@HDRinc.com
Daniel Perry	Halff	dperry@halff.com

D. Presentation

San Antonio Regional Flood Plan

January 11, 2022

Agenda

- **Introductions**
- **Plan Objectives and Benefits**
- **Background**
- **Planning Process and Other Studies**
- **Stakeholder Input**
- **Next Steps**

Meeting Purpose: Introduce the regional flood planning process and gather local knowledge of flood-prone areas, flood mitigation projects and needs.

Local management team has dedicated their careers to San Antonio Basin

Ron Branyon, PE, CFM

Project Manager

Point of contact/HDR

Added Value To SARFPG

- **Local, Responsive Project Manager**
- **20 years of experience delivering TWDB flood mitigation studies, drainage master plans, and floodplain mapping studies, in San Antonio River Basin**
- **Extensive experience in public outreach related to flood mitigation and mapping projects**
- **A strong working relationship with members of the Bexar Regional Watershed Management partnership.**
- **Track record for successful delivery of local high-profile projects, including nature- based solutions**

Relevant Experience To SARFP Tasks

- **SARA, City of San Antonio Drainage Master Plan — TX**
- **SARA, San Antonio River Watershed Cooperating Technical Partners (CTP) — TX**
- **SARA/Bexar County, San Pedro Creek Improvements Project — TX**
- **USACE, Leon Creek Master Plan — TX**
- **FEMA, DFIRM-Refugio, Calhoun, Aransas — TX**
- **USACE, Lower San Antonio River Basin Hydraulic Routing Models — TX**

"I work in Bexar County, reside in Wilson County and ranch in Goliad County, so this watershed is my home! From the headwaters to the Gulf I have seen it all and protecting the watershed and those who live here is what excites me about this opportunity."

What is the Region 12 Flood Plan?

- Historic Flooding – Realization of the need for flood planning
- In 2019, the 86th Texas legislature created and funded the first-ever regional and state flood planning process
- Schedule
  - Regional flood plans to be delivered by January 10, 2023, and then every five years thereafter
  - State plan to be adopted by September 1, 2024, and then every five years thereafter
- TWDB Flood Planning website:
- https://www.twdb.texas.gov/flood/planning/index.asp

Plan Objectives

- Document existing flood infrastructure and preparedness
- Identify current and future flood risk and hazard
- Develop flood mitigation/management goals
- Identify and evaluate flood management strategies and mitigation projects
- Evaluate benefits/impacts to water supply environment, and economics

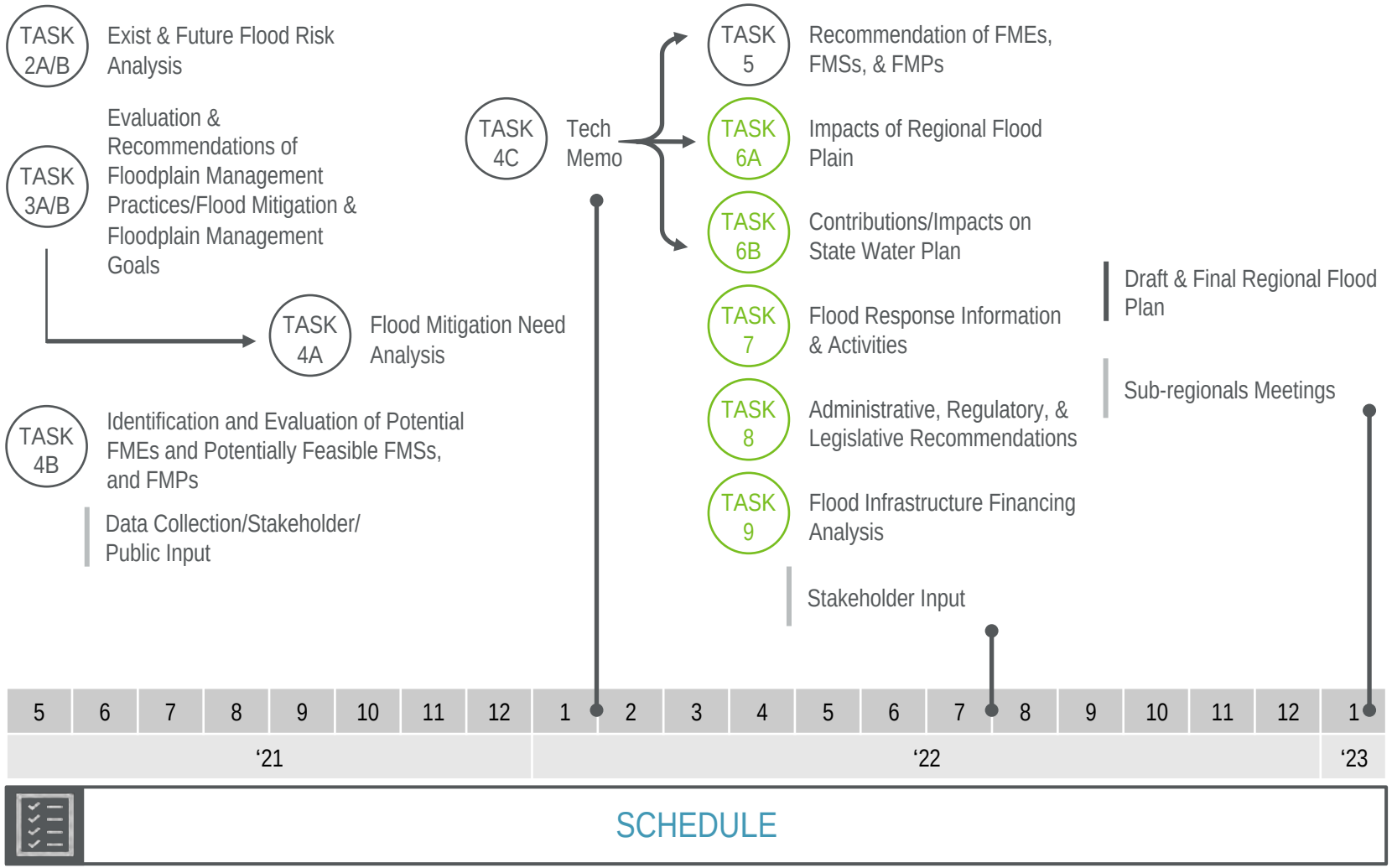
Region 12 Background

- **San Antonio Region Flood Planning Group (SARFPG)**
  - Created to represent diverse interest and to deliver the 2023 regional flood plan
- **Sponsor**
  - San Antonio River Authority
- **Technical Team**
  - HDR/Halff team selected as consultant to prepare plan

San Antonio Regional Flood Planning Group

- Flood Districts- Nefi Garza, *City of San Antonio (Chair)*
- River Authorities- Derek Boese, *SARA (Vice-Chair)*
- Water Districts- David Mauk, *Bandera Co River Authority & GWD*
- Municipalities- Jeffery Carrol, *City of Boerne*
- Agriculture- Brian Yanta, *Goliad County Ag-Extension*
- Counties- David Wegmann, *Bexar County*
- Electric-generating Utilities- Doris Cooksey, *CPS Energy*
- Environment- Debbie Reed, *Greater Edwards Aquifer Alliance*
- Industries- Cara Tackett, *Pape-Dawson Engineers*
- Non-Profit- Suzanne Scott, *Nature Conservancy*
- Public- John Beasley, *US Army Environmental Command*
- Small Business- Steve Gonzales, *Civil Tech Engineering, Inc.*
- Water Utilities- Steven Clouse, *SAWS*

TWDB Flood Planning Tasks



Schedule

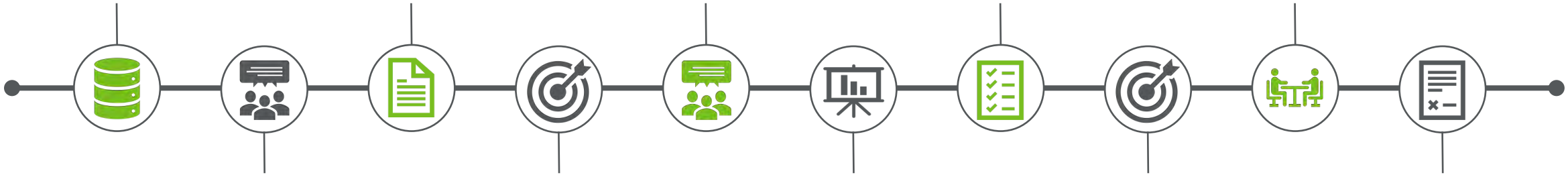
Updated Flood Risk Geodatabase – July 2021: Flood Risk Data used for base map for an interactive website for review and comment.

Draft Technical Memorandum – November 2021: We propose a workshop with you to review and collect comments for incorporation into the final document.

Regular RFPG Meeting Check-ins – February – July 2022: We will continue attending regular RFPG meetings to provide status updates on Tasks 5-9 progress.

Draft Plan – June 2022: We propose a workshop with you to review and collect comments on the Draft Plan to incorporate into the final Draft Plan.

Sub-regional Public Meeting(s) – September – October 2022: We will hold sub-regional public meetings to present the Draft Plan and incorporate public comments from the meetings and interactive website, along with TWDB's review comments into Final Plan.



Regular RFPG Meeting Check-ins – July – November 2021: We will attend regular RFPG meetings to provide status updates on Tasks 1-4 progress and discuss issues, decisions needed, action items, and next steps.

MAJOR DELIVERABLE- Technical Memorandum – January 7, 2022

Summary of Proposed Evaluations, Projects, and Strategies – May 2022: We propose a workshop with you to review preliminary list of potential flood management evaluations and potentially feasible flood mitigation projects and strategies.

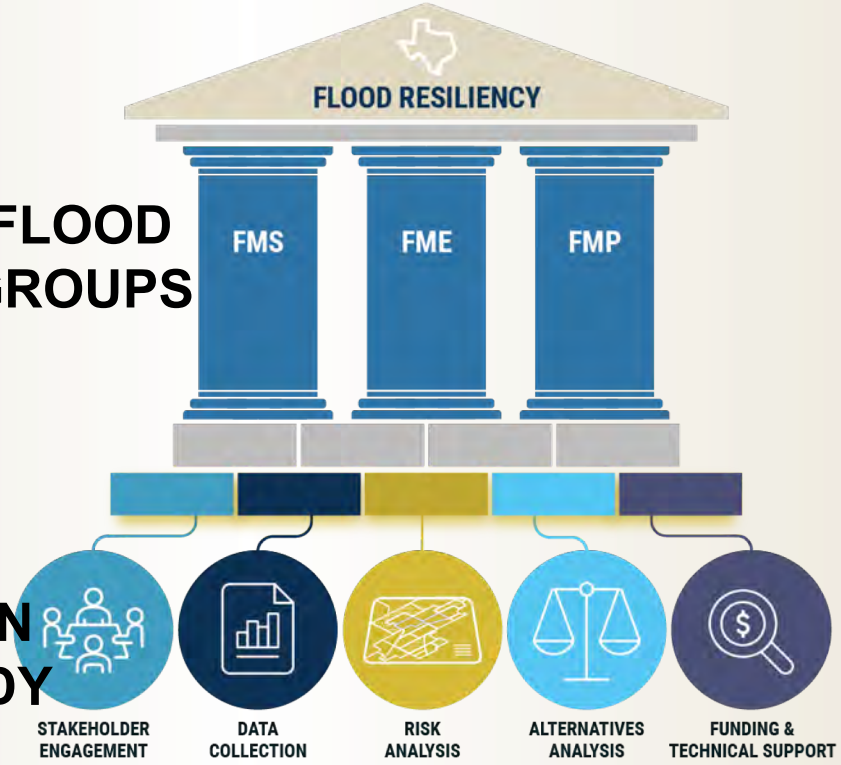
DELIVERABLE: Draft Plan – by August 1, 2022

December 2022: Once the Draft Final Plan is available, we will lead a workshop with you to review and collect final comments.

MAJOR DELIVERABLE: Final Plan – January 10, 2023

Additional Relevant Flood Studies and Coordination

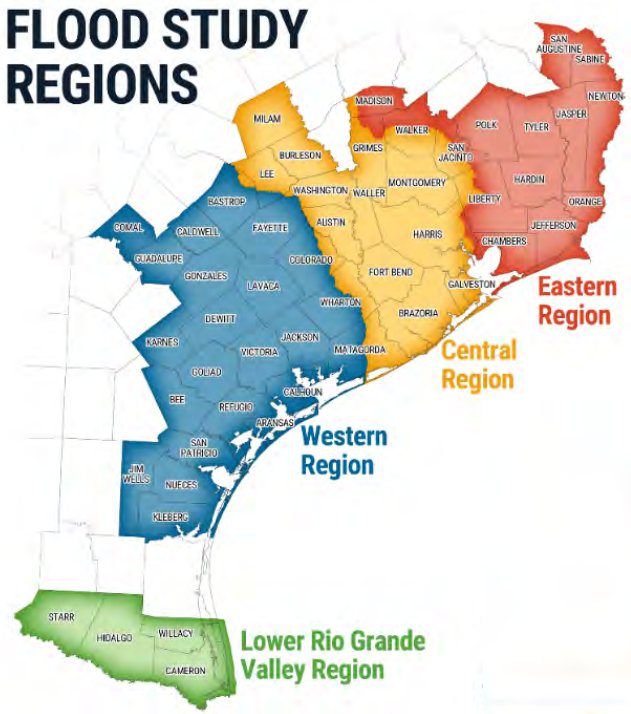
REGIONAL FLOOD PLANNING GROUPS



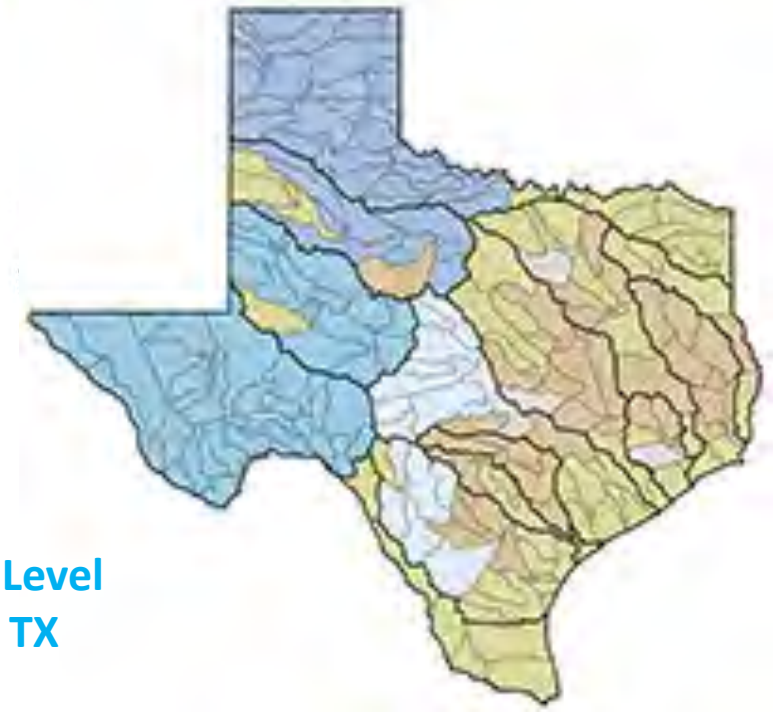
RIVER BASIN FLOOD STUDY

ACRONYMS

- FMS: Flood Management Strategies
- FME: Flood Management Evaluations
- FMP: Flood Mitigation Projects



GLO, Lower Rio Grande Valley Flood Study - TX

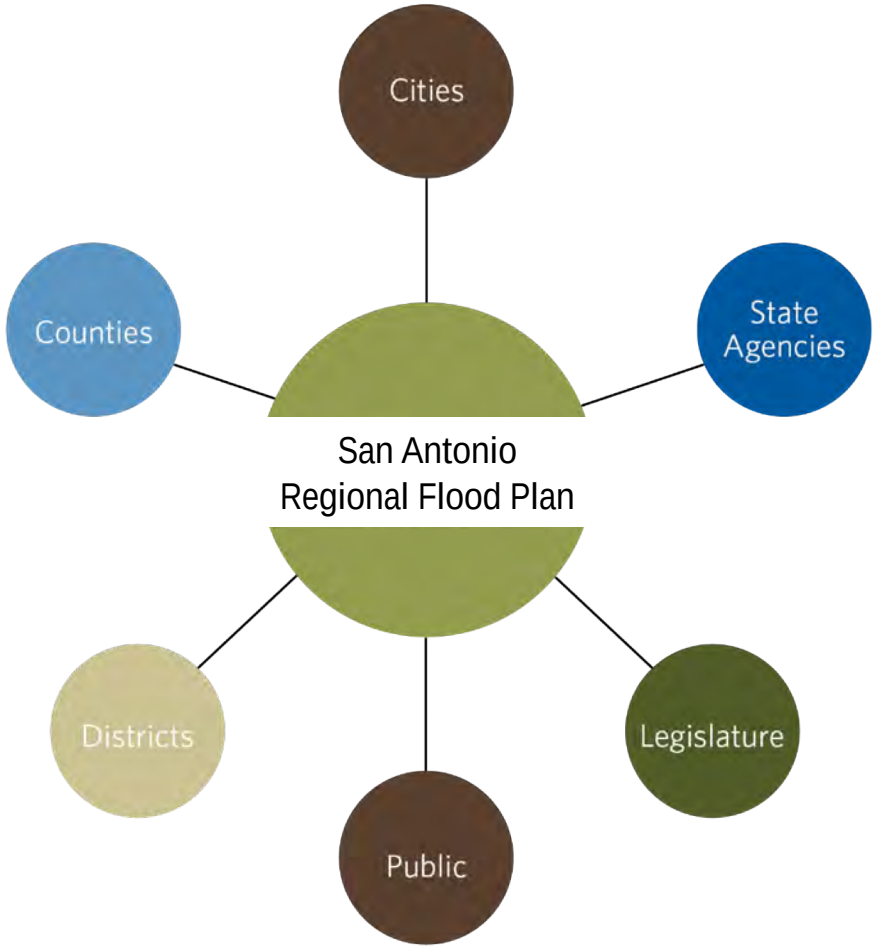


TWDB, Base Level Engineering- TX

Stakeholder Input

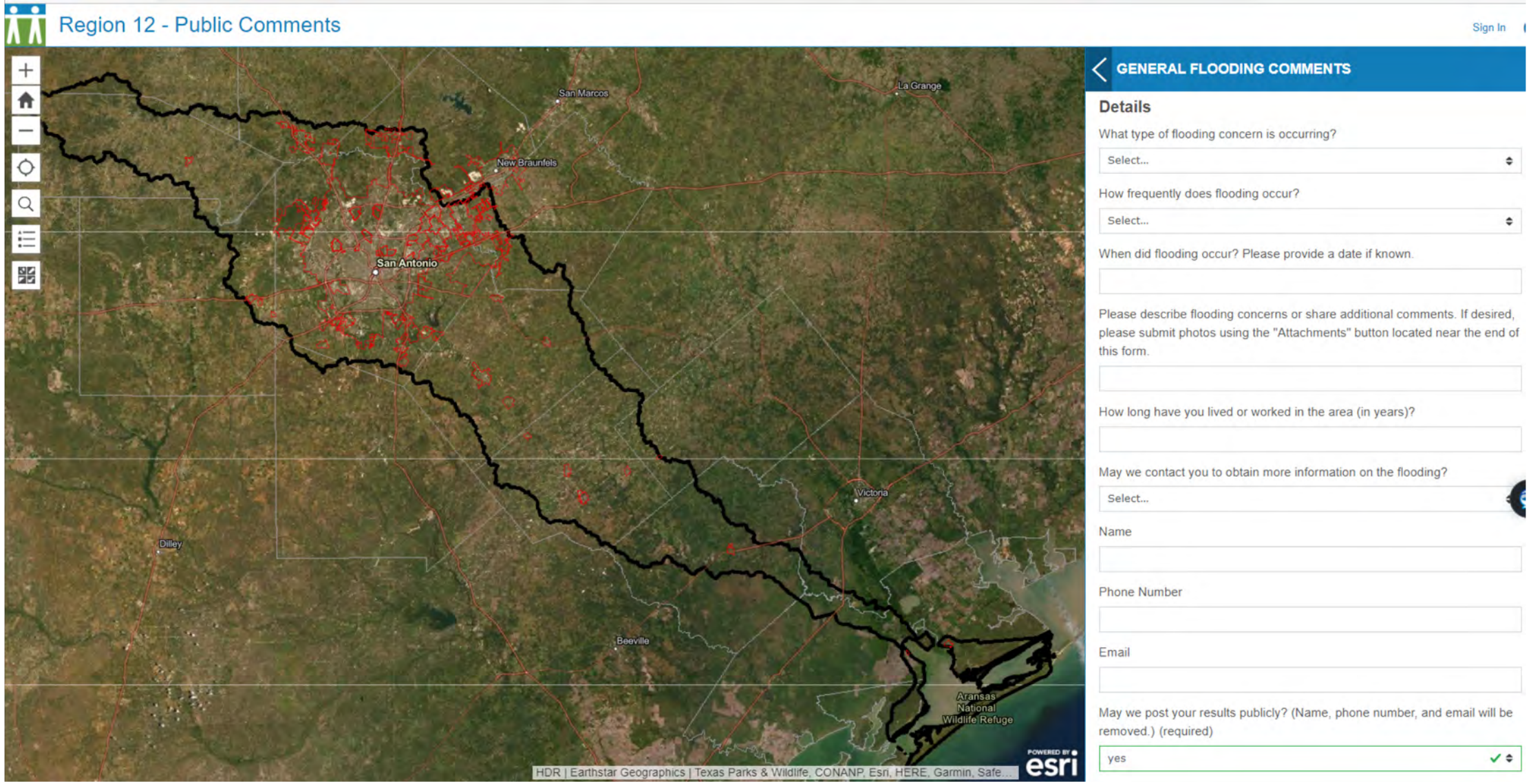
- Local knowledge, needs, and goals
  - **Flood Prone Areas**
  - Existing “Major” Flood Infrastructure
  - Proposed or Ongoing Flood Mitigation Projects
  - Existing flood management practices
  - Short- and long-term management goals
- Stay in touch through the Region 12 Website
- https://region12texas.org

  - *Anyone else that needs to be a part of this conversation?*



Interactive Comment Map

Region 12 - Public Comments (arcgis.com)



Stakeholder Input

- **Your insight is valuable**
  - Tell us your experience, where you have seen or know of flood concerns
  - A plan is only as good as the input
  - The flood plan needs to represent ALL community needs

- No one size fits all solutions, unique needs for each basin in the region

- **Funding opportunities for your much-needed projects**

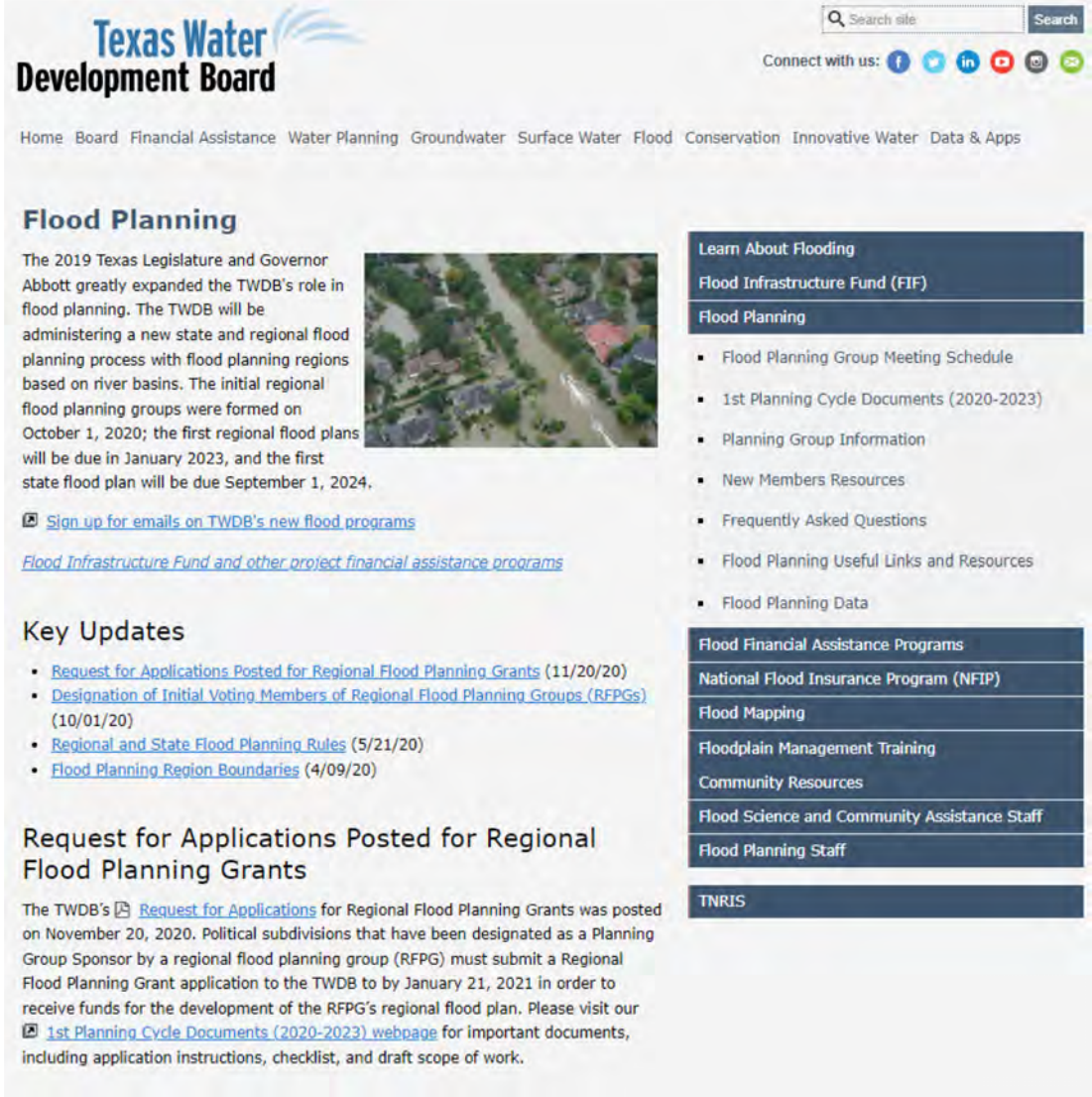
Stakeholder Input

HOW TO ENGAGE

- **Contact us- https://region12texas.wpengine.com/contact-us/**
- **Share the Region 12 Website https://www.region12texas.org**
- **Regional Flood Plan Meetings (all public)**
  - **Posted on Region 12 Website**
- **Stakeholder Surveys/ Interactive Map**

MORE INFORMATION ON STATE FLOOD PLANNING

https://www.twdb.texas.gov/flood/planning/index.asp



Any Questions

Contact info: Ron Branyon
Email: Ronald.branyon@hdrinc.com
Phone: 210.912.7105

E. Photos and Media Coverage

SARFPG PUBLIC MEETING AT BANDERA COUNTY RIVER AUTHORITY & CONSERVATION DISTRICT
DECEMBER 9, 2021

SARFPG PUBLIC MEETING AT BANDERA COUNTY RIVER AUTHORITY & CONSERVATION DISTRICT
DECEMBER 9, 2021

SARFPG PUBLIC MEETING AT BANDERA COUNTY RIVER AUTHORITY & CONSERVATION DISTRICT
DECEMBER 9, 2021

The Bandera Prophet

Photo by Jessica Nohealapa'ahi

December 13, 2021

Flood mitigation measures discussed at the groundwater district

By Jessica Nohealapa'ahi
The Bandera Prophet

"Sometimes flooding isn't on everyone's radar, but when kids can't get to school…we need to talk about what we can do," HDR Water Resources Leader Ron Branyon said. "There is climate change. More storm events are coming. There will be flash floods. We need to prepare for 10 years into the future. It's not just how do we fix the problem, it's how do we prevent the problem."

The San Antonio Regional Flood Planning Group met Dec. 9, at the Bandera County River Authority & Groundwater (BCRAGD) district office to discuss flood mitigation, planning and prevention. BCRAGD also presented its Flood Inundation Model, an interactive map showing the different levels of flooding for the Upper Medina River, which is part of the Upper Medina Flood Early Warning System.

"This is a feast or famine region, as far is rain is concerned," environmental and water resources protection advocate Troy Dorman said, who advised community leaders to put together and present projects that identify flood-prone areas, as well as short- and long-term management goals. "Not every project will be funded, but we want to get as many projects as possible into the plan…if there's a $2 billion project, put it on the list. Then the legislature can see what needs to be funded."

The San Antonio Regional Flood Planning Group is responsible for updating the Region 12 Flood Plan. Region 12 includes parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, Calhoun, Comal, Dewitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria and Wilson counties.

For more information, go to Region12Texas.org.

San Antonio Regional Flood Planning Group
Public Meeting Documentation

Planning Region

Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

Meeting Location, Time, and Date

Tuesday, January 11, 2021
6:30 p.m. – 8 p.m.
Tradition Elementary School Cafeteria
12885 FM 1346, St. Hedwig, TX 78152

Presenters

Ronald Branson, P.E, Project Manager, HDR, Inc.

Elected Officials in Attendance

1

Total Number of Attendees (approx.)

7

Number of Comments Submitted at Meeting

2

Contents

A. Comments Received

The following comments were submitted at the Public Meeting. To view these comments, plus those submitted online, go to the "Comment Map" section at https://www.region12texas.org/, and click on comment submission link.

REGION 12

PUBLIC COMMENT FORM

Sticker Number *(from in-person map)* _____

1. **What type of flooding concern is occurring?**
   - ☒ Road (i.e. street, highway, impacts travel)
   - ☒ Land (i.e. yard, parking lot, field, etc.)
   - ☐ Building (i.e. interior of home or other type of building is flooded)
   - ☐ Channel (i.e. drainage channel)
   - ☐ Other (i.e. unsure or don't know)

2. **How frequently does flooding occur?**
   - ☐ Once
   - ☐ Few occasions
   - ☒ Frequently
   - ☐ Unknown

3. **When did flooding occur? Please provide date if known.** SEPT. 21

4. **Description of flood concern or additional comments for the team.**

   Email photos or videos to the project consultant at Carolynn.Calabrese@hdrinc.com.

5. **What is the closest street/intersection to this flooding?** ABBOT Rd & S. GRAYTOWN RD ALSO CIBOLO CREEK AND IBO AREA

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

Region12Texas.org
(210) 227-1373

REGION 12

PUBLIC COMMENT FORM

6. **How long have you lived or worked in the area (in years)?** life

7. **Can we contact you to obtain more information on the flooding?**

   ☐ Yes

   ☒ No

   Name: _____ Phone Number: _____

   Email Address: _____

8. **Can we post your results publicly? (Name, phone number, and email will be removed.)**

   ☐ Yes

   ◉ No

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

Region12Texas.org

(210) 227-1373

REGION 12

PUBLIC COMMENT FORM

Sticker Number *(from in-person map)* _____

1. **What type of flooding concern is occurring?**

   - [X] Road (i.e. street, highway, impacts travel)
   - [X] Land (i.e. yard, parking lot, field, etc.)
   - [X] Building (i.e. interior of home or other type of building is flooded)
   - [X] Channel (i.e. drainage channel)
   - [ ] Other (i.e. unsure or don't know)

2. **How frequently does flooding occur?**

   - [ ] Once
   - [ ] Few occasions
   - [X] Frequently every hard rain
   - [ ] Unknown

3. **When did flooding occur? Please provide date if known.**

   Oct 2021
   May 2021

4. **Description of flood concern or additional comments for the team.**

   Email photos or videos to the project consultant at Carolynn.Calabrese@hdrinc.com.

   Husband sent in pictures. Flooding affects multiple neighbors that border the drainage ditch

5. **What is the closest street/intersection to this flooding?** Cedar Point
   12906 New Cedar, Helotes

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
Region12Texas.org
(210) 227-1373

REGION 12

PUBLIC COMMENT FORM

6. **How long have you lived or worked in the area (in years)?** 2 1/2 yrs.

7. **Can we contact you to obtain more information on the flooding?**

   ☒ Yes

   ☐ No

   Name: Paul/Mary Hardin Phone Number: 801-420-2419

   Email Address: [redacted]

8. **Can we post your results publicly? (Name, phone number, and email will be removed.)**

   ☒ Yes

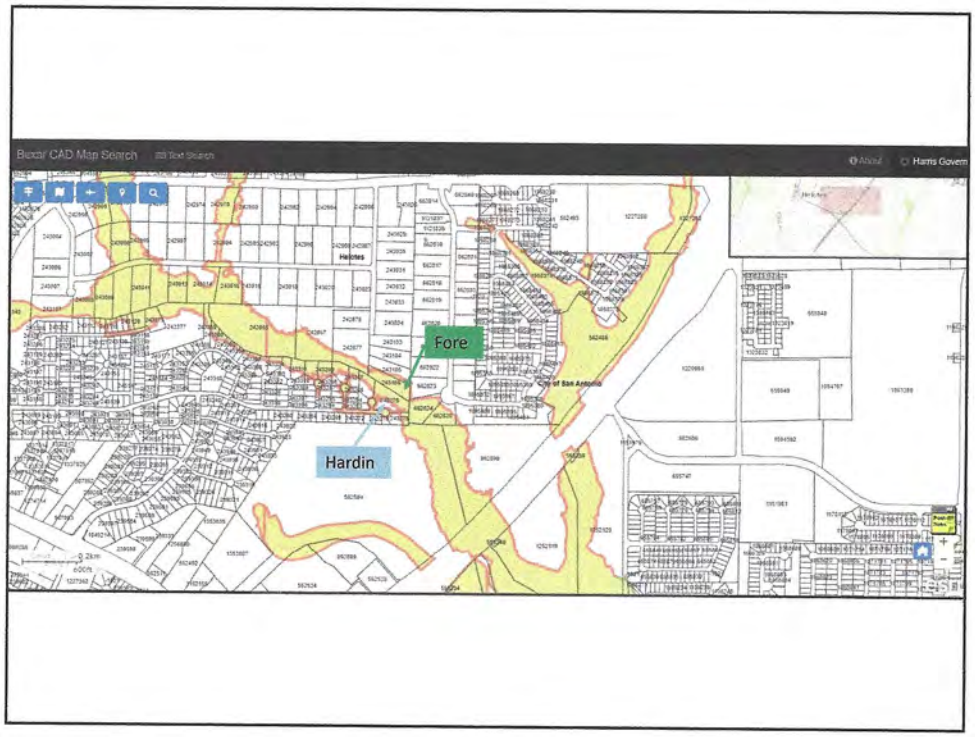
   ☐ No

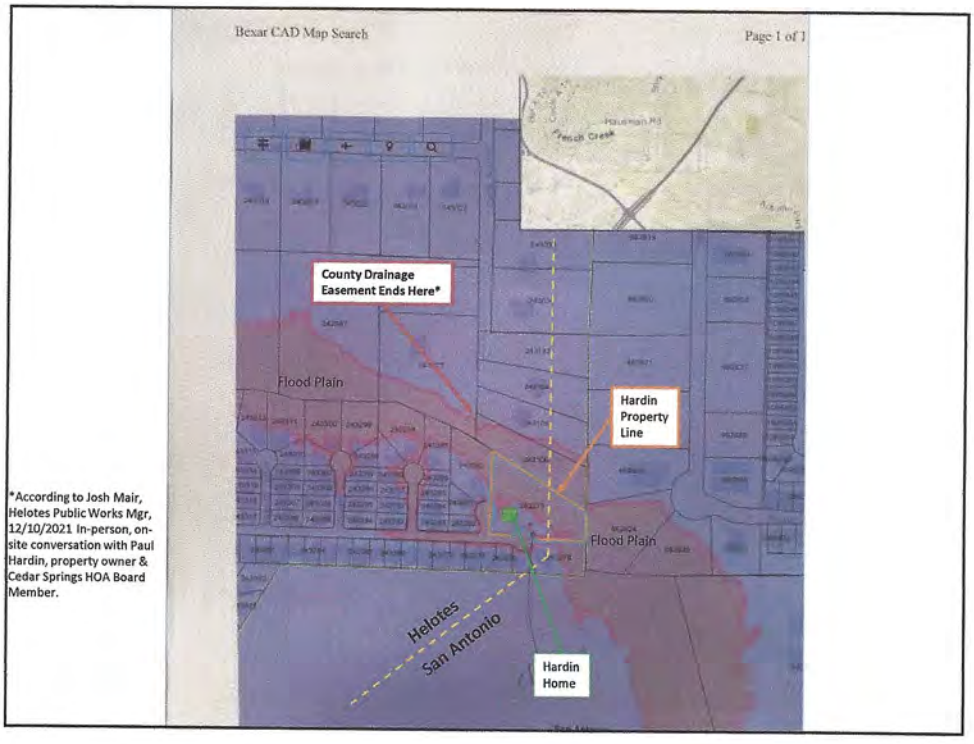
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

Region12Texas.org

(210) 227-1373

Area of French Creek Ditch Overflow Cedar Springs Hardin Property (and others) Oct 14, 2021


Bexar CAD Map Search
Fore
Hardin


Bexar CAD Map Search
Page 1 of 1
County Drainage Easement Ends Here*
Flood Plain
Hardin Property Line
Flood Plain
Helotes
San Antonio
Hardin Home
*According to Josh Mair, Helotes Public Works Mgr, 12/10/2021 In-person, on-site conversation with Paul Hardin, property owner & Cedar Springs HOA Board Member.

French Creek Ditch at full flow 6-12 ft deep May 1, 2021

French Creek Ditch Overflow Cedar Springs Hardin Property (and others) Oct 14, 2021

Water in Driveway up to Van hubs 175 ft from center of Fr Crk Ditch Oct 14, 2021

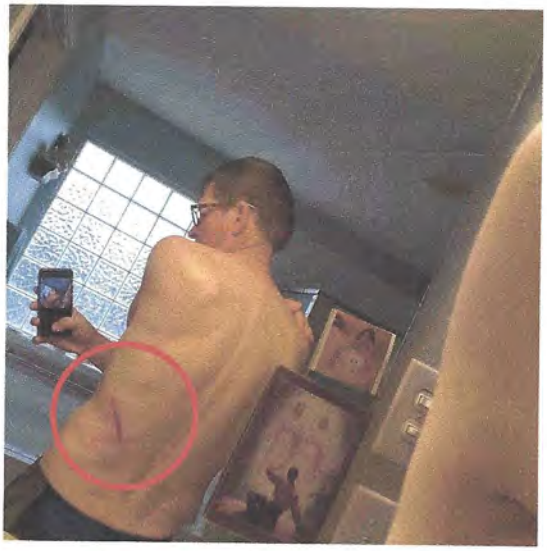
French Creek Ditch
175 ft that way

Clearing Brush from French Creek
Cedar Springs Hardin Ditch
November 11, 2021

Clearing Brush from French Creek
Cedar Springs Hardin Ditch
November 11, 2021—Many good friends and neighbors came to help!

Clearing Brush from French Creek
Cedar Springs Hardin Ditch
November 11, 2021—Approx 100 cubic yards at our cost of ~$2,000. (Labor gratis!)

Personal injury during brush clearing



1/11/2022

Brush stacked on Greenbelt between Hardin Home and French Creek Ditch Nov 11,2021

Cedar Springs Hardin property has street drainage on West and South sides of property. "Oh, the rains came down and the floods came up...."

1/11/2022

Please remember: for those of us living in a flood plain, when it rains, it "poors".

.

B. Notice to the Public (newspaper ad, flyer and social media)

2021 protests: Citizens make their opinions public

Protests took different forms in Wilson County during 2021, after various events stirred citizens to action.

WCN File Photo

Hundreds of property owners attend a May 2 seminar at Isabel's Garden at Studio C in Floresville to learn about property taxes and filing appraisal protests, after receiving statements indicating a huge increase in the appraised value of their properties.

WCN File Photo

Floresville High School students conduct a peaceful demonstration Sept. 24 related to alleged sexual assaults at the high school.

Two protests manifested themselves in demonstrations — with chants and homemade signs — over allegations involving students on Floresville Independent School District campuses.

Parents protest bullying

Protesters demonstrated outside the school district's central office April 16, following an incident three days earlier. According to the mother of a middle school student, her son had been knocked down under the school gym bleachers and rendered unconscious, after months of being bullied by other students.

School district officials responded to the protest by saying they had already begun investigating the incident and would review district policies and procedures regarding bullying. (See "Protestors seek 'justice' for FISD bullying victim," April 20.)

High school students demonstrate

Another serious allegation, this time of sexual assaults at Floresville High School, triggered another demonstration Sept. 21 outside the high school. Approximately 70 students left class and marched to the property line, displaying signs and repeating chants for almost an hour. Family members and friends joined them in protest on an adjoining public street.

Again, school district officials assured demonstrators that the allegations were taken very seriously and that appropriate actions were being taken.

Some protesting parents expressed anger that they had heard about sexual assaults from their children, but not from the school. District officials, however, said privacy laws and ongoing criminal investigations prevented them from providing much information about the cases.

District officials also noted that the students had been permitted to demonstrate peacefully on school grounds and said they "encourage students and parents to communicate openly with teachers, counselors, administrators, as well as law enforcement." (See "Floresville HS students protest alleged assaults," Sept. 28.)

Property owners protest appraisals

A significant number of property owners submitted formal protests with the Wilson County Appraisal District after receiving higher appraisal statements last April.

Although this form of protest doesn't have anyone take to the streets, many taxpayers made their opinions quite public, citing individual cases of property owners receiving appraisals that doubled or even tripled their previous year's appraised value, even without improvements to the property.

While the district doesn't set higher tax rates, higher property appraisals mean property owners will pay more in taxes. Appraisal district officials explained that the district follows legislative guidelines, but property owners could file protests with additional information, including photos and other documentation, that might lower their appraisals. (See "High appraisals spark questions," April 20.)

After learning what to do, many taxpayers did file protests — 7,462, according to the appraisal district — more than three times the number who protested the previous year's appraisals. So many were the protests that the appraisal district, which was supposed to certify tax rolls for the county's taxing entities by July 25, obtained an extension from the state for a Sept. 1 deadline. (See "Property appraisal protests grind on," June 8.)

Apparently, many property owners obtained adjustments to their appraisals and were satisfied with them. By the time the taxing entities — county, cities, school districts, and other governing bodies — approved their tax rates before the fiscal year ended in October, few citizens protested those rates at the public hearings.

gripps@wcn-online.com

The Blockhouse receives grant to aid with COVID impacts

ST. HEDWIG — The Blockhouse Café has been awarded a $2,500 grant from the Texas Conference for Women in support of its efforts to overcome the extraordinary financial pressures placed on women-owned restaurants since COVID.

> ***'We are a small mom-and-pop shop that depends on every customer that walks through our door.'***
> — The Blockhouse owner Jennifer Bratcher

"This grant could not have come at a better time for our business," said owner Jennifer Bratcher. "We survived the first COVID outbreak that put a major strain on our business with all the tight restrictions that came with it. We are a small mom-and-pop shop that depends on every customer that walks through our door."

The grant, she said, will help The Blockhouse — which serves "slightly elevated comfort food," coffee, and teas — prepare for this winter's COVID season, and help with employee retention and hiring, "which has been such a struggle."

The Texas Conference for Women — in partnership with the Texas Restaurant Association — has awarded a total of $200,000 to 80 Texas women-owned restaurants. In 2020, the two organizations distributed $175,000 to more than 70 restaurants.

The Texas Conference for Women is a nonprofit, non-partisan organization dedicated to advancing women in the workplace.

"Our community has been a huge support and we are forever grateful for the business they have provided us during this first year," Bratcher said.

The Blockhouse is located at 11781 F.M. 1346 in St. Hedwig. For more information, visit https://www.theblockhouse.com or call 210-598-9770.

Changes to TRICARE retail pharmacies now in effect

TRICARE, one of the nation's largest health plans, operated by the Defense Health Agency, has announced that CVS Pharmacy has joined the TRICARE retail pharmacy network, while Walmart, Sam's Club, and some community pharmacies have left the network.

Beneficiaries who have a prescription at Walmart, Sam's Club, or any other impacted pharmacy, should transfer it to a new network pharmacy to avoid having to pay the full cost of the prescription up front or having to file a claim for reimbursement.

Beneficiaries that filled a prescription at one of the impacted pharmacies will receive a communication from the Department of Defense's retail pharmacy contractor, Express Scripts, who will provide recommendations on filling prescriptions at a new network pharmacy.

Lists of network pharmacies are available online at https://militaryrx.express-scripts.com or by calling 877-363-1303.

MEETING FLYER EMAILED TO STAKEHOLDERS FOR THEIR DISTRIBUTION. ALSO POSTED ON SARFPG WEBSITE.

REGION 12 FLOOD PLANNING PUBLIC MEETING

HELP US PLAN FOR FLOOD EVENTS OVER THE SHORT & LONG TERM THROUGHOUT OUR REGION

ABOUT REGION 12

The San Antonio Regional Flood Planning Group (SARFPG) is currently updating the Region 12 flood plan. Region 12 includes parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson Counties.

COME TO OUR PUBLIC MEETING!

WHEN:	Tuesday, January 11, 2022, 6:30-8:00 p.m.
WHERE:	Tradition Elementary School Cafeteria 12885 FM 1346, St. Hedwig, TX 78152
WHAT:	• Learn more about flood mapping efforts in our region. • Talk with SARFPG staff and ask questions. • Take a survey to share your flooding concerns.

SHARE YOUR FEEDBACK

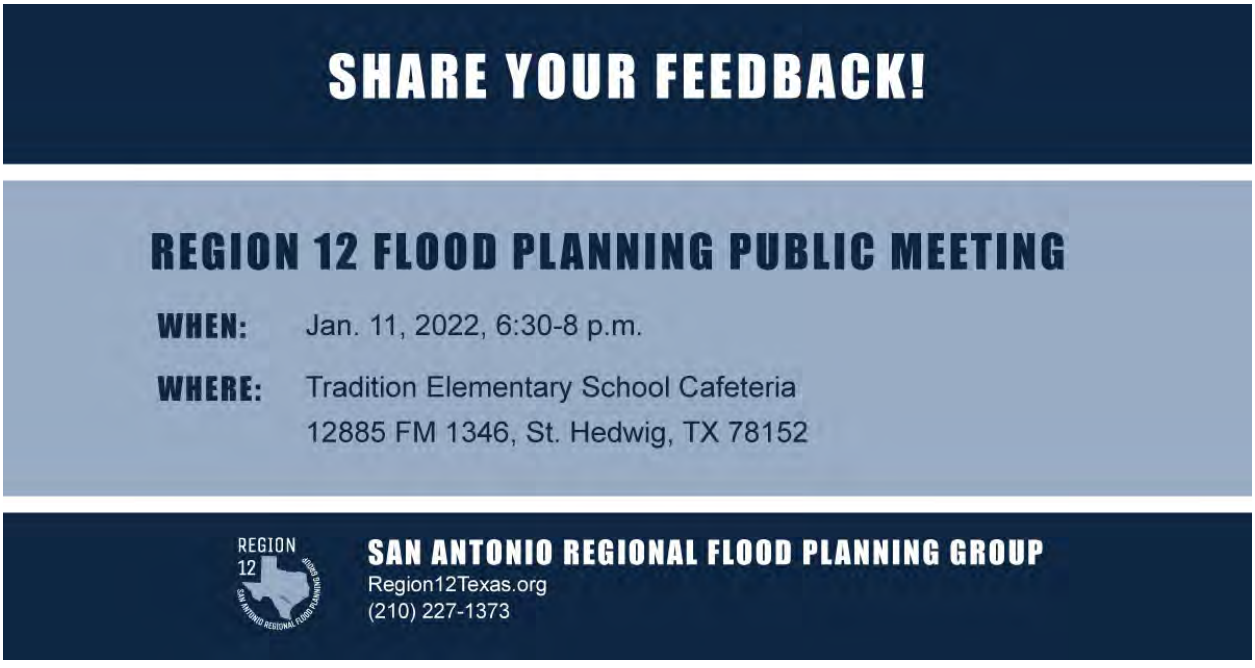
Help us plan for and address short and long-term flooding throughout our region! Go to bit.ly/Region12FloodPlanning or scan this QR code with your smart phone's camera to take our survey.

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
Region12Texas.org
(210) 227-1373

St. Hedwig Area - Social Media Outreach

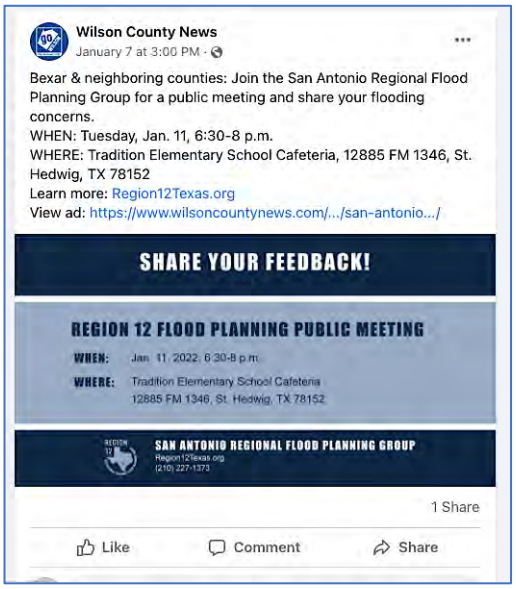
Outreach for the St. Hedwig SARFPG Public Meeting included the distribution of a social media package to San Antonio River Authority partners. The package included content and graphics for Facebook, Twitter and Nextdoor, as shown below.

Post	Copy
#1: Before meeting	Bexar & neighboring counties: share your flooding concerns at a San Antonio Regional Flood Planning Group public meeting! WHEN: Jan. 11, 6:30-8 p.m. WHERE: Tradition Elementary School Cafeteria, 12885 FM 1346, St. Hedwig, TX 78152 Learn more & share feedback: Region12Texas.org
#2: Day before meeting	REMINDER for Bexar & neighboring counties! Join the San Antonio Regional Flood Planning Group for a public meeting and share your flooding concerns. Learn more & share feedback: Region12Texas.org
Anytime:	The San Antonio Regional Flood Planning Group is currently updating our region's flood plan – but we need your help! Share flooding concerns in your area by taking our survey here: bit.ly/Region12FloodPlanning



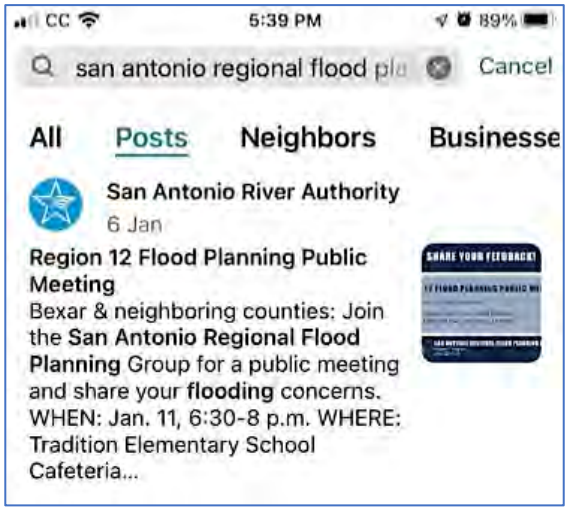
Facebook posts by:

- Wilson County News
- East Central Ind. School District



Nextdoor post by:

- San Antonio River Authority



C. Sign-in Sheets

WELCOME! PLEASE SIGN IN

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
TUESDAY, JANUARY 11, 2022 - 6:30 P.M. – 8 P.M.
TRADITION ELEMENTARY SCHOOL, 12885 FM 1346
ST. HEDWIG, TX 78152

PLEASE PRINT

NAME	ADDRESS/ZIP CODE	EMAIL ADDRESS
Edward J Cielencki JR	655 N. Graytown Rd ST. HEDWIG 78152	
~~Carl Franckowiak~~	~~15725 St. Hedwig Rd~~	
Ken Lemanski	5034 Tupelo Row SA 78263 210-860-3991	[redacted]
Mary Hardin	12906 New Cedar 801-827-4134	[redacted]
Paul Hardin	" 801-420-2419	[redacted]
Anthony N. Schneider SR	402 De Soto Dr Universal City TX 78148	[redacted]
AJ Schneider	"	"

WELCOME! PLEASE SIGN IN

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
TUESDAY, JANUARY 11, 2022 - 6:30 P.M. – 8 P.M.
TRADITION ELEMENTARY SCHOOL, 12885 FM 1346
ST. HEDWIG, TX 78152

PLEASE PRINT

NAME	ADDRESS/ZIP CODE	EMAIL ADDRESS
Vinnie Bilotto	7243 Hidden Hills N S.A. TX 78244	[redacted]

ELECTED OFFICIALS SIGN IN SHEET

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
TUESDAY, JANUARY 11, 2022 - 6:30 P.M. – 8 P.M.
TRADITION ELEMENTARY SCHOOL, 12885 FM 1346
ST. HEDWIG, TX 78152

Name	Affiliation	Email Address
Caid Franckowiak	St. Hedwig City Council	caid.franckowiak@sthedwigcity.com

REGION 12 SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

STAFF/ CONSULTANTS SIGN IN SHEET

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
TUESDAY, JANUARY 11, 2022 - 6:30 P.M. – 8 P.M.
TRADITION ELEMENTARY SCHOOL, 12885 FM 1346
ST. HEDWIG, TX 78152

Name	Affiliation	Email Address
Laura Calderon	Ximenes & Assoc	lcalderon@xa-sa.com
Linda Ximenes	Ximenes & Assoc	lximenes@xa-sa.com
Ron Branyon	HDR, Inc	
NICHOLAS GOVEA	HDR, INC	NICHOLAS.GOVEA@HDRINC.COM
Ludivine Varga	~~HDR~~	Ludivine.varga@HDRINC.com

D. Presentation

San Antonio Regional Flood Plan

January 11, 2022

Agenda

- **Introductions**
- **Plan Objectives and Benefits**
- **Background**
- **Planning Process and Other Studies**
- **Stakeholder Input**
- **Next Steps**

Meeting Purpose: Introduce the regional flood planning process and gather local knowledge of flood-prone areas, flood mitigation projects and needs.

Local management team has dedicated their careers to San Antonio Basin

Ron Branyon, PE, CFM

Project Manager

Point of contact/HDR

Added Value To SARFPG

- **Local, Responsive Project Manager**
- **20 years of experience delivering TWDB flood mitigation studies, drainage master plans, and floodplain mapping studies, in San Antonio River Basin**
- **Extensive experience in public outreach related to flood mitigation and mapping projects**
- **A strong working relationship with members of the Bexar Regional Watershed Management partnership.**
- **Track record for successful delivery of local high-profile projects, including nature- based solutions**

Relevant Experience To SARFP Tasks

- **SARA, City of San Antonio Drainage Master Plan — TX**
- **SARA, San Antonio River Watershed Cooperating Technical Partners (CTP) — TX**
- **SARA/Bexar County, San Pedro Creek Improvements Project — TX**
- **USACE, Leon Creek Master Plan — TX**
- **FEMA, DFIRM-Refugio, Calhoun, Aransas — TX**
- **USACE, Lower San Antonio River Basin Hydraulic Routing Models — TX**

"I work in Bexar County, reside in Wilson County and ranch in Goliad County, so this watershed is my home! From the headwaters to the Gulf I have seen it all and protecting the watershed and those who live here is what excites me about this opportunity."

What is the Region 12 Flood Plan?

- Historic Flooding – Realization of the need for flood planning
- In 2019, the 86th Texas legislature created and funded the first-ever regional and state flood planning process
- Schedule
  - Regional flood plans to be delivered by January 10, 2023, and then every five years thereafter
  - State plan to be adopted by September 1, 2024, and then every five years thereafter
- TWDB Flood Planning website:
- https://www.twdb.texas.gov/flood/planning/index.asp

HARDIN PHOTOS SUBMITTED AT ST. HEDWIG PUBLIC MEETING 4/4/2022

Plan Objectives

- Document existing flood infrastructure and preparedness
- Identify current and future flood risk and hazard
- Develop flood mitigation/management goals
- Identify and evaluate flood management strategies and mitigation projects
- Evaluate benefits/impacts to water supply environment, and economics

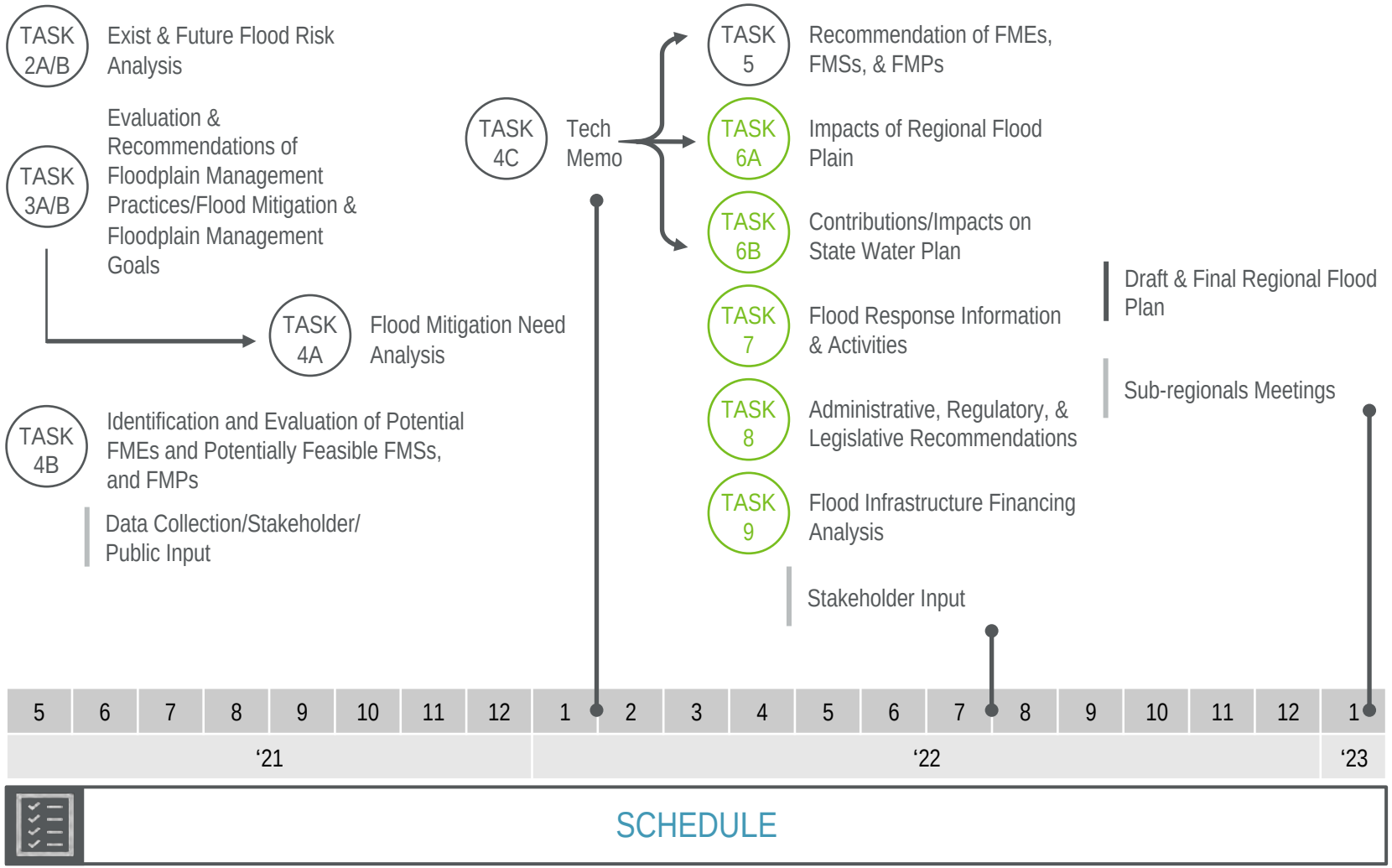
Region 12 Background

- **San Antonio Region Flood Planning Group (SARFPG)**
  - Created to represent diverse interest and to deliver the 2023 regional flood plan
- **Sponsor**
  - San Antonio River Authority
- **Technical Team**
  - HDR/Halff team selected as consultant to prepare plan

San Antonio Regional Flood Planning Group

- Flood Districts- Nefi Garza, *City of San Antonio (Chair)*
- River Authorities- Derek Boese, *SARA (Vice-Chair)*
- Water Districts- David Mauk, *Bandera Co River Authority & GWD*
- Municipalities- Jeffery Carrol, *City of Boerne*
- Agriculture- Brian Yanta, *Goliad County Ag-Extension*
- Counties- David Wegmann, *Bexar County*
- Electric-generating Utilities- Doris Cooksey, *CPS Energy*
- Environment- Debbie Reed, *Greater Edwards Aquifer Alliance*
- Industries- Cara Tackett, *Pape-Dawson Engineers*
- Non-Profit- Suzanne Scott, *Nature Conservancy*
- Public- John Beasley, *US Army Environmental Command*
- Small Business- Steve Gonzales, *Civil Tech Engineering, Inc.*
- Water Utilities- Steven Clouse, *SAWS*

TWDB Flood Planning Tasks



Schedule

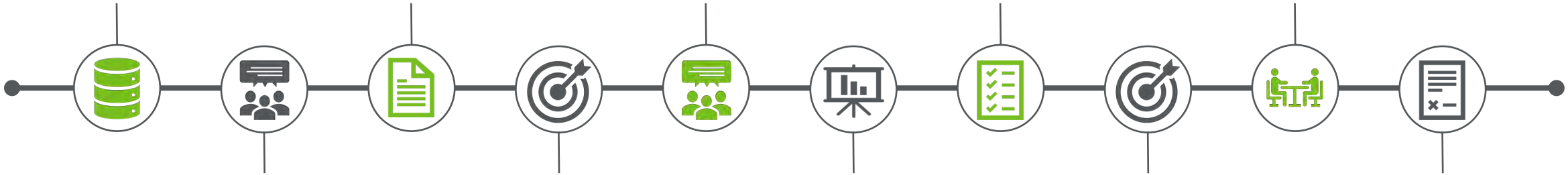
Updated Flood Risk Geodatabase – July 2021: Flood Risk Data used for base map for an interactive website for review and comment.

Draft Technical Memorandum – November 2021: We propose a workshop with you to review and collect comments for incorporation into the final document.

Regular RFPG Meeting Check-ins – February – July 2022: We will continue attending regular RFPG meetings to provide status updates on Tasks 5-9 progress.

Draft Plan – June 2022: We propose a workshop with you to review and collect comments on the Draft Plan to incorporate into the final Draft Plan.

Sub-regional Public Meeting(s) – September – October 2022: We will hold sub-regional public meetings to present the Draft Plan and incorporate public comments from the meetings and interactive website, along with TWDB's review comments into Final Plan.



Regular RFPG Meeting Check-ins – July – November 2021: We will attend regular RFPG meetings to provide status updates on Tasks 1-4 progress and discuss issues, decisions needed, action items, and next steps.

MAJOR DELIVERABLE- Technical Memorandum – January 7, 2022

Summary of Proposed Evaluations, Projects, and Strategies – May 2022: We propose a workshop with you to review preliminary list of potential flood management evaluations and potentially feasible flood mitigation projects and strategies.

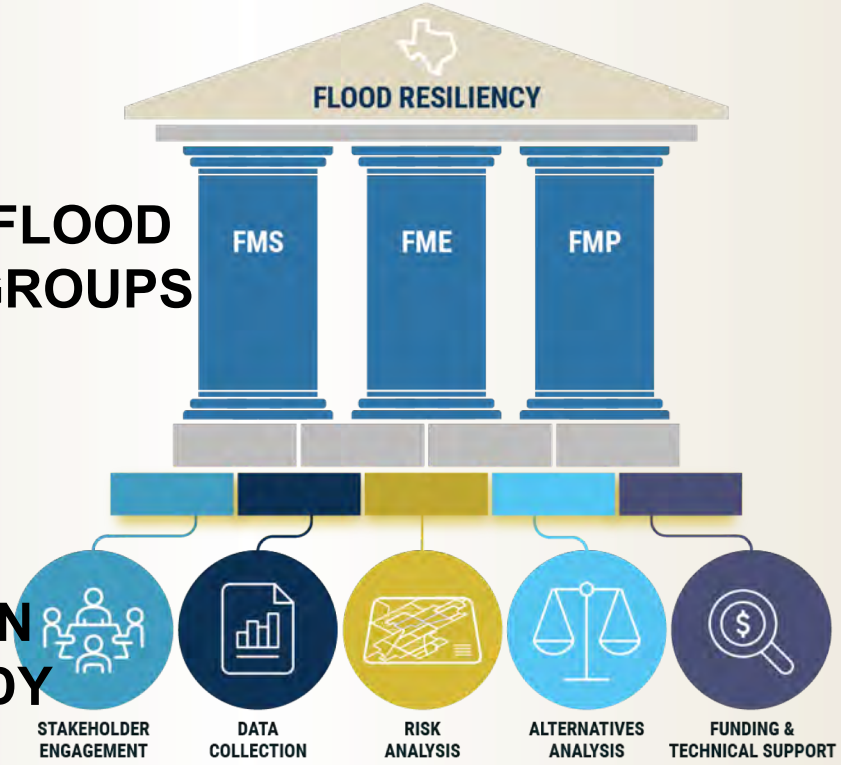
DELIVERABLE: Draft Plan – by August 1, 2022

December 2022: Once the Draft Final Plan is available, we will lead a workshop with you to review and collect final comments.

MAJOR DELIVERABLE: Final Plan – January 10, 2023

Additional Relevant Flood Studies and Coordination

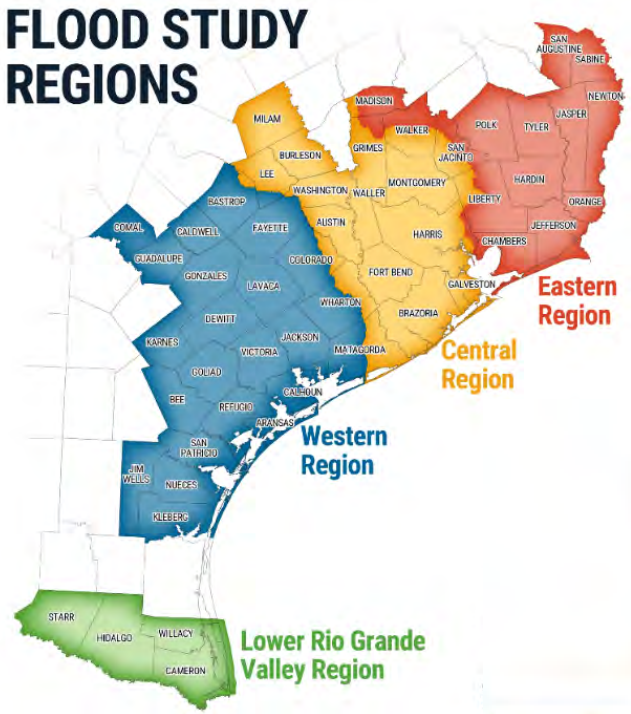
REGIONAL FLOOD PLANNING GROUPS



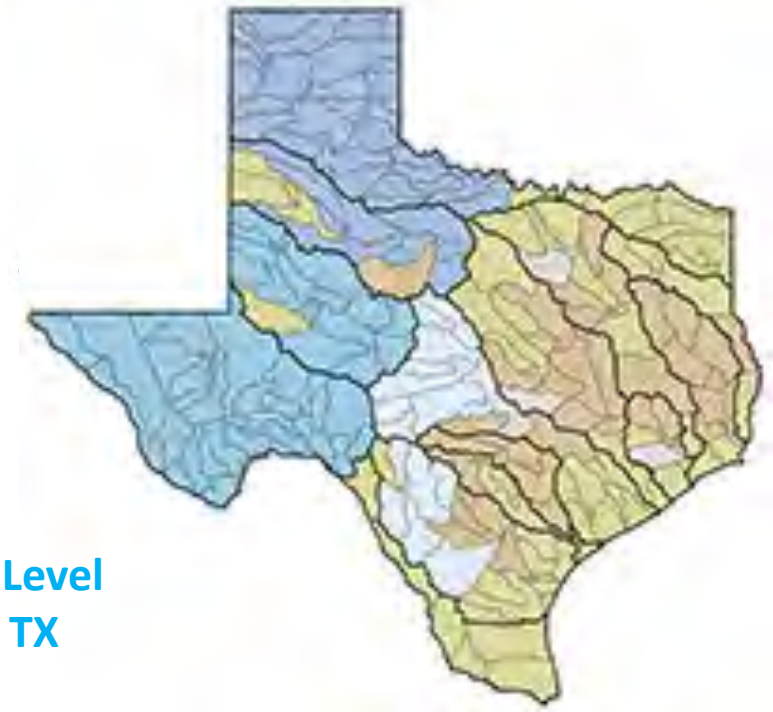
RIVER BASIN FLOOD STUDY

ACRONYMS

- FMS: Flood Management Strategies
- FME: Flood Management Evaluations
- FMP: Flood Mitigation Projects



GLO, Lower Rio Grande Valley Flood Study - TX

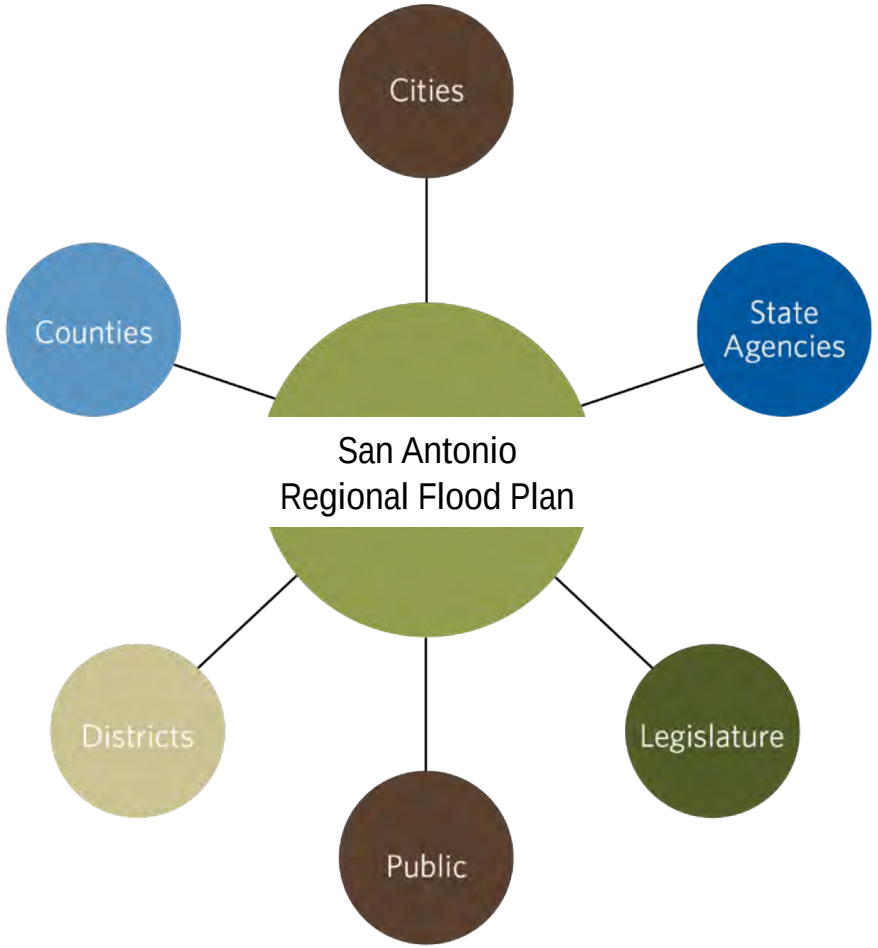


TWDB, Base Level Engineering- TX

Stakeholder Input

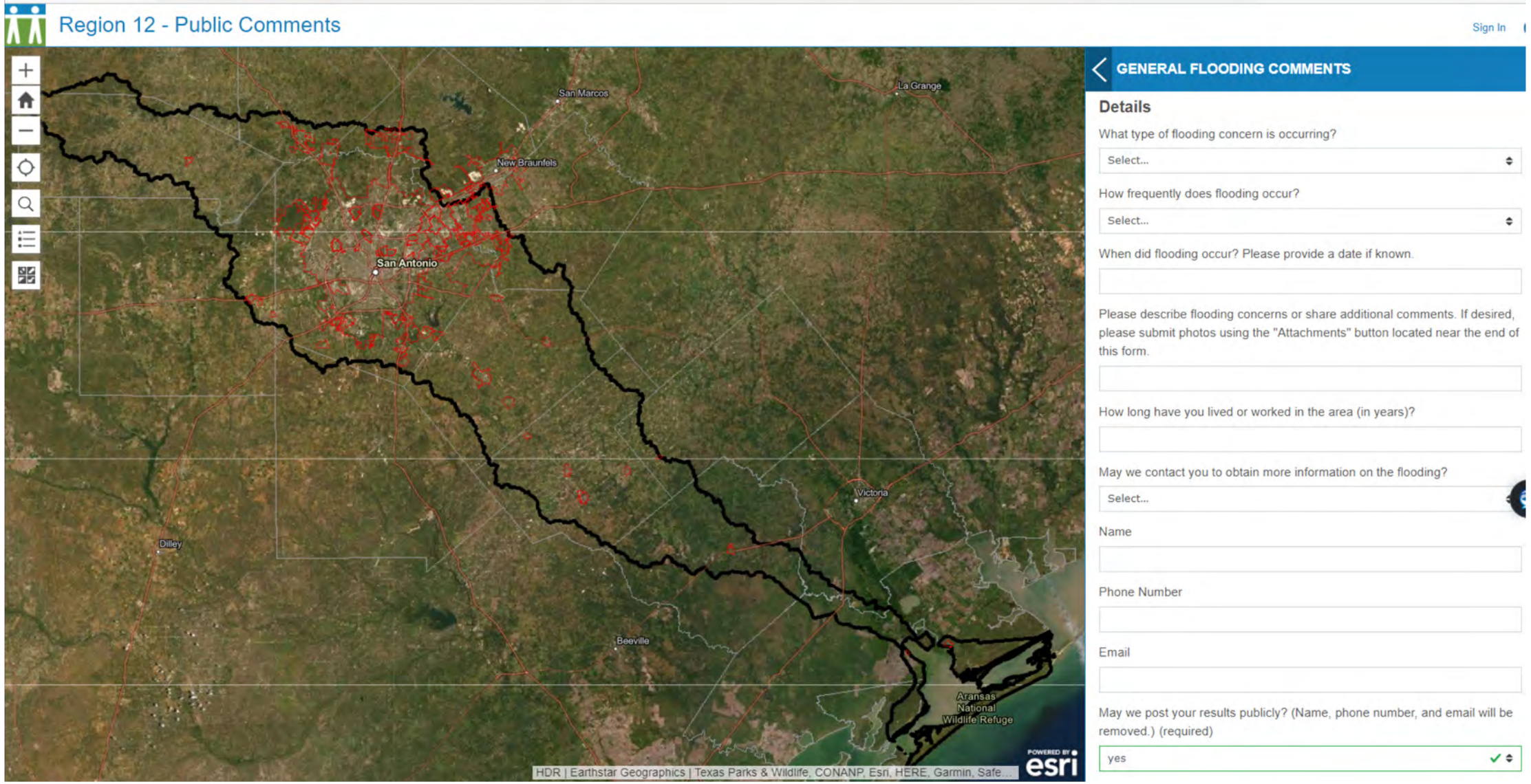
- Local knowledge, needs, and goals
  - **Flood Prone Areas**
  - Existing “Major” Flood Infrastructure
  - Proposed or Ongoing Flood Mitigation Projects
  - Existing flood management practices
  - Short- and long-term management goals
- Stay in touch through the Region 12 Website
- https://region12texas.org

  - *Anyone else that needs to be a part of this conversation?*



Interactive Comment Map

Region 12 - Public Comments (arcgis.com)



Stakeholder Input

- **Your insight is valuable**
  - Tell us your experience, where you have seen or know of flood concerns
  - A plan is only as good as the input
  - The flood plan needs to represent ALL community needs

- No one size fits all solutions, unique needs for each basin in the region

- **Funding opportunities for your much-needed projects**

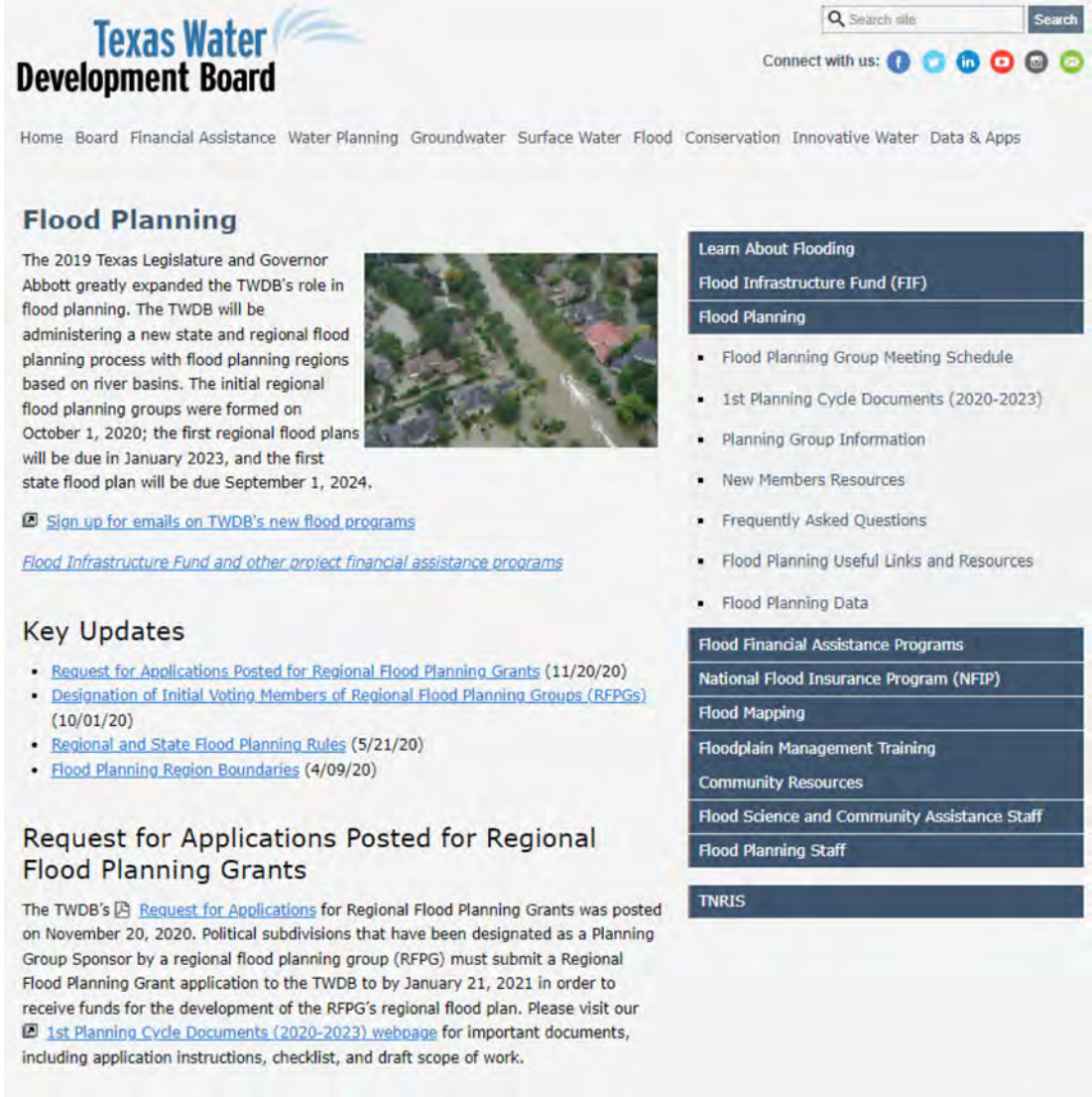
Stakeholder Input

HOW TO ENGAGE

- **Contact us- https://region12texas.wpengine.com/contact-us/**
- **Share the Region 12 Website https://www.region12texas.org**
- **Regional Flood Plan Meetings (all public)**
  - **Posted on Region 12 Website**
- **Stakeholder Surveys/ Interactive Map**

MORE INFORMATION ON STATE FLOOD PLANNING

https://www.twdb.texas.gov/flood/planning/index.asp



Any Questions

Contact info: Ron Branyon
Email: Ronald.branyon@hdrinc.com
Phone: 210.912.7105

E. Photos

SARFPG PUBLIC MEETING IN ST. HEDWIG, JANUARY 11, 2022

SARFPG PUBLIC MEETING IN ST. HEDWIG, JANUARY 11, 2022

SARFPG PUBLIC MEETING IN ST. HEDWIG, JANUARY 11, 2022

San Antonio Regional Flood Planning Group
Virtual Public Meeting Documentation

Planning Region

Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

Virtual Meeting Date, Time and Location

Monday, February 7, 2022
6 p.m. – 7 p.m.
Webex link at www.region12texas.org

Presenters

Ronald Branson, P.E, Project Manager, HDR, Inc.

Elected Officials in Attendance

None

Total Number of Attendees (approx.)

3

Number of Comments Submitted

Any comments submitted by meeting participants can be found at www.region12texas.org and clicking the link in the Comment Map section of the webpage.

Contents

A. Comments Received

During the virtual meeting, participants were shown how to submit their comments online at https://www.region12texas.org/. All comments submitted online, as well as those submitted at in-person public meetings, can be viewed at https://www.region12texas.org/, by clicking the link in the Comment Map section of the webpage.

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B. Notice to the Public (newspaper ad, social media, flyer distribution, media outreach)

Ad publication in the Victoria Advocate newspaper included an email blast on 2/5/22 to 20,000 Victoria Advocate subscribers. The email blast included information on the upcoming SARFPG meeting.

A2 · VICTORIA ADVOCATE

AROUND THE CROSSROADS

DAILY POLL

WEDNESDAY'S RESULTS

IN CASE YOU MISSED IT

1,354

CORRECTIONS

LIFE

Library observes Black History Month with local history display

BLACK HISTORY

POLICE REPORTS

5 people arrested on drug crimes

PHOTO CONTEST

Show us your valentine, win a prize

DISCOVER 361 PLAN YOUR WEEK

COVID-19 CASES BY COUNTY

VICTORIA ADVOCATE

VICTORIA ADVOCATE

Print News For Your Town Since 1846

is currently looking for Independent Contractors to deliver routes in:

Victoria, Port Lavaca/Point Comfort, Placedo, Tellerner/Inez, Port O'Conner, Cuero/Yorktown, Hallettsville.

WANT EXTRA INCOME?

Want to only work 3-4 hours per day in the comfort of your own vehicle?

Up to $1,000+ per month!

START DELIVERING NEWSPAPERS TODAY!

Earn up to a $750 Bonus on select routes.

(Restrictions apply)

Email Shawnee Zach at szach@victoriaa.com

Call 361-574-1221 or come by our office at 101 W. Goodwin St. #200, Victoria, TX 77901

REGION 12 FLOOD PLANNING VIRTUAL PUBLIC MEETING

HELP US PLAN FOR FLOOD EVENTS OVER THE SHORT & LONG TERM THROUGHOUT OUR REGION

ABOUT REGION 12

YOU'RE INVITED

WHEN

WHERE

WHAT

CAN'T MAKE IT?

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

SARFPG LIVE Virtual Meeting - Social Media Outreach

Outreach for the SARFPG Virtual Public Meeting included distribution of a social media package to Dan Antonio River Authority partners. The package included content and graphics for Facebook, Twitter, Nextdoor and LinkedIn, as shown below.

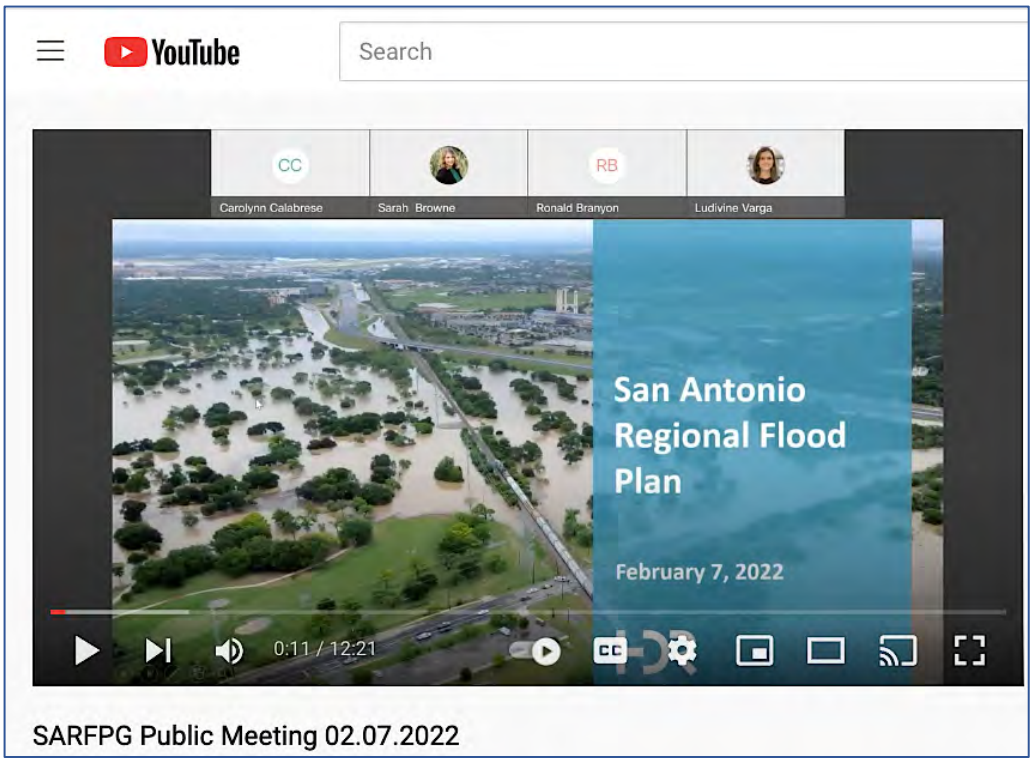
Post	Copy
#1: Before meeting	The SA Regional Flood Planning Group is updating the Region 12 flood plan. Come to a virtual public meeting on Feb. 7, 6-7 PM. Share flooding concerns & participate in a live Q&A session! Learn more & see if you live or have property in Region 12 at Region12Texas.org.
#2: Day of meeting	REMINDER: Join the SA Regional Flood Planning Group for a virtual public meeting tonight! Share your flooding concerns about our region & participate in a live Q&A with the project team. For the public meeting & to learn more: Region12Texas.org
#3: Day after meeting	If you missed the SA Regional Flood Planning Group's virtual meeting last night, you can still learn more about flood planning in our region! Go to Region12Texas.org for more info & share comments through Feb. 12 for our interim flood planning report.

Nextdoor post by:

- **San Antonio River Authority**

YouTube post by:

- **San Antonio River Authority**



Outreach for the SARFPG virtual meeting included in-person distribution of flyers to the following locations on January 26, 2022.

FLORESVILLE

- Curl Up & Dye Hair Salon, 1801 Bentwood Dr, Floresville, TX 78114
- Oak Hills Animal Hospital, 1678 US-181, Floresville, TX 78114
- Floresville Food Mart, 1124 D St, Floresville, TX 78114
- Sam Fore, Jr. Wilson County Public Library, 1103 4th St, Floresville, TX 78114
- Martha's Grill, 1011 Third Street, Floresville, TX 78114

POTH

- Wiatrek's Meat Market, 912 N Storts St., Poth, TX 78147

FALLS CITY

- Shorty's Steakhouse, 7901 US-181, Hobson, TX 78117
- Falls City Library, 206 E Irvin St, Falls City, TX 78113
- Falls City Hall, 206 E Irvin St, Falls City, TX 78113
- Pollok's Restaurant, 207 N. Front Street, Falls City, TX 78113

KARNES CITY

- Karnes City Public Library, 302 S Panna Maria Ave, Karnes City, TX 78118

KENEDY

- Kenedy Public Library, Ruhman C. Franklin Municipal Building, 303 W Main St, Kenedy, TX 78119
- Kenedy City Hall, Ruhman C. Franklin Municipal Building, 303 W Main St, Kenedy, TX 78119

GOLIAD

- Goliad County Library, 320 S. Commercial St, Goliad, TX 77963
- Blue Quail Deli, 224 S Commercial St, Goliad, TX 77963

FLYER DISTRIBUTED IN FLORESVILLE, POTH, FALLS CITY, KARNES CITY, KENEDY, GOLIAD; EMAILED TO PARTNERS; POSTED ON SA RIVER AUTHORITY WEBSITE.

REGION 12 FLOOD PLANNING VIRTUAL PUBLIC MEETING

HELP US PLAN FOR FLOOD EVENTS THROUGHOUT OUR REGION OVER THE SHORT & LONG TERM!

ABOUT REGION 12

The San Antonio Regional Flood Planning Group (SARFPG) is currently updating the Region 12 flood plan. Region 12 includes parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson Counties.

YOU'RE INVTED!

WHEN:	Monday, February 7, 2022, 6:00-7:00 p.m.

WHERE:	Join us live on February 7:
	• Visit **bit.ly/Region12Meeting** to attend online.
	  ○ **Meeting Number/Access Code**: 2489 375 3020
	  ○ **Password**: RFP2022
	• Or, scan this QR code with your smart phone's camera.
	• Dial 1-408-418-9388 to join by phone only.

WHAT:	• Learn about flood mapping efforts in our region. • Participate in a live Q&A with the project team. • Take a survey to share your flooding concerns.

CAN'T MAKE IT?

Visit Region12Texas.org to learn more and share your feedback. Comments submitted through February 12 will be included in the interim Region 12 Flood Plan.

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
Region12Texas.org
(210) 227-1373

MEDIA ALERT EMAILED TO REGIONAL PRINT AND ELECTRONIC MEDIA SERVING BEXAR COUNTY AND VICTORIA REGIONS.

Public comments sought on flooding issues

LX

lcalderon xa-sa.com
lcalderon xa-sa.com
Tuesday, February 1, 2022 at 3:19 PM
Show Details

MEDIA ADVISORY
Contact: Laura Calderon, Ximenes & Assoc.
lcalderon@xa-sa.com
(210) 601-1354 (mobile)

Regional Flood Planning Group Seeks Public Input *Public asked to pinpoint flooding issues on interactive map*	
WHAT:	The San Antonio Regional Flood Planning Group is holding a live virtual public meeting about regional flood planning efforts and how the public can submit their flooding concerns via an online interactive map and survey.
WHEN:	Monday, February 7, 2022, 6 p.m. to 7 p.m.
WHERE:	www.region12texas.org
VISUALS:	The meeting focuses on the Region 12 flood planning area which includes parts of 17 counties. Map of Region 12 at: https://data.tnris.org/894ad055-a134-470a-a133-55f0818aaceb/assets/7b185deb-4506-42e5-9b5e-ecb4b4304bbe-FPR___12___San_Antonio___8.5x11.pdf
VIRTUAL INTERVIEWS AVAILABLE:	Contact Laura Calderon to schedule a virtual interview with: • Nefi Garcia, Chair, SA Regional Flood Planning Group (SARFPG): Available Feb. 4 from 2 p.m. to 4 p.m. • Suzanne Scott, Chair, SARFPG's Outreach Committee: Available Feb. 3 from 2:30 p.m. to 5 p.m., or Feb. 4, 9 a.m. to 11 a.m.

The San Antonio Regional Flood Planning Group wants to know your flooding concerns. The regional group is holding a live virtual meeting on Monday, February 7, from 6 p.m. to 7 p.m. at www.region12texas.org.

The virtual meeting includes information on flood mapping efforts in the region, a live question and answer session with the project team, and how to submit your flooding concerns on an interactive comment map and survey. The comment map pinpoints the flooding issues submitted so far, and you can add yours at www.region12texas.org.

The public is encouraged to provide their comments by Saturday, Feb. 12 for inclusion in the interim Regional Flood Plan. Comments submitted after Feb. 12 will be included in the final Regional Flood Plan to the Texas Water Development Board in 2023.

The San Antonio Regional Flood Planning Group is part of a new state and regional flood planning process approved by the Texas Legislature in 2019. The goal is to better manage flood risk and reduce the loss of life and property from flooding in Texas. Regional flood planning groups are based on river basins. Region 12 is based on the San Antonio River basin which runs through parts of 17 counties.

The San Antonio Regional Flood Planning Area (Region 12) consists of: parts of Aransas, Atascosa, Bandera, Bexar, Caldwell, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

###

C. Presentation

Welcome!

San Antonio Regional Flood Plan Meeting to begin shortly.

Webex Help: **866.229.3239**

San Antonio Regional Flood Plan

February 7, 2022

Agenda

- Introductions
- Background
- Plan objectives and benefits
- Planning process and other studies
- Stakeholder input
- Next steps

Local management team has dedicated their careers to San Antonio Basin

Ron Branyon, PE, CFM

Project Manager

Point of contact/HDR

Added Value To SARFPG

- **Local, Responsive Project Manager**
- **20 years of experience delivering TWDB flood mitigation studies, drainage master plans, and floodplain mapping studies, in San Antonio River Basin**
- **Extensive experience in public outreach related to flood mitigation and mapping projects**
- **A strong working relationship with members of the Bexar Regional Watershed Management partnership.**
- **Track record for successful delivery of local high-profile projects, including nature- based solutions**

Relevant Experience To SARFP Tasks

- **SARA, City of San Antonio Drainage Master Plan — TX**
- **SARA, San Antonio River Watershed Cooperating Technical Partners (CTP) — TX**
- **SARA/Bexar County, San Pedro Creek Improvements Project — TX**
- **USACE, Leon Creek Master Plan — TX**
- **FEMA, DFIRM-Refugio, Calhoun, Aransas — TX**
- **USACE, Lower San Antonio River Basin Hydraulic Routing Models — TX**

"I work in Bexar County, reside in Wilson County and ranch in Goliad County, so this watershed is my home! From the headwaters to the Gulf I have seen it all and protecting the watershed and those who live here is what excites me about this opportunity."

Overview

- Historic Flooding – Realization of the need for flood planning
- In 2019, the 86th Texas legislature created and funded the first-ever regional and state flood planning process
- Schedule
  - Regional flood plans to be delivered by January 10, 2023, and then every five years thereafter
  - State plan to be adopted by September 1, 2024, and then every five years thereafter
- TWDB Flood Planning website: twdb.texas.gov/flood/planning/

Background

- San Antonio Region Flood Planning Group (SARFPG)
  - Created to represent diverse interest and to deliver the 2023 regional flood plan
- Sponsor
  - San Antonio River Authority
- Technical Team
  - HDR/Halff team selected as consultant to prepare plan

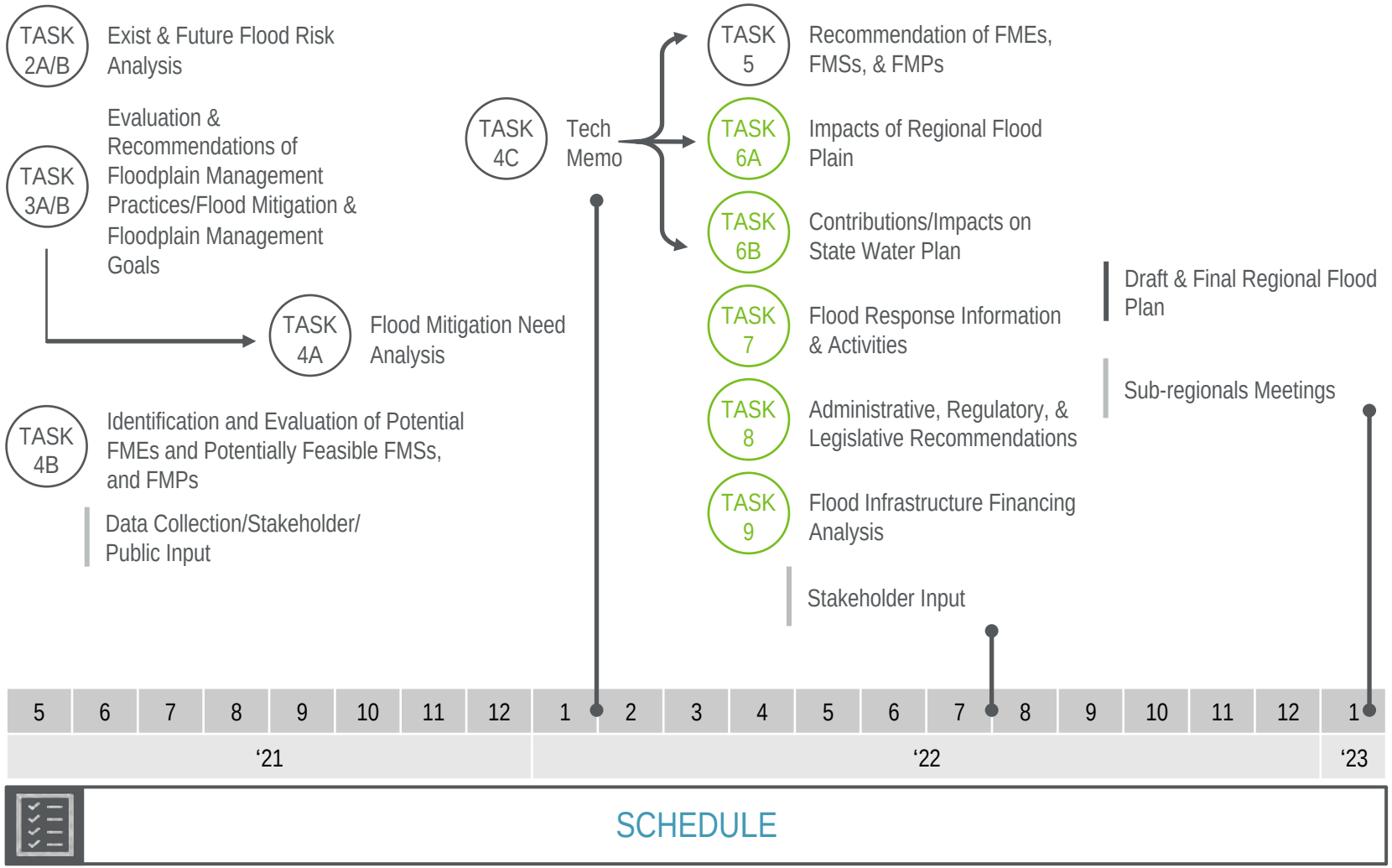
San Antonio Regional Flood Planning Group

- Flood Districts- Nefi Garza, *City of San Antonio (Chair)*
- River Authorities- Derek Boese, *SARA (Vice-Chair)*
- Water Districts- David Mauk, *Bandera Co River Authority & GWD*
- Municipalities- Jeffery Carrol, *City of Boerne*
- Agriculture- Brian Yanta, *Goliad County Ag-Extension*
- Counties- David Wegmann, *Bexar County*
- Electric-generating Utilities- Doris Cooksey, *CPS Energy*
- Environment- Debbie Reed, *Greater Edwards Aquifer Alliance*
- Industries- Cara Tackett, *Pape-Dawson Engineers*
- Non-Profit- Suzanne Scott, *Nature Conservancy*
- Public- John Beasley, *US Army Environmental Command*
- Small Business- Steve Gonzales, *Civil Tech Engineering, Inc.*
- Water Utilities- Steven Clouse, *SAWS*

Plan Objectives

- Document existing flood infrastructure and preparedness
- Identify current and future flood risk and hazard
- Develop flood mitigation/management goals
- Identify and evaluate flood management strategies and mitigation projects
- Evaluate benefits/impacts to water supply environment, and economics

TWDB Flood Planning Tasks



Schedule

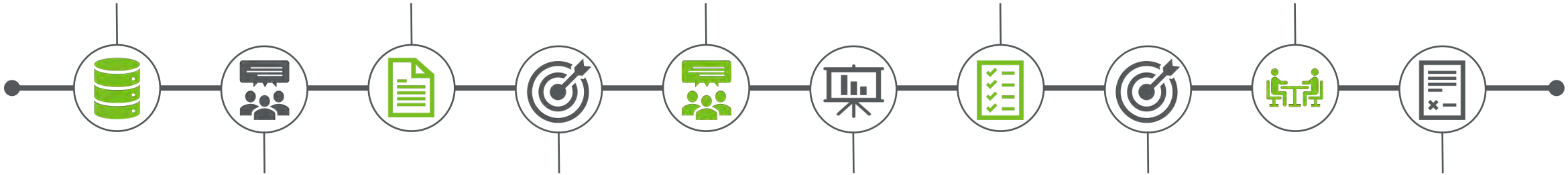
Updated Flood Risk Geodatabase – July 2021: Flood Risk Data used for base map for an interactive website for review and comment.

Draft Technical Memorandum – November 2021: We propose a workshop with you to review and collect comments for incorporation into the final document.

Regular RFPG Meeting Check-ins – February – July 2022: We will continue attending regular RFPG meetings to provide status updates on Tasks 5-9 progress.

Draft Plan – June 2022: We propose a workshop with you to review and collect comments on the Draft Plan to incorporate into the final Draft Plan.

Sub-regional Public Meeting(s) – September – October 2022: We will hold sub-regional public meetings to present the Draft Plan and incorporate public comments from the meetings and interactive website, along with TWDB's review comments into Final Plan.



Regular RFPG Meeting Check-ins – July – November 2021: We will attend regular RFPG meetings to provide status updates on Tasks 1-4 progress and discuss issues, decisions needed, action items, and next steps.

MAJOR DELIVERABLE- Technical Memorandum – January 7, 2022

Summary of Proposed Evaluations, Projects, and Strategies – May 2022: We propose a workshop with you to review preliminary list of potential flood management evaluations and potentially feasible flood mitigation projects and strategies.

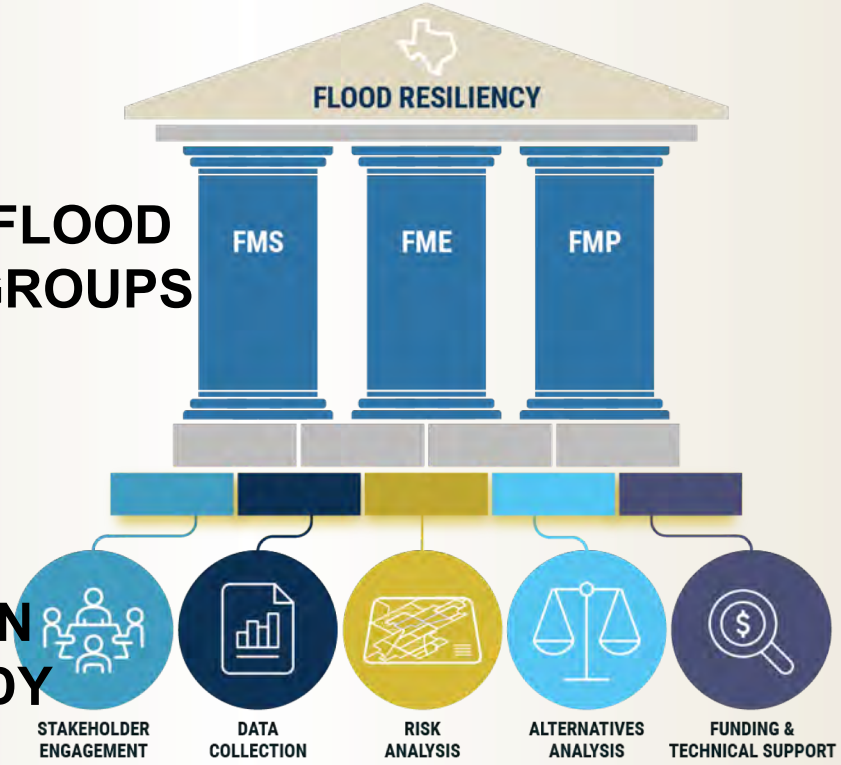
DELIVERABLE: Draft Plan – by August 1, 2022

December 2022: Once the Draft Final Plan is available, we will lead a workshop with you to review and collect final comments.

MAJOR DELIVERABLE: Final Plan – January 10, 2023

Relevant Flood Studies and Coordination

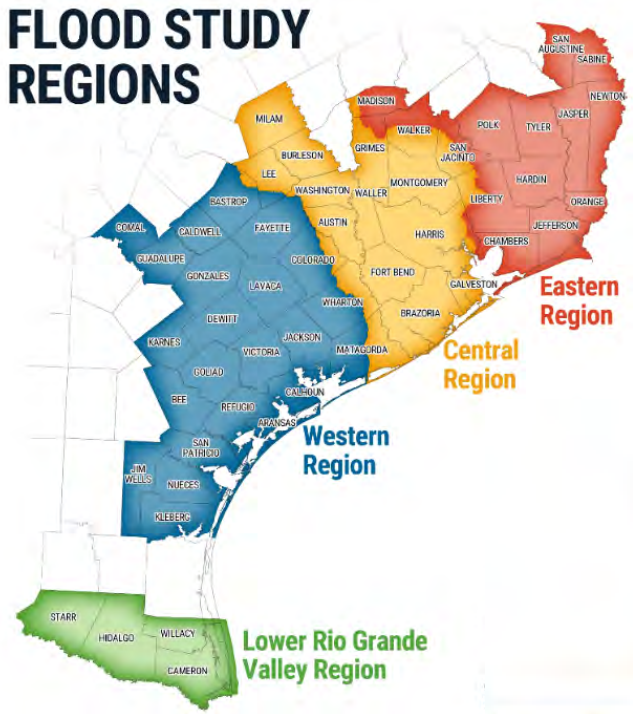
REGIONAL FLOOD PLANNING GROUPS



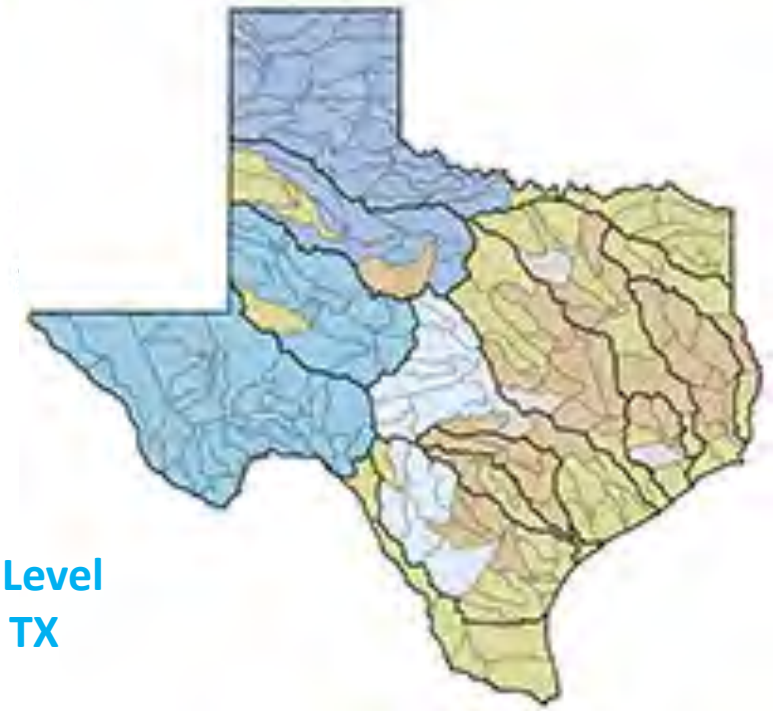
RIVER BASIN FLOOD STUDY

ACRONYMS

- **FMS: Flood Management Strategies**
- **FME: Flood Management Evaluations**
- **FMP: Flood Mitigation Projects**



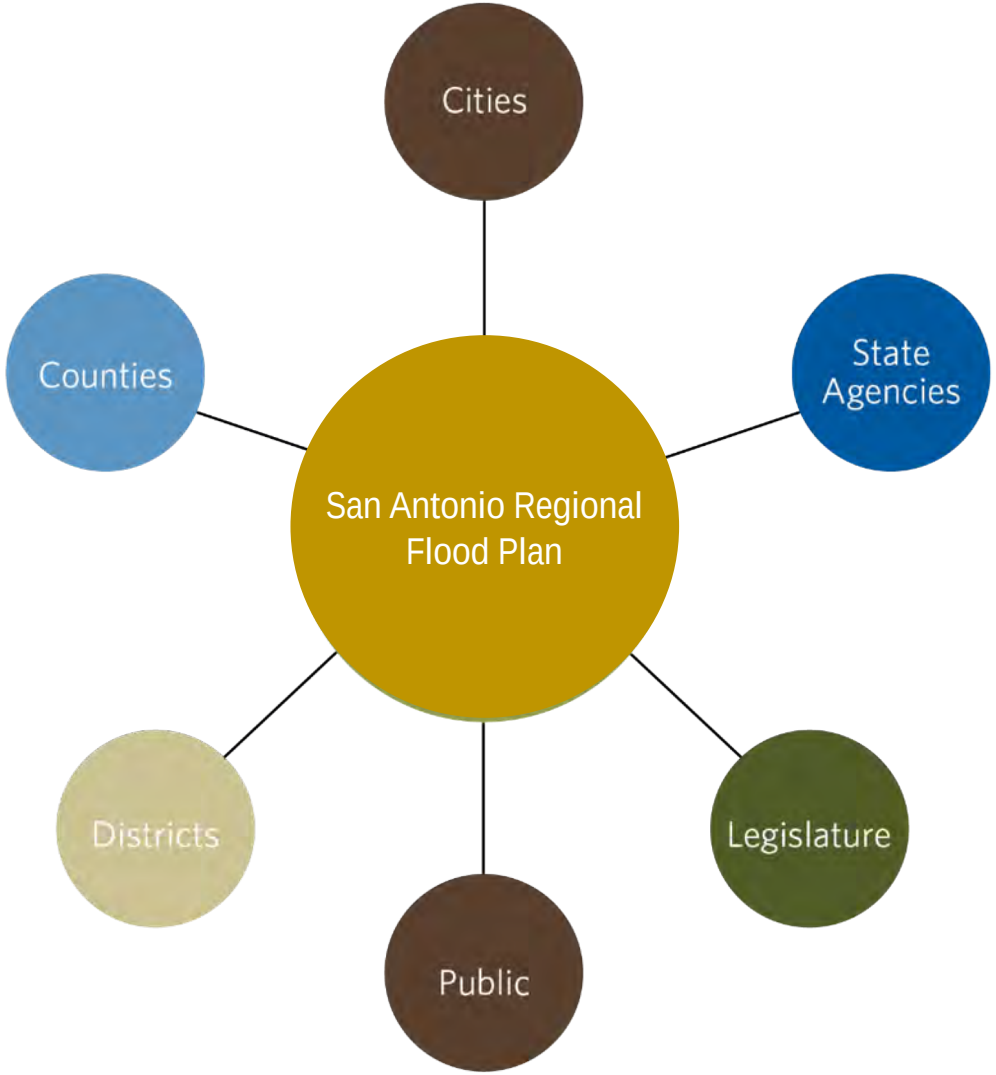
General Land Office (GLO) Flood Studies - TX



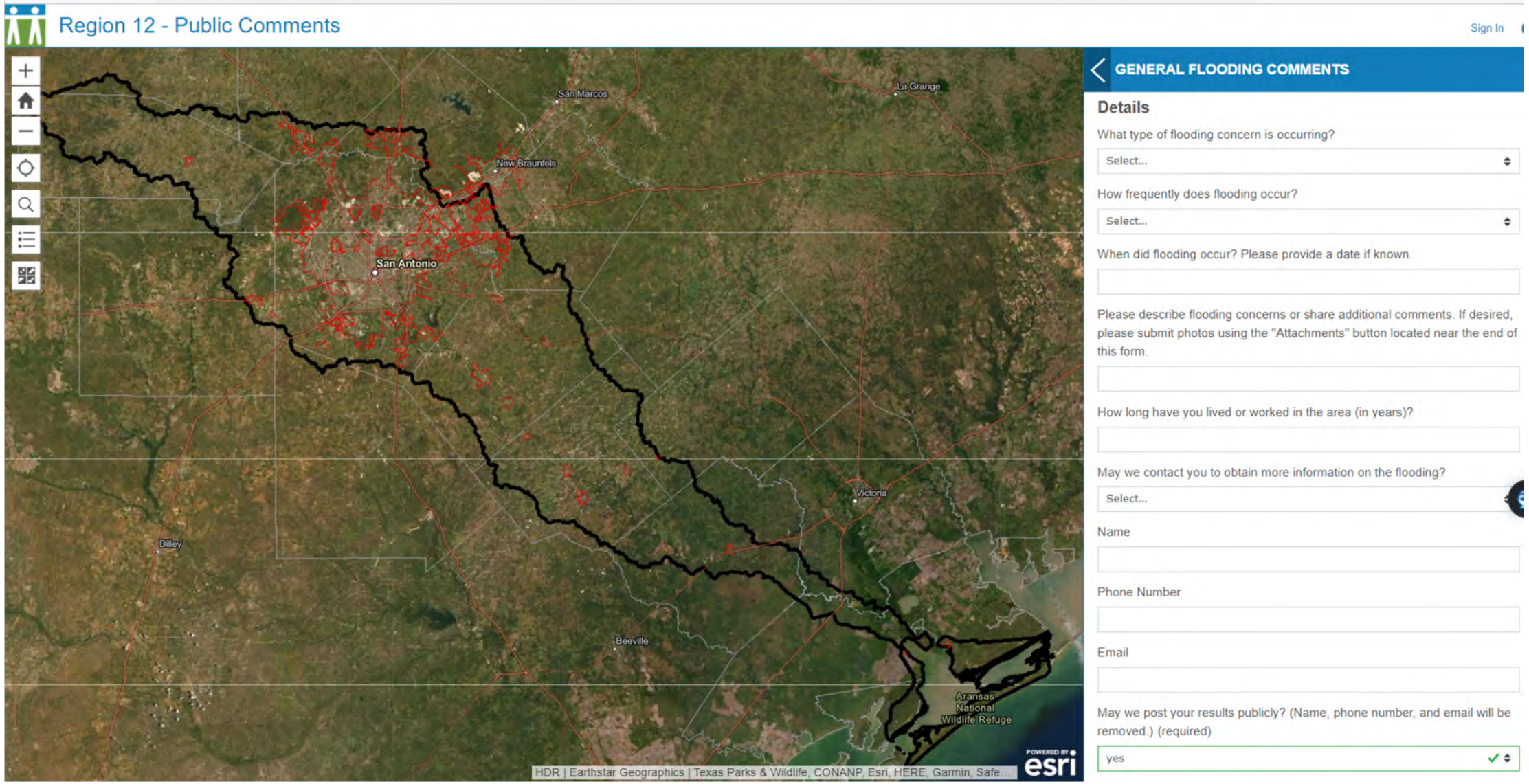
TWDB, Base Level Engineering- TX

Stakeholder Input

- Local knowledge, needs, and goals
  - Flood Prone Areas
  - Existing “Major” Flood Infrastructure
  - Proposed or Ongoing Flood Mitigation Projects
  - Existing flood management practices
  - Short- and long-term management goals



Interactive Comment Map



Your Feedback is Valuable

- Tell us your experience, where you have seen or know of flood concerns
- A plan is only as good as the input
- The flood plan needs to represent ALL community needs
- No one size fits all solutions, unique needs for each basin in the region
- Funding opportunities for your much-needed projects

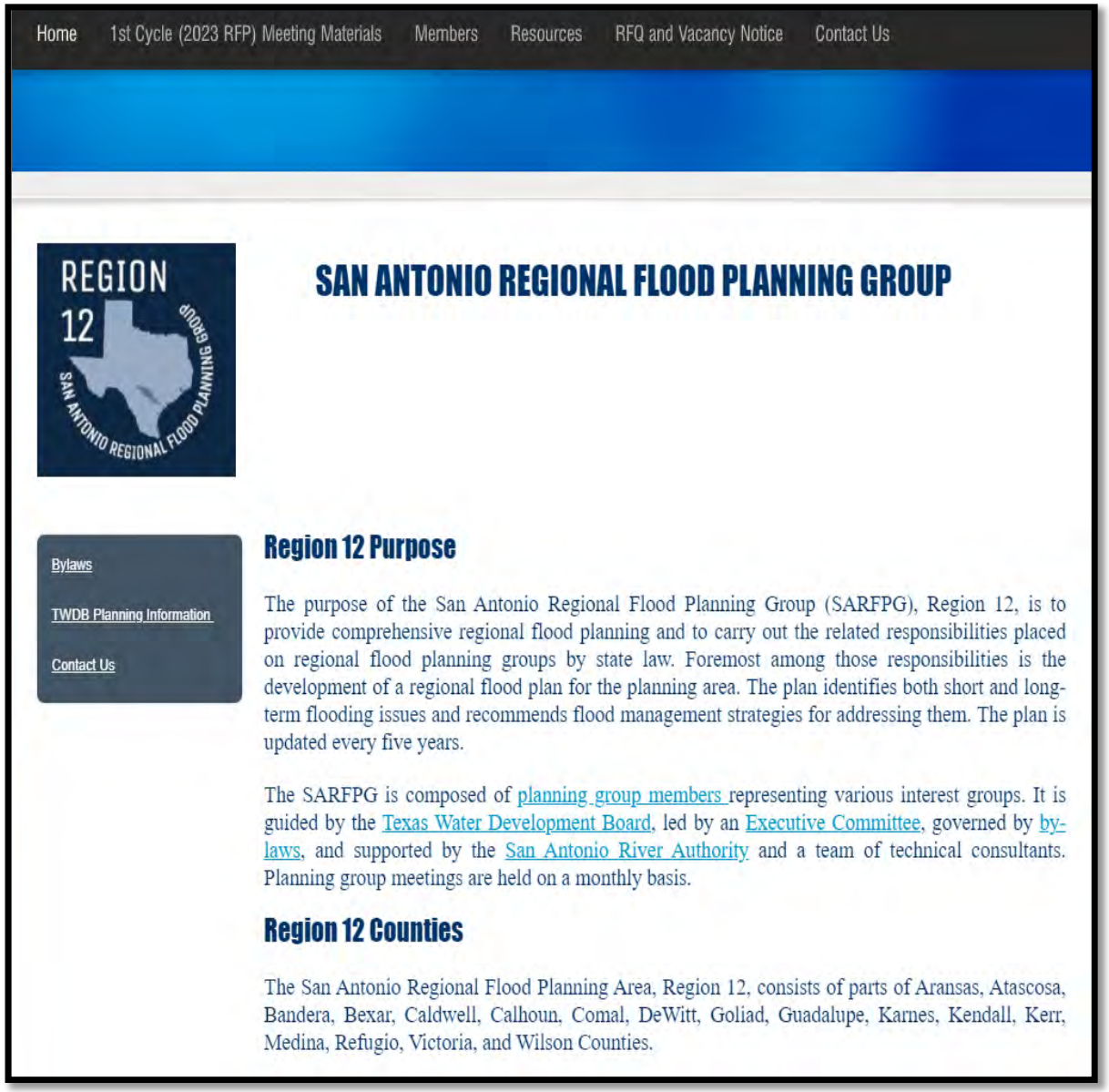
Stay Informed

Website: **Region12texas.org**

- Learn more about the plan
- Contact project team
- Find out about upcoming meetings
- Stakeholder surveys
- Interactive map

Contact:

- **Ron Branyon**
  Ronald.Branyon@hdrinc.com
  210.841.2922
- **Ludivine Varga**
  Ludivine.Varga@hdrinc.com
  210.841.2923

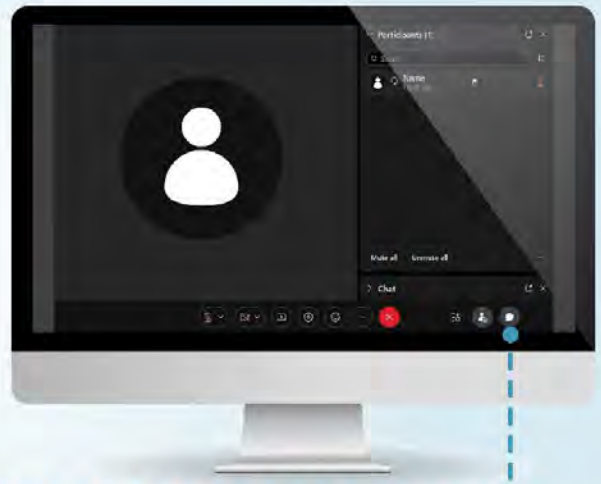


Asking a Question

Issues? Call Webex Help
866.229.3239

Internet Browser

1. Select icon
2. Type your question
3. Select recipient (Everyone)
4. Click "Send"

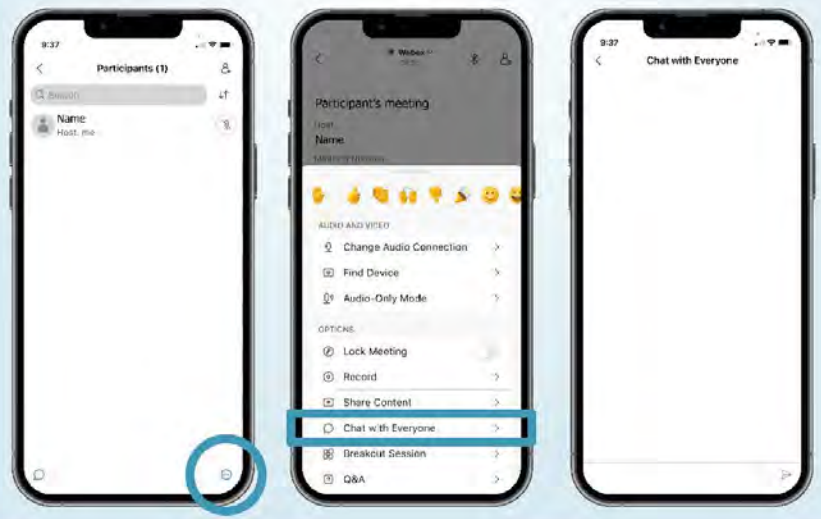


Webex Software

1. Select icon
2. Type your question
3. Select recipient (Everyone)
4. Click "Send"

Mobile App

1. Select icon
2. Select icon
3. Type your question
4. Select recipient (Everyone)
5. Click "Send"

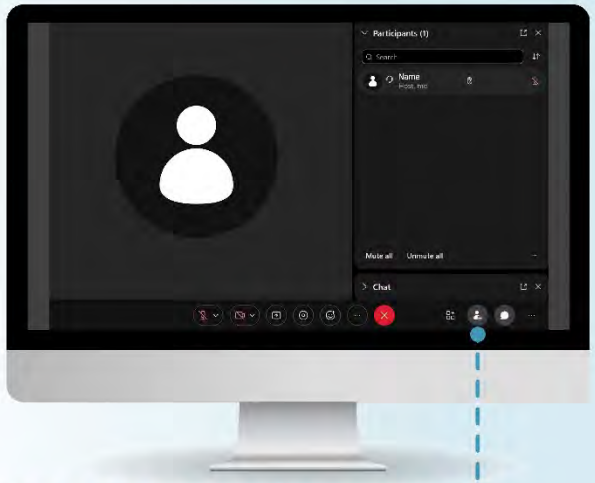


Raising Your Hand

Issues? Call Webex Help
866.229.3239

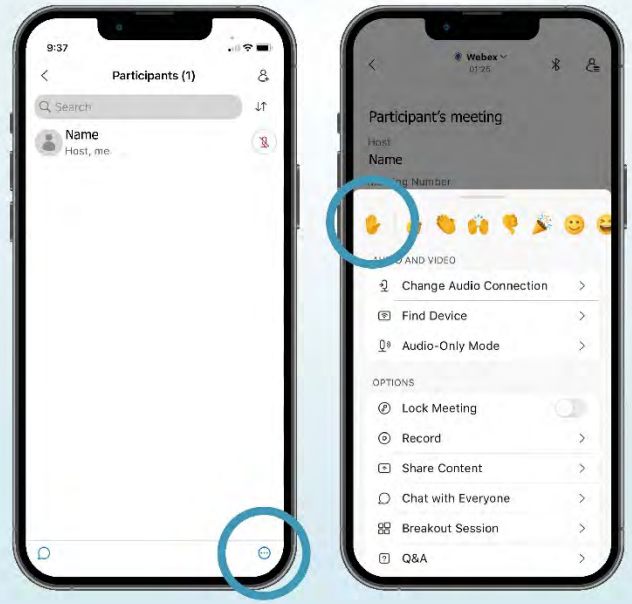
Internet Browser & Webex Software

1. Select icon
2. Hover over your name to select 'Raise Hand'
3. Wait to be unmuted by host
4. Select same 'Raise hand' icon to lower your hand



Mobile App

1. Select icon
2. Select Raise Hand
3. Wait to be unmuted by host
4. Select "Lower Hand" after speaking



Thank you!

Project Contact:
Ron Branyon
Ronald.Branyon@hdrinc.com
210.841.2922

D. Questions and Answers

THE FOLLOWING FREQUENTLY ASKED QUESTIONS WERE REVIEWED AT THE MEETING.

REGION 12 FLOOD PLANNING FREQUENTLY ASKED QUESTIONS

Online Public Meeting: Feb. 7, 2022

FAQ QUESTIONS

1. **Is there a standard approach that will be used by all the Regional Flood Planning Groups (RFPGs) to determine the benefit-cost of each proposed plan element?**

- Yes, a standard approach was developed by the Texas Water Development Board (TWDB). The BCA Input Tool and Instructions can be found as document 10 here.

2. **Were the need areas scored based on severity? Would proposed mitigation projects be scored? What criteria and weightage will be applied so the best projects float up to the top?**

- Neither the Region 12 Flood Planning Group nor the technical consultant (HDR) are establishing criteria and weighting for potential projects. For this process, we are not ranking the projects, but instead are identifying the Flood Management Projects, Evaluations and Studies that meet the criteria established by the TWDB.

3. **What metrics are you proposing to collect specific to Flood Mitigation Projects (FMPs), Flood Management Evaluations (FMEs), and Flood Management Strategies (FMSs) to send to TWDB, which can support better prioritization of projects in Region 12?**

- The FMPs, FMEs and FMSs identified by the consultant and the RFPG will be entered into a geodatabase with the required fields as designated by the TWDB. The required information for each can be found in the Technical Guidelines for Regional Flood Planning section 2.4.B linked here.

4. **What type of comments are needed for the Region 12 flood plan?**

- Go to our online comment map to share any flooding concerns or issues you may have, even those that occurred years ago. Please include the flooding frequency to let us know if the flooding occurred once, on a few occasions, or happens frequently within the area.

- Adding your comments to the online comment map notifies the engineering consultant team about your flooding concerns, which ensures your feedback is considered in the Region 12 flood plan. You can also attend Region 12 Flood Planning Group meetings to elaborate further on flooding concerns.

5. How will my feedback be used?

- Feedback shared as part of this effort will help the San Antonio Regional Flood Planning Group (SARFPG) identify and evaluate potential floodplain management evaluations, projects, and strategies within the San Antonio Region, including specific short-term (10 year) and long-term (30 year) flood mitigation goals to reduce flood risks to life and property.
- Please note that the SARFPG does not have the authority to regulate or implement projects, but rather are tasked with identifying and evaluating potential flood management strategies as a vision for protecting the basin from impacts of future flooding to ameliorate current and future flood hazards. Future funding eligibility for flood activities through state agencies will be contingent on having a project listed in the Flood Plan.

6. Should comments indicate a flooding concern, or can they include suggested solutions as well?

- The Region 12 flood plan will consider all types of solutions for flooding issues such as studies, evaluations, and projects. Solutions are welcomed, including non-physical solutions such as policy/regulation changes or increased funding for flooding mitigation strategies that are already in place.
- Please feel free to elaborate further and share solutions or recommendations under the "Please describe flooding concern…" question on our online comment map. Comments submitted through Saturday, Feb. 12 will be included in the interim Regional Flood Plan. Comments shared after Feb. 12 will be included in the final Regional Flood Plan in 2023.

7. If my flooding concern is predominately on my private property, should I still add it to the public comment map?

- Yes. The governing flood authority is often unaware of private property flooding. Flooding concerns on your property might be part of a larger flooding issue that affect a wider area.

8. Should I let my governing flood authority know that I have made you aware of my flooding concern?

- The Regional Flood Plan will evaluate flooding concerns shared as part of this effort, but it will not address all submitted comments. It's important to let your local flood regulatory agency know of any flooding issues you have now or have in the future, regardless of the Regional Flood Plan effort. We are contacting all the regulatory flood agencies in the region to gather information that they have on flooding concerns and ongoing/future projects they have planned.

9. Who is my local governing flood authority, and how do I contact them?

- Most municipalities and counties have a local floodplain administrator (FPA) that you can contact about local flooding concerns. To identify your community FPA, you can contact your local government.

10. What is the difference between the Region 12 Flood Planning Group, the San Antonio River Authority, and the Texas Water Development Board?

- The Texas Water Development Board (TWDB) is the state's lead water planning and infrastructure agency. In the 2019, the Texas Legislature charged TWDB with creating flood planning regions and administering the required work of flood planning.
- Designated by the TWDB, the Region 12 Flood Planning Group is composed of planning group members representing various interest groups in the region. This self-governed group is responsible for developing a regional flood plan by January 2023. The TWDB will provide grant funds to planning group enabling them to hire technical consultants to perform much of the work necessary to develop the regional flood plans.
- The San Antonio River Authority is the local sponsor that will assist the regional planning group to apply for funding and to otherwise support the planning process.

11. What are the next steps for comments shared as part of the Region 12 Flood Planning effort?

- All comments submitted through Saturday, February 12 will be included in the interim Regional Flood Plan. Between February and March, the San Antonio Regional Flood Planning Group and the consultant team will meet to discuss potential Flood Management Strategies, Flood Management Evaluations, and Flood Mitigation Projects identified through this planning effort. After this discussion, a draft list will be submitted to the Texas Water Development Board in March. The final Region 12 Flood Plan will be completed in January 2023.

12. Will the Region 12 Flood Plan consider nature-based flooding solutions?

- We will be considering nature-based solutions and working with other agencies (such as land conservation agencies) to further consider these options. Some of the nature-based solutions we will be reviewing include identifying conservation easements in Region 12 that may be feasible for use in joint flood mitigation programs.

13. Is the project team coordinating with TxDOT on transportation-related flooding concerns, such as flooding on roads or low water crossings?

- TxDOT coordination is underway. They will let us know of proposed and ongoing projects, and we will let them know of any flood prone areas that they might not be aware of.

14. Can we bring up these concerns/comments at the next San Antonio Regional Flood Planning Group meeting?

- Yes, each San Antonio Regional Flood Planning Group meeting includes a public concerns portion at the beginning and end where members of the public can share their comments. Comments can be shared even after the deadline to share comments for the interim Region 12 flood plan on February 12. Visit the 1st Cycle Meeting Materials page on the Region 12 website to learn more about upcoming meetings. The next meeting takes place at 2:00 p.m. on February 24, 2022 and can be joined virtually.

San Antonio Regional Flood Planning Group
Public Meeting Documentation

Planning Region

Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

Meeting Date, Time, and Location

Monday, June 6, 2022, 6:30 p.m. to 8 p.m.
Sam Rayburn Middle School
1400 Cedarhurst Dr.
San Antonio, TX 78227

Presenters

Ronald Branson, P.E, Project Manager, HDR, Inc.

Elected Officials in Attendance

0

Total Number of Attendees (approx.)

5

Number of Comments Submitted at Meeting

2

Contents

A. Comments Received

The following comments were submitted at the Public Meeting. To view these comments and others submitted online, go to https://www.region12texas.org/ and click on the Region 12 Flood Plan Comment Map in the Comments and Feedback section.

6/6/22

San Antonio Regional Flood Planning Group

Community Survey

Thank you for attending this meeting to learn more about the San Antonio Regional Flood Planning Group's (SARFPG) activities to develop a plan to prevent and reduce flooding in this entire region. By informing you of its goals, the SARFPG is seeking to enhance your understanding of the kinds of activities included in flood prevention and reduction. We are asking you to review the goal statements listed below and indicate your level of support for these goals.

Before we ask you to give us your opinion on the goals, it might be helpful to provide definitions of some of the terms and acronyms used in the statements. Definitions include:

- **NFIP**-National Flood Insurance Program
- **FEMA**-Federal Emergency Assistance
- **FPR**-Flood Planning Region
- **NBS**-Nature-based Solutions: actions to protect, sustainably manage, and restore natural or modified ecosystems simultaneously providing human well-being and biodiversity benefits.
- **100-year flood**- indicates the likelihood of a given flood event to be equaled or exceeded in any given year. In other words, there's one chance in a hundred that a flood like that would happen again in one year.
- **1% chance future conditions floodplain**- the 100-year flood estimated future inundation boundary due to a creek or river.
- **500-year flood**- Indicates there is a one in 500 chance that any given flood event may happen again in one year.
- **NFHL**- National Flood Hazard Layer- current effective flood hazard data to support the National Flood Insurance Program. You can use the information to better understand your level of flood risk and type of flooding.
- **FIS**- Flood Insurance Study - A compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community.

Below you will find summary statements of the SARFG's goals for the next 30 years. Some are expected to be achieved in 10 years and others are on the 30-year planning horizon.
(Please note that the statements below are summaries of the actual goal statements. If you would like to see the complete goal statements, along with their with success measures, please go to https://www.region12texas.org.) This survey includes a scale to allow you to indicate your level of support for the statement. Please indicate by checking the appropriate box below.

Improve Public Safety and Risk Management

1. Support and expand the development of a regionally coordinated warning and emergency response program that can detect the flood threat and provide timely warning of impending flood danger to reduce flood deaths and high-water rescues across the region.
   - ☐ Strongly agree
   - ☑ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
2. Decrease the average age of FEMA Flood Insurance Rate Maps (FIRMs/NFHL/FIS) to less than 10 years.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
3. Increase the number of entities that regulate new development and redevelopment in the future 100-year floodplain.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☑ Disagree
   - ☐ Strongly disagree
4. Reduce the number of repetitive-loss NFIP properties in the flood planning region.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☑ Disagree
   - ☐ Strongly disagree
5. Reduce the number of existing (2022) residential properties in the 100-year floodplain.
   - ☐ Strongly agree
   - ☐ Agree
   - ☑ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
6. Reduce the number of vulnerable critical facilities (such as hospitals, schools and public safety locations) located within the existing and future 100-year floodplain.
   - ☐ Strongly agree
   - ☐ Agree
   - ☑ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
7. Identify and eliminate or mitigate the eligible top 50 vulnerable roadway segments and low water crossings located within the existing and future 100-year floodplain.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

Enhance Emergency Response

8. Increase the number of flood gauges (rainfall, stream, reservoir, etc.) in the region to provide localized information to emergency responders, and access to that data for future reference.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

9. Increase the number of entities that communicate real time flood warnings to the public. Leverage mobile phone navigation apps to provide real time rerouting for the public.
   - ☐ Strongly agree
   - ☑ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
10. Increase the number to 100% of entities that conduct detailed studies to update their local flood risk.
   - ☐ Strongly agree
   - ☑ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

INCREASE AWARENESS AND EDUCATION

11. Track and document existing public outreach and education activities and increase them from 6 to 12 per year to improve awareness of flood hazards and benefits of flood planning including nature-based solutions in the region.
   - ☐ Strongly agree
   - ☑ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
12. Increase the proficiency of stakeholders and floodplain managers across the region, adding to their knowledge of nature-based solutions, floodplain preservation, and cost/benefit of traditional structural solutions.
   - ☐ Strongly agree
   - ☑ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

STRENGTHEN INFRASTRUCTURE

13. Increase the number of entities that have adopted a holistic watershed approach using existing Natural Flood Mitigation Features (NFMF) such as headwaters, buffers, and conservation easements for flood risk reduction as a basis for comprehensive subdivision regulations.
   - ☐ Strongly agree
   - ☐ Agree
   - ☑ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
14. Establish a baseline and increase the number of acres of publicly protected and restored open space as part of land conservation and acquisitions to reduce future impacts of flooding.
   - ☐ Strongly agree
   - ☑ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
15. Increase the number of structural projects that include a Nature-Based Solution (NBS) or Green Infrastructure (GI) component.
   - ☐ Strongly agree
   - ☑ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

PLEASE RESPOND TO THE STATEMENTS BELOW USING THE SCALE PROVIDED.

16. Flooding is not a concern in my community.
- ☐ Strongly agree
- ☐ Agree
- ☐ Not Sure
- ☑ Disagree
- ☐ Strongly disagree

17. The community is prepared to respond to flood events.
- ☐ Strongly agree
- ☐ Agree
- ☐ Not Sure
- ☑ Disagree
- ☐ Strongly disagree

18. If the goals listed above are achieved, the community will be safer and better prepared to respond to flood events.
- ☑ Strongly agree
- ☐ Agree
- ☐ Not Sure
- ☐ Disagree
- ☐ Strongly disagree

19. What other flood-related goals do you think the San Antonio Regional Flood Planning Group should be considering?

_____

_____

_____

_____

20. Please give us a little information about yourself. What is your zip code? 78249

21. How did you find out about this meeting?
- ☐ Email from a friend
- ☐ A friend told me.
- ☐ Email from an organization I belong to
- ☐ At the meeting of an organization I belong to
- ☐ Notice from an elected official or her/his office
- ☐ Ad in the newspaper
- ☑ Social Media (Twitter, Facebook, TikTok, etc.)
- ☐ Other, please specify. _____

6/6/22

San Antonio Regional Flood Planning Group

Community Survey

Thank you for attending this meeting to learn more about the San Antonio Regional Flood Planning Group's (SARFPG) activities to develop a plan to prevent and reduce flooding in this entire region. By informing you of its goals, the SARFPG is seeking to enhance your understanding of the kinds of activities included in flood prevention and reduction. We are asking you to review the goal statements listed below and indicate your level of support for these goals.

Before we ask you to give us your opinion on the goals, it might be helpful to provide definitions of some of the terms and acronyms used in the statements. Definitions include:

- **NFIP**-National Flood Insurance Program
- **FEMA**-Federal Emergency Assistance
- **FPR**-Flood Planning Region
- **NBS**-Nature-based Solutions: actions to protect, sustainably manage, and restore natural or modified ecosystems simultaneously providing human well-being and biodiversity benefits.
- **100-year flood**- indicates the likelihood of a given flood event to be equaled or exceeded in any given year. In other words, there's one chance in a hundred that a flood like that would happen again in one year.
- **1% chance future conditions floodplain**- the 100-year flood estimated future inundation boundary due to a creek or river.
- **500-year flood**- Indicates there is a one in 500 chance that any given flood event may happen again in one year.
- **NFHL**- National Flood Hazard Layer- current effective flood hazard data to support the National Flood Insurance Program. You can use the information to better understand your level of flood risk and type of flooding.
- **FIS**- Flood Insurance Study - A compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community.

Below you will find summary statements of the SARFG's goals for the next 30 years. Some are expected to be achieved in 10 years and others are on the 30-year planning horizon.
(Please note that the statements below are summaries of the actual goal statements. If you would like to see the complete goal statements, along with their with success measures, please go to https://www.region12texas.org.) This survey includes a scale to allow you to indicate your level of support for the statement. Please indicate by checking the appropriate box below.

Improve Public Safety and Risk Management

1. Support and expand the development of a regionally coordinated warning and emergency response program that can detect the flood threat and provide timely warning of impending flood danger to reduce flood deaths and high-water rescues across the region.
   - [x] Strongly agree
   - [ ] Agree
   - [ ] Neither agree nor disagree
   - [ ] Disagree
   - [ ] Strongly disagree
2. Decrease the average age of FEMA Flood Insurance Rate Maps (FIRMs/NFHL/FIS) to less than 10 years.
   - [ ] Strongly agree
   - [x] Agree
   - [ ] Neither agree nor disagree
   - [ ] Disagree
   - [ ] Strongly disagree
3. Increase the number of entities that regulate new development and redevelopment in the future 100-year floodplain.
   - [x] Strongly agree
   - [ ] Agree
   - [ ] Neither agree nor disagree
   - [ ] Disagree
   - [ ] Strongly disagree
4. Reduce the number of repetitive-loss NFIP properties in the flood planning region.
   - [ ] Strongly agree
   - [x] Agree
   - [ ] Neither agree nor disagree
   - [ ] Disagree
   - [ ] Strongly disagree
5. Reduce the number of existing (2022) residential properties in the 100-year floodplain.
   - [ ] Strongly agree
   - [x] Agree
   - [ ] Neither agree nor disagree
   - [ ] Disagree
   - [ ] Strongly disagree
6. Reduce the number of vulnerable critical facilities (such as hospitals, schools and public safety locations) located within the existing and future 100-year floodplain.
   - [ ] Strongly agree
   - [x] Agree
   - [ ] Neither agree nor disagree
   - [ ] Disagree
   - [ ] Strongly disagree
7. Identify and eliminate or mitigate the eligible top 50 vulnerable roadway segments and low water crossings located within the existing and future 100-year floodplain.
   - [ ] Strongly agree
   - [x] Agree
   - [ ] Neither agree nor disagree
   - [ ] Disagree
   - [ ] Strongly disagree

Enhance Emergency Response

8. Increase the number of flood gauges (rainfall, stream, reservoir, etc.) in the region to provide localized information to emergency responders, and access to that data for future reference.
   - [x] Strongly agree
   - [ ] Agree
   - [ ] Neither agree nor disagree
   - [ ] Disagree
   - [ ] Strongly disagree

9. Increase the number of entities that communicate real time flood warnings to the public. Leverage mobile phone navigation apps to provide real time rerouting for the public.
   - ☐ Strongly agree
   - ☒ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
10. Increase the number to 100% of entities that conduct detailed studies to update their local flood risk.
   - ☐ Strongly agree
   - ☒ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

INCREASE AWARENESS AND EDUCATION

11. Track and document existing public outreach and education activities and increase them from 6 to 12 per year to improve awareness of flood hazards and benefits of flood planning including nature-based solutions in the region.
   - ☒ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
12. Increase the proficiency of stakeholders and floodplain managers across the region, adding to their knowledge of nature-based solutions, floodplain preservation, and cost/benefit of traditional structural solutions.
   - ☒ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

STRENGTHEN INFRASTRUCTURE

13. Increase the number of entities that have adopted a holistic watershed approach using existing Natural Flood Mitigation Features (NFMF) such as headwaters, buffers, and conservation easements for flood risk reduction as a basis for comprehensive subdivision regulations.
   - ☒ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
14. Establish a baseline and increase the number of acres of publicly protected and restored open space as part of land conservation and acquisitions to reduce future impacts of flooding.
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   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
15. Increase the number of structural projects that include a Nature-Based Solution (NBS) or Green Infrastructure (GI) component.
   - ☐ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☒ Disagree
   - ☐ Strongly disagree

PLEASE RESPOND TO THE STATEMENTS BELOW USING THE SCALE PROVIDED.

16. Flooding is not a concern in my community.
    - ☐ Strongly agree
    - ☐ Agree
    - ☐ Not Sure
    - ☐ Disagree
    - ☒ Strongly disagree

17. The community is prepared to respond to flood events.
    - ☐ Strongly agree
    - ☒ Agree
    - ☐ Not Sure
    - ☐ Disagree
    - ☐ Strongly disagree

18. If the goals listed above are achieved, the community will be safer and better prepared to respond to flood events.
    - ☒ Strongly agree
    - ☐ Agree
    - ☐ Not Sure
    - ☐ Disagree
    - ☐ Strongly disagree

19. What other flood-related goals do you think the San Antonio Regional Flood Planning Group should be considering?

Trash + debris collection

20. Please give us a little information about yourself. What is your zip code? 78227

21. How did you find out about this meeting?
    - ☐ Email from a friend
    - ☐ A friend told me.
    - ☐ Email from an organization I belong to
    - ☐ At the meeting of an organization I belong to
    - ☐ Notice from an elected official or her/his office
    - ☐ Ad in the newspaper
    - ☒ Social Media (Twitter, Facebook, TikTok, etc.)
    - ☐ Other, please specify. _____

.

B. Notice to the Public (newspaper ad, flyer, social media, and other outreach)

REAGAN

From page NS17

fifth when the Eagles scored five runs on four hits to take a 7-4 lead.

The Rattlers had managed just one hit to that point. They scored four runs in the third thanks to three Eagles errors to take a 4-2 lead.

Reagan's bats came alive in the fifth as they answered Eagle Pass' big inning.

Junior third baseman Brennan Greer had a one-out single and scored on Luke Sasser's two-out double that made it 7-5. Jacob King's run-scoring single pulled the Ratters to 7-6. Moore followed with a two-run single that put the Rattlers on top, 8-7.

"Luke Sasser did an incredible job getting that rally started with a double with two outs," Moore said. "From there, it was a ripple effect. We got the whole team hitting, and I just happened to be up and was doing it for the team."

Billy Calzada/Staff photographer

Smithson Valley's David DeHoyos slides in safely as Reagan catcher Andrew Ermis waits for the throw during the regional quarterfinal playoffs at North East Sports Park on May 20.

The Eagles (23-16) threatened in the top of the sixth when left fielder Aiden Lopez led off with a single.

Rattlers reliever Billy Baehr, who entered with no outs in the fifth inning, struck out Jared Romero and Ruiz looking. In between that, Roy threw out Lopez at second on a delayed steal.

"Caden is a great teammate," Baehr said. "That throw out was a huge, huge boost for our team, and it really helped us get out of that inning."

Eagle Pass threatened again in the seventh when right fielder Isaac Stanwick walked with one out and stole second and third. Baehr struck out Mathew Elizondo with a full count before shortstop Robert De La Garza flied out to center to end the game.

"You just have to for the next pitch," Baehr said of getting out of the jams. "You can't look back on anything. You can't fix the past. You have to go off what's about to happen next and try to give it your best effort."

The Eagles took a 2-0 lead in a wild first inning that was capped with Ermis' ejection.

Lopez opened the game with an opposite-field double to left. He moved to second on Jared Romero's single and scored when a Reagan fielder mishandled the ball coming back to the infielder, and Lopez raced home for the first run.

Romero moved to second on the error and went to third on a grounder. He then scored on a chopper to third to make it 2-0 heading into the bottom of the first.

The Rattlers had swept East Central, Round Rock Cedar Ridge and Smithson Valley entering Thursday.

"This was our first game of the season where everything was on the line," Moore said. "We got the job done, and we're ready for the fifth round."

Reagan advances to the regional finals for the first time since 2018, when they lost to Southlake Carroll in the Class 6A state final.

The Rattlers will face Austin Lake Travis or La Joya in the regional final. Lake Travis defeated La Joya 11-0 in five innings on Thursday in a best-of-three series. They resume play Saturday in Sinton.

dhinojosa@express-news.net
Twitter: @hinojosa_david

SARFPG PUBLIC MEETING FLYER EMAILED MAY 25, 2022 TO ELECTED OFFICIALS & STAKEHOLDERS FOR POSTING OR DISTRIBUTION.

REGION 12 FLOOD PLANNING PUBLIC MEETINGS

Help Protect our Communities from Future Flooding!

The San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for Region 12, which includes counties along the San Antonio River Basin. Join us for our upcoming public meetings to help us build a strong flood plan that keeps our local communities, families, and homes safe from flooding for years to come.

About Region 12

Region 12 includes parts of Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria and Wilson counties.

About the Region 12 Flood Plan

As part of a statewide initiative, this flood plan will recommend projects to prevent flood damage to lives and property across our region. Earlier this year, SARFPG hosted a series of meetings to gather community input. Now, we're reaching out to:

- Provide flood planning status updates.
- Share potential short- and long-term flooding recommendations and get your feedback.
- Learn more about your flooding experiences.
- Provide an opportunity to speak directly with our project team.

June Public Meetings

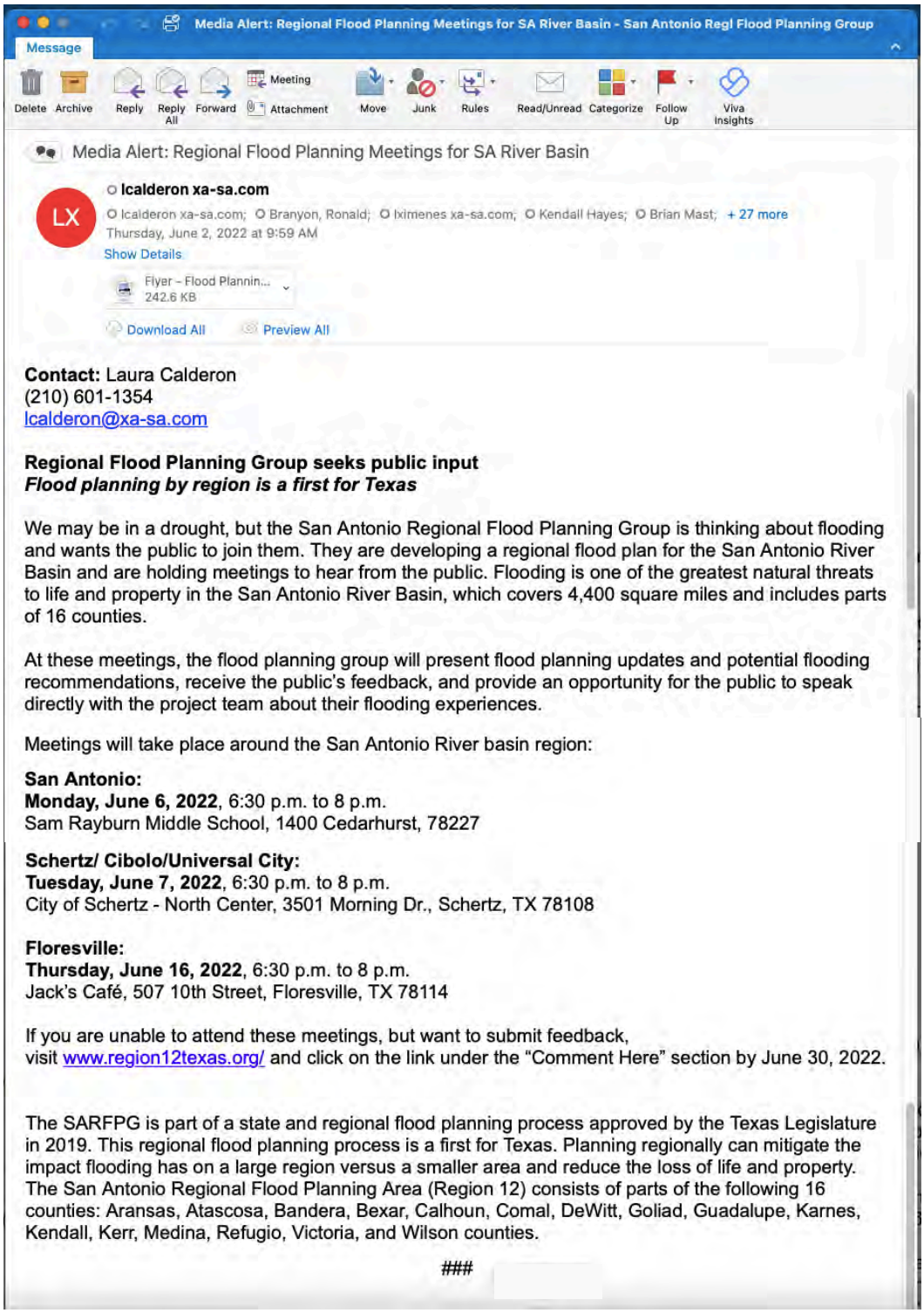
West San Antonio	Schertz-Cibolo/Universal City	Floresville
WHEN: Monday, June 6, 2022, 6:30-8:00 p.m. **WHERE:** Sam Rayburn Middle School 1400 Cedarhurst Dr. San Antonio, TX 78227	**WHEN:** Tuesday, June 7, 2022, 6:30-8:00 p.m. **WHERE:** City of Schertz - North Center 3501 Morning Dr. Schertz, TX 78108	**WHEN:** Thursday, June 16, 2022, 6:30-8:00 p.m. **WHERE:** Jack's Café (large meeting room) 507 10th St. Floresville, TX 78114

Share Your Feedback

Unable to stop by a public meeting? You can still share feedback on the Region 12 Flood Plan. Go to bit.ly/Region12FloodPlanning or scan this QR code with your smart phone's camera to take our survey.

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
Region12Texas.org
(210) 227-1373

SARFPG PUBLIC MEETING
Sample Media Advisory email sent
June 2, 2022 to media outlets within Region 12



Media Alert: Regional Flood Planning Meetings for SA River Basin - San Antonio Regl Flood Planning Group

Message

Delete Archive Reply Reply All Forward Meeting Attachment Move Junk Rules Read/Unread Categorize Follow Up Viva Insights

Media Alert: Regional Flood Planning Meetings for SA River Basin

LX lcalderon xa-sa.com

lcalderon xa-sa.com; Branyon, Ronald; lximenes xa-sa.com; Kendall Hayes; Brian Mast; + 27 more

Thursday, June 2, 2022 at 9:59 AM

Show Details

Flyer – Flood Plannin... 242.6 KB

Download All Preview All

Contact: Laura Calderon
(210) 601-1354
lcalderon@xa-sa.com

Regional Flood Planning Group seeks public input
Flood planning by region is a first for Texas

We may be in a drought, but the San Antonio Regional Flood Planning Group is thinking about flooding and wants the public to join them. They are developing a regional flood plan for the San Antonio River Basin and are holding meetings to hear from the public. Flooding is one of the greatest natural threats to life and property in the San Antonio River Basin, which covers 4,400 square miles and includes parts of 16 counties.

At these meetings, the flood planning group will present flood planning updates and potential flooding recommendations, receive the public's feedback, and provide an opportunity for the public to speak directly with the project team about their flooding experiences.

Meetings will take place around the San Antonio River basin region:

San Antonio:
Monday, June 6, 2022, 6:30 p.m. to 8 p.m.
Sam Rayburn Middle School, 1400 Cedarhurst, 78227

Schertz/ Cibolo/Universal City:
Tuesday, June 7, 2022, 6:30 p.m. to 8 p.m.
City of Schertz - North Center, 3501 Morning Dr., Schertz, TX 78108

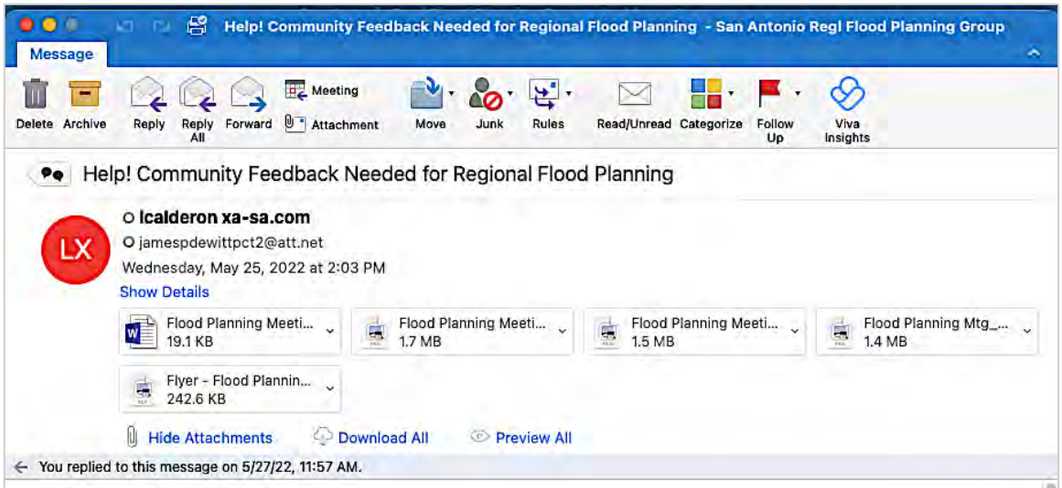
Floresville:
Thursday, June 16, 2022, 6:30 p.m. to 8 p.m.
Jack's Café, 507 10th Street, Floresville, TX 78114

If you are unable to attend these meetings, but want to submit feedback,
visit www.region12texas.org/ and click on the link under the "Comment Here" section by June 30, 2022.

The SARFPG is part of a state and regional flood planning process approved by the Texas Legislature in 2019. This regional flood planning process is a first for Texas. Planning regionally can mitigate the impact flooding has on a large region versus a smaller area and reduce the loss of life and property. The San Antonio Regional Flood Planning Area (Region 12) consists of parts of the following 16 counties: Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

###

SARFPG PUBLIC MEETING
Sample email sent May 25, 2022 to elected county officials within Region 12, which includes Bexar County. Email database follows.



Help! Community Feedback Needed for Regional Flood Planning

LX

lcalderon xa-sa.com
jamespdewittpct2@att.net
Wednesday, May 25, 2022 at 2:03 PM
Show Details

Flood Planning Meeti... 19.1 KB
Flood Planning Meeti... 1.7 MB
Flood Planning Meeti... 1.5 MB
Flood Planning Mtg_... 1.4 MB
Flyer - Flood Plannin... 242.6 KB

Hide Attachments Download All Preview All

You replied to this message on 5/27/22, 11:57 AM.

Dear Commissioner Pilchiek,

As a leader in your community, you are aware that flooding is one of the greatest natural threats to life and property in the San Antonio River Basin, which includes parts of De Witt County. The San Antonio Regional Flood Planning Group (SARFPG) is working to reduce the devastation caused by flood events and make the region safer by protecting lives, homes and property. **We need your help to reach these goals.** On behalf of the SARFPG, I am asking for your assistance to inform your community about important upcoming meetings to address flood events.

SARFPG background
The SARFPG is part of a state and regional flood planning process approved by the Texas Legislature in 2019. This **regional** flood planning process is a **first** for Texas. **It can help mitigate flooding that impacts a large region versus a smaller area and help reduce the loss of life and property.** The San Antonio River Basin, the regional focus for this planning effort, covers more than 4,400 square miles encompassing parts of 16 counties, including De Witt County.

Flooding is a growing problem as flood events are becoming more frequent and intense. The SARFPG wants to continue receiving public feedback because ultimately, there may be opportunities to leverage state funding for flood and drainage issues. The next round of public meetings will be held:

- **Monday, June 6, 2022**: Sam Rayburn Middle School, 1400 Cedarhurst, San Antonio, TX 78227, 6:30 p.m. to 8 p.m.
- **Tuesday, June 7, 2022**: City of Schertz - North Center, 3501 Morning Dr., Schertz, TX 78108, 6:30 p.m. to 8 p.m.
- **Thursday, June 16, 2022**: Jack's Café, 507 10th Street, Floresville, TX 78114

The goals for these meetings are to:

- Provide flood planning status updates.
- Share potential short- and long-term flooding recommendations and get your feedback.
- Learn more about your flooding experiences.
- Provide an opportunity to speak directly with our project team.

Attached is a meeting flyer and social media posts and pictures for your use. **Please help us by posting this information on your personal or organizational social media account, by including meeting information in your newsletter, and sharing the flyer with your community.**

If you or your constituents are unable to attend these meetings, but want to submit feedback, please visit https://www.region12texas.org/ and click on the link under the "Comment Here" section. If you have any upcoming community meetings, we are also available to present information and receive community feedback. The final draft plan is due August 2022, so we are trying to gather community feedback by June 30, 2022.

If you have any questions, need more information or would like to request a presentation, please contact Project Manager Ron Branyon, P.E. at ronald.branyon@hdrinc.com or (210) 841-2922.

Thank you for your consideration!

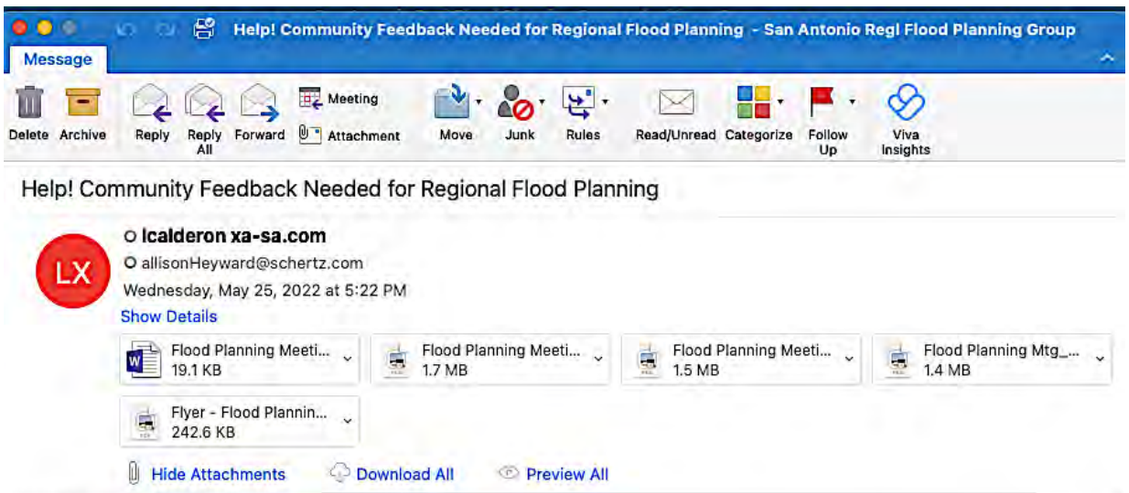
Laura A. Calderon
SARFPG Project Team Member
Ximenes & Associates, Inc.
Facilitating communication and consensus since 1984
500 Sixth Street
San Antonio, Texas 78215
(210) 354-2925 (office)
(210) 601-1354 (cell)

Email Database for Region 12 County Commissioners				
First	**Last**	**Title**	**Pct-District**	**Email**
Robert L.	Hurley	County Judge	Atascosa County	countyjudge@atascosacounty.texas.gov
Mark	Gillespie	Commissioner	Precint 1	commissioner1@atascosacounty.texas.gov
Stuart	Knowlton	Commissioner	Precinct 2	commissioner2@atascosacounty.texas.gov
Eliseo	Perez	Commissioner	Precinct 3	commissioner3@atascosacounty.texas.gov
Kennard	Riley	Commissioner	Precinct 4	commissioner4@atascosacounty.texas.gov
Richard	Meyer	County Judge	Calhoun County	Richard.Meyer@calhouncotx.org
David	Hall	Commissioner	Precint 1	david.hall@calhouncotx.org
Vern	Lyssy	Commissioner	Precinct 2	vern.lyssy@calhouncotx.org
Joel M.	Behrens	Commissioner	Precinct 3	Joel.Behrens@calhouncotx.org
Gary D.	Reese	Commissioner	Precinct 4	gary.reese@calhouncotx.org
C.H. "Burt"	Mills	County Judge	Aransas County	judge@aransascounty.org
Jack	Chaney	Commissioner	Precint 1	jchaney@aransascounty.org
Leslie	Casterline	Commissioner	Precinct 2	bcasterline@aransascounty.org
Pat	Rousseau	Commissioner	Precinct 3	prousseau@aransascounty.org
Wendy	Laubach	Commissioner	Precinct 4	wlaubach@aransascounty.org
Robert E.	Blaschke	County Judge	Refugio County	judge.blaschke@gmail.com
Ben	Zeller	County Judge	Victoria County	bzeller@vctx.org
Danny	Garcia	Commissioner	Precint 1	dgarcia@vctx.org
Kevin M.	Janak	Commissioner	Precinct 2	kjanak@vctx.org
Gary	Burns	Commissioner	Precinct 3	gburns@vctx.org
Clint	Ives	Commissioner	Precinct 4	cives@vctx.org
Mike	Bennett	County Judge	Goliad County	mbennett@goliadcountytx.gov
Kenneth	Edwards	Commissioner	Precint 1	kedwards@goliadcountytx.gov
Alonzo	Morales	Commissioner	Precinct 2	amorales@goliadcountytx.gov
Kirby	Brumby	Commissioner	Precinct 3	kbrumby@goliadcountytx.gov
David	Bruns	Commissioner	Precinct 4	dbruns@goliadcountytx.gov
Daryl L.	Fowler	County Judge	De Witt County	daryl.fowler@co.dewitt.tx.us
Curtis	Afflerbach	Commissioner	Precint 1	commish1@co.dewitt.tx.us
James	Pilchiek	Commissioner	Precinct 2	jamespdewittpct2@att.net
James	Kaiser	Commissioner	Precinct 3	jkaiserk@gmail.com
Richard	Randle	Commissioner	Precinct 4	richard.randle@co.dewitt.tx.us
Wade	Hedtke	County Judge	Karnes County	wade.hedtke@co.karnes.tx.us

Email Database for Region 12 County Commissioners				
First	**Last**	**Title**	**Pct-District**	**Email**
Shelby	Dupnik	Commissioner	Precint 1	shelby.dupnik@co.karnes.tx.us
Bernard	Lyssy	Commissioner	Precinct 2	benny.lyssy@co.karnes.tx.us
Sean	O'Brien	Commissioner	Precinct 3	sean.obrien@co.karnes.tx.us
Sharon	Chesser	Commissioner	Precinct 4	schesser@co.karnes.tx.us
Kyle	Kutscher	County Judge	Guadalupe County	kyle.kutscher@co.guadalupe.tx.us
Greg	Seidenberger	Commissioner	Precint 1	greg.seidenberger@co.guadalupe.tx.us
Drew	Engelke	Commissioner	Precinct 2	Drew.Engelke@co.guadalupe.tx.us
Michael	Carpenter	Commissioner	Precinct 3	Michael.Carpenter@co.guadalupe.tx.us
Judy	Cope	Commissioner	Precinct 4	judy.cope@co.guadalupe.tx.us
Chris	Schuchart	County Judge	Medina County	countyjudge@medinacountytexas.org
Timothy	Neuman	Commissioner	Precint 1	angie.zapata@medinacountytexas.org
Larry	Sittre	Commissioner	Precinct 2	lydia.aguinaga@medinacountytexas.org
David	Lynch	Commissioner	Precinct 3	david.lynch@medinatx.org
Jerry	Beck	Commissioner	Precinct 4	gracie.martinez@medinacountytexas.org
Darrel L.	Lux	County Judge	Kendall County	judge@co.kendall.tx.us
Christina	Bergmann	Commissioner	Precint 1	christina.bergmann@co.kendall.tx.us
Richard W.	Elkins	Commissioner	Precinct 2	richard.elkins@co.kendall.tx.us
Richard	Chapman	Commissioner	Precinct 3	richard.chapman@co.kendall.tx.us
Don	Durden	Commissioner	Precinct 4	don.durden@co.kendall.tx.us
				commissioners@co.kendall.tx.us
Sherman	Krause	County Judge	Comal County	krause@co.comal.tx.us
Donna	Eccleston	Commissioner	Precint 1	cctdme@co.comal.tx.us
Scott	Haag	Commissioner	Precinct 2	haagsc@co.comal.tx.us
Kevin	Webb	Commissioner	Precinct 3	webbke@co.comal.tx.us
Jen	Crownover	Commissioner	Precinct 4	crownj@co.comal.tx.us
Richard	Evans	County Judge	Bandera County	countyjudge@banderacounty.org
H. Bruce	Eliker	County Commissioner	Precint 1	eliker@banderacounty.org
Robert	Harris	Commissioner	Precinct 2	
Jack U.	Moseley	Commissioner	Precinct 3	jmoseley@banderacounty.org
Jordan	Rutherford	Commissioner	Precinct 4	jrutherford@banderacounty.org
Nelson W.	Wolff	County Judge	Bexar County	nwolff@Bexar.org
Rebeca	Clayton-Flores	Commissioner	Precinct 1	CommissionerPct1@bexar.org

Email Database for Region 12 County Commissioners				
First	**Last**	**Title**	**Pct-District**	**Email**
Justin	Rodriguez	Commissioner	Precinct 2	precinct2commissioner@bexar.org
Marialyn	Barnard	Commissioner	Precinct 3	
Tommy	Calvert	Commissioner	Precinct 4	tc@bexar.org
Richard L.	Jackson	County Judge	Wilson County	judge@wilsoncountytx.gov
Gary	Martin	Commissioner	Precint 1	gmartin@wilsoncountytx.gov
Paul W.	Pfeil	Commissioner	Precinct 2	ppfeil@wilsoncountytx.gov
Jeffery	Pierdolla	Commissioner	Precinct 3	jPierdolla@wilsoncountytx.gov
Larry A.	Wiley	Commissioner	Precinct 4	lwiley@wilsoncountytx.gov
Robert	Kelly	County Judge	Kerr County	cojudge@co.kerr.tx.us
Harley David	Belew	Commissioner	Precint 1	hbelew@co.kerr.tx.us
Beck	Gipson	Commissioner	Precinct 2	bgipson@co.kerr.tx.us
Jonathan	Letz	Commissioner	Precinct 3	jletz@co.kerr.tx.us
Don	Harris	Commissioner	Precinct 4	dharris@co.kerr.tx.us

SARFPG PUBLIC MEETING
Sample email sent May 25, 2022 to elected city officials within Region 12, which includes San Antonio. Email database follows.



Help! Community Feedback Needed for Regional Flood Planning

LX

lcalderon xa-sa.com
allisonHeyward@schertz.com
Wednesday, May 25, 2022 at 5:22 PM
Show Details

Flood Planning Meeti... 19.1 KB
Flood Planning Meeti... 1.7 MB
Flood Planning Meeti... 1.5 MB
Flood Planning Mtg_... 1.4 MB
Flyer - Flood Plannin... 242.6 KB

Hide Attachments Download All Preview All

Dear Council Member Heyward,

As a leader in your community, you are aware that flooding is one of the greatest natural threats to life and property in the San Antonio River Basin, which includes Schertz. The San Antonio Regional Flood Planning Group (SARFPG) is working to reduce the devastation caused by flood events and make the region safer by protecting lives, homes and property. **We need your help to reach these goals.** On behalf of the SARFPG, I am asking for your assistance to inform your community about important upcoming meetings to address flood events.

SARFPG background
The SARFPG is part of a state and regional flood planning process approved by the Texas Legislature in 2019. This **regional** flood planning process is a **first** for Texas. **It can help mitigate flooding that impacts a large region versus a smaller area and help reduce the loss of life and property.** The San Antonio River Basin, the regional focus for this planning effort, covers more than 4,400 square miles encompassing parts of 16 counties, including Bexar, Comal and Guadalupe counties.

Help us inform your community about regional flood planning
Flooding is a growing problem as flood events are becoming more frequent and intense. The SARFPG wants to continue receiving public feedback because ultimately, there may be opportunities to leverage state funding for flood and drainage issues. The next round of public meetings will be held:

- **Monday, June 6, 2022**: Sam Rayburn Middle School, 1400 Cedarhurst, San Antonio, TX 78227, 6:30 p.m. to 8 p.m.
- **Tuesday, June 7, 2022**: City of Schertz - North Center, 3501 Morning Dr., Schertz, TX 78108, 6:30 p.m. to 8 p.m.
- **Thursday, June 16, 2022**: Jack's Café, 507 10th Street, Floresville, TX 78114

The goals for these meetings are to:

- Provide flood planning status updates.
- Share potential short- and long-term flooding recommendations and get your feedback.
- Learn more about your flooding experiences.
- Provide an opportunity to speak directly with our project team.

Attached is a meeting flyer and social media posts and pictures for your use. **Please help us by posting this information on your personal or organizational social media account, by including meeting information in your newsletter, and sharing the flyer with your community.**

If you or your constituents are unable to attend these meetings, but want to submit feedback, please visit https://www.region12texas.org/ and click on the link under the "Comment Here" section. If you have any upcoming community meetings, we are also available to present information and receive community feedback. The final draft plan is due August 2022, so we are trying to gather community feedback by June 30, 2022.

If you have any questions, need more information or would like to request a presentation, please contact Project Manager Ron Branyon, P.E. at ronald.branyon@hdrinc.com or (210) 841-2922.

Thank you for your consideration!

Laura A. Calderon
SARFPG Project Team Member
Ximenes & Associates, Inc.
Facilitating communication and consensus since 1984
500 Sixth Street
San Antonio, Texas 78215
(210) 354-2925 (office)
(210) 601-1354 (cell)
lcalderon@xa-sa.com

Email Database for Region 12 Elected City Officials				
First	**Last**	**Title**	**City**	**Email**
Suzanne	Schauman	Mayor	Bandera	mayor@cityofbandera.org
Rebecca	Gibson	Mayor Pro-Tem	Bandera	txbecalou@gmail.com
Darcy	Hasty	Council Member	Bandera	darcy.keepbanderabandera@gmail.com
Toni	Kunz	Council Member	Bandera	cobtonikunz@yahoo.com
Christine	Morse	Council Member	Bandera	christinemorse68@gmail.com
Jerry	Russe	Council Member	Bandera	jerryrusse@gmail.com
David	Jordan	City Administrator	Bandera	cityadmin@cityofbandera.org
Jeffrey	Carroll	Mr.	Boerne	jcarroll@boerne-tx.gov
Stosh	Boyle	Mayor	Cibolo	mayor@cibolotx.gov
Mark	Allen	Council Member	Cibolo	district5@cibolotx.gov
T.G.	Benson	Council Member	Cibolo	district1@cibolotx.gov
Reggie	Bone	Council Member	Cibolo	rbone@cibolotx.gov
Katie	Cunningham	Council Member	Cibolo	district4@cibolotx.gov
Dick	Hetzel	Council Member	Cibolo	district6@cibolotx.gov
Joel	Hicks	Council Member	Cibolo	district7@cibolotx.gov
Victor	Osorio	Council Member	Cibolo	district2@cibolotx.gov
Wayne	Reed	Mr.	Cibolo	wreed@cibolotx.gov
Cecelia	Gonzalez-Dippel	Mayor	Floresville	mayor@floresvilletx.gov
Gloria	Cantu	Council Member	Floresville	councilplace5@floresvilletx.gov
Jade	Jimenez	Council Member	Floresville	councilplace4@floresvilletx.gov
Terry	Rolland	Council Member	Floresville	councilplace2@floresvilletx.gov
Eduardo Ortiz	Villarreal	Mayor Pro Tem	Floresville	councilplace3@floresvilletx.gov
Marissa	Ximenez	Council Member	Floresville	councilplace1@floresvilletx.gov
Andy	Joslin	Mr.	Floresville	citymanager@floresvilletx.gov
Luis	Rodriguez	Mayor Pro Tem	Goliad	ljrodriguez9245@gmail.com
Robin	Alaniz	Alderman	Goliad	ralanizcitycouncil@goliadtx.net
Mary	Gleinser	Alderman	Goliad	mary.gleinser@goliadtx.net
Yolanda	Ramirez	Alderman	Goliad	yramirezcitycouncil@goliadtx.net
Lorinda	Rangel	Alderman	Goliad	lrangelcitycouncil@goliadtx.net
	City	Secretary	Goliad	citysecretary@goliadtx.net
Leroy	Skloss	Mayor	Karnes City	lskloss@cityofkctx.com
Jimmy	Loya	Mayor Pro Tem	Karnes City	jloya@cityofkctx.com
Robert	Ebrom	Council Member	Karnes City	rebrom@cityofkctx.com
Larry	Franke	Council Member	Karnes City	lfranke@cityofkctx.com

Email Database for Region 12 Elected City Officials				
First	**Last**	**Title**	**City**	**Email**
Lillian	Lyssy	Council Member	Karnes City	llyssy@cityofkctx.com
Aaron	Rosales	Council Member	Karnes City	arosales@cityofkctx.com
Ken	Roberts	Mr.	Karnes City	kroberts@cityofkctx.com
Joe	Baker	Mayor	Kenedy	mayor@cityofkenedy.org
James	Douglas	Alderman	Kenedy	district4@cityofkenedy.org
Christopher	Parker	Alderman	Kenedy	district3@cityofkenedy.org
John	Rodriguez	Alderman	Kenedy	district2@cityofkenedy.org
Cindy	Saenz	Alderman	Kenedy	district1@cityofkenedy.org
Sandra	Schultz	Alderman	Kenedy	district5@cityofkenedy.org
William	Linn	Mr.	Kenedy	citymanager@cityofkenedy.org
Mary M.	Dennis	Mayor	Live Oak	yourmayormary@yahoo.com
Ed	Cimics	Council Member	Live Oak	edcimics@sbcglobal.net
Aaron	Dahl	Council Member	Live Oak	liveoakplace5@gmail.com
Mendell	Morgan	Council Member	Live Oak	liveoakplace1@gmail.com
Erin	Dr. Perez	Council Member	Live Oak	erin@erinperez.com
Robert	Tullgren	Council Member	Live Oak	btullgrenplace2@liveoaktx.net
Glen	Martel	City Manager	Live Oak	gmartel@liveoaktx.net
Chrystal	Eckel	Mayor	Poth	mayor@cityofpoth.org
Ron	Nirenberg	Mayor	San Antonio	ron.nirenberg@sanantonio.gov
Mario	Bravo	Councilman	San Antonio	district1@sanantonio.gov
Jalen	McKee-Rodriguez	Councilwoman	San Antonio	district2@sanantonio.gov
Phyllis	Viagran	Councilwoman	San Antonio	district3@sanantonio.gov
Adriana	Rocha Garcia, PhD	Councilwoman	San Antonio	district4@sanantonio.gov
Teri	Castillo	Councilwoman	San Antonio	district5@sanantonio.gov
Melissa	Cabello Havrda	Councilwoman	San Antonio	district6@sanantonio.gov
Ana	Sandoval	Councilman	San Antonio	district7@sanantonio.gov
Manny	Pelaez	Councilman	San Antonio	district8@sanantonio.gov
John	Courage	Councilman	San Antonio	district9@sanantonio.gov
Clayton	Perry	Councilman	San Antonio	district10@sanantonio.gov
Eric	Walsh	Mr.	San Antonio	citymanager@sanantonio.gov
Ralph	Gutierrez	Mayor	Schertz	ralphgutierrez@schertz.com
Tim	Brown	Council Member	Schertz	timbrown@schertz.com
Michael	Dahle	Council Member	Schertz	mdahle@schertz.com
Mark	Davis	Council Member	Schertz	markdavis@schertz.com

Email Database for Region 12 Elected City Officials				
First	**Last**	**Title**	**City**	**Email**
Allison	Heyward	Council Member	Schertz	allisonHeyward@schertz.com
David	Scagliola	Council Member	Schertz	davidscagliola@schertz.com
Rosemary	Scott	Council Member	Schertz	rscott@schertz.com
Jill	Whitaker	Council Member	Schertz	jwhittaker@schertz.com
Mark	Browne	Mr.	Schertz	mbrowne@schertz.com
John	Williams	Mayor	Universal City	mayor@uctx.gov
Richard	Neville	Mayor Pro Tem	Universal City	council1@uctx.gov
Steven R.	Buck	Council Member	Universal City	Council3@uctx.gov
Bear	Goolsby	Council Member	Universal City	Council2@uctx.gov
Paul	Najarian	Council Member	Universal City	council6@uctx.gov
William	Shelby	Council Member	Universal City	Council5@uctx.gov
Phil	Vaughan	Council Member	Universal City	Council4@uctx.gov
Kim	Turner	City Manager	Universal City	citymanager@uctx.gov
Jeff	Bauknight	Mayor	Victoria	jbauknight@victoriatx.gov
Duane	Crocker	Council Member	Victoria	dcrocker@victoriatx.gov
Rafael	DeLaGarza	Council Member	Victoria	rdelagarza@victoriatx.gov
Mark	Loffgren	Council Member	Victoria	mloffgren@victoriatx.gov
Jan	Scott	Council Member	Victoria	janscott@victoriatx.gov
Josephine	Soliz	Council Member	Victoria	jsoliz@victoriatx.gov

SOCIAL MEDIA

The SARFPG used social media to raise awareness of the upcoming meetings. Region 12 city and county elected officials and stakeholders were asked to help inform the community of the meetings by posting on their social media platforms.

The SARFPG supplied the social media graphics (shown here) and content for the posts (shown on the following page) to the elected officials for ease and convenience.

Social Media Content – Twitter, Facebook, LinkedIn, Nextdoor

Social media graphics and content were provided to Region 12 city and county elected officials and stakeholders for use on their social media platforms. Below are posts that were provided.

Date	Twitter Post	Facebook/LinkedIn Post	Nextdoor Post
Tuesday, 6/1	Learn about flood planning recommendations for our region and share your feedback in 3 public meetings! Join the San Antonio Regional Flood Planning Group in San Antonio on 6/6, Schertz on 6/7, and Floresville on 6/16. Learn more: Region12Texas.org	Flood events pose one of the greatest natural threats to life and property in the San Antonio River Basin, and they are becoming more frequent and intense. To help protect lives, homes and communities, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio on 6/6, Schertz on 6/7, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org	**HEADING:** San Antonio, Schertz, and Floresville: Share Your Feedback on Flooding in 3 Public Meetings! **POST:** Flood events pose one of the greatest natural threats to life and property in the San Antonio River Basin, and they are becoming more frequent and intense. To help protect lives, homes and communities, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio on 6/6, Schertz on 6/7, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org
Monday, 6/6	REMINDER: Learn about flood planning recommendations for our region and share your feedback in 3 public meetings! Join the San Antonio Regional Flood Planning Group tonight in San Antonio, in Schertz tomorrow, and Floresville on 6/16. Learn more: Region12Texas.org	REMINDER: San Antonio, Schertz, and Floresville: Share Your Feedback on Flooding in 3 Public Meetings! To help protect lives, homes and communities from more frequent and intense flood events, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio tonight, in Schertz on tomorrow, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org	**HEADING:** REMINDER: San Antonio, Schertz, and Floresville: Share Your Feedback on Flooding in 3 Public Meetings! **POST:** To help protect lives, homes and communities from more frequent and intense flood events, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio tonight, in Schertz on tomorrow, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org

SARFPG PUBLIC MEETING
Facebook posts

SARFPG PUBLIC MEETING
Facebook posts

SARFPG PUBLIC MEETING
Nextdoor post

C. Sign-in Sheets

WELCOME! PLEASE SIGN IN.

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

MONDAY, JUNE 6, 2022 - 6:30 P.M. – 8 P.M.
RAYBURN MIDDLE SCHOOL, 1400 CEDARHURST, SAN ANTONIO TX 78227

PLEASE PRINT

Name	Address/Zip Code	Email Address
LEE FRUERBACHER	11931 DAWNHAVEN 78249	circlefrealty@yahoo.com
Nathan Glavy	1869 Blanco Rd. 78212	nathan@aquiferalliance.org
D Reid	702 Sommer	deborahD aquiferalliance.org
Crystal Caldera	City of Leon Valley	C.Caldera@leonvalleytexas.gov
JAMES BORGEN VALLEY HI NORTH	—	VALLEYHINORTH@GMAIL.COM

WELCOME! PLEASE SIGN IN.

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP

MONDAY, JUNE 6, 2022 - 6:30 P.M. – 8 P.M.
RAYBURN MIDDLE SCHOOL, 1400 CEDARHURST, SAN ANTONIO TX 78227

PLEASE PRINT

Name	Address/Zip Code	Email Address
Thomas Carder	1131 Hidden Pond 78227	thomasecarder@yahoo.com

STAFF/ CONSULTANTS SIGN IN SHEET

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
MONDAY, JUNE 6, 2022 - 6:30 P.M. – 8 P.M.
RAYBURN MIDDLE SCHOOL, 1400 CEDARHURST, SAN ANTONIO, TX 78227

Name	Affiliation	Email Address
Linda Ximenes	Ximenes & Assoc., Inc.	lximenes@xa-sa.com
Laura Vasquez	"	lvasquez@xa-sa.com
Daniel Perry	Halff Associates Inc.	dperry@halff.com
Cody Hester	HDR	cody.hester@hdrinc.com
Sara Page	HDR	Sara.Page@hdrinc.com
Laura Calderon	Ximenes & Assoc	lcalderon@xa-sa.com

D. Presentation

San Antonio Regional Flood Plan

June 6, 2022

Agenda

- Introductions
- Plan Objectives and Benefits
- Background
- Planning Process and Other Studies
- Stakeholder Input
- Next Steps

Meeting Purpose

- Introduce the regional flood planning process and gather local knowledge of flood-prone areas, flood mitigation projects and needs.

Local management team has dedicated their careers to San Antonio Basin

Ron Branyon, PE, CFM

Project Manager

Point of contact/HDR

Added Value To SARFPG

- **Local, Responsive Project Manager**
- **20 years of experience delivering TWDB flood mitigation studies, drainage master plans, and floodplain mapping studies, in San Antonio River Basin**
- **Extensive experience in public outreach related to flood mitigation and mapping projects**
- **A strong working relationship with members of the Bexar Regional Watershed Management partnership.**
- **Track record for successful delivery of local high-profile projects, including nature- based solutions**

Relevant Experience To SARFP Tasks

- **SARA, City of San Antonio Drainage Master Plan — TX**
- **SARA, San Antonio River Watershed Cooperating Technical Partners (CTP) — TX**
- **SARA/Bexar County, San Pedro Creek Improvements Project — TX**
- **USACE, Leon Creek Master Plan — TX**
- **FEMA, DFIRM-Refugio, Calhoun, Aransas — TX**
- **USACE, Lower San Antonio River Basin Hydraulic Routing Models — TX**

"I work in Bexar County, reside in Wilson County and ranch in Goliad County, so this watershed is my home! From the headwaters to the Gulf I have seen it all and protecting the watershed and those who live here is what excites me about this opportunity."

What is the Region 12 Flood Plan?

- Historic Flooding – Realization of the need for flood planning
- In 2019, the 86th Texas legislature created and funded the first-ever regional and state flood planning process
- Schedule
  - Regional flood plans to be delivered by January 10, 2023, and then every five years thereafter
  - State plan to be adopted by September 1, 2024, and then every five years thereafter
- TWDB Flood Planning website: https://www.twdb.texas.gov/flood/planning/

Region 12 Background

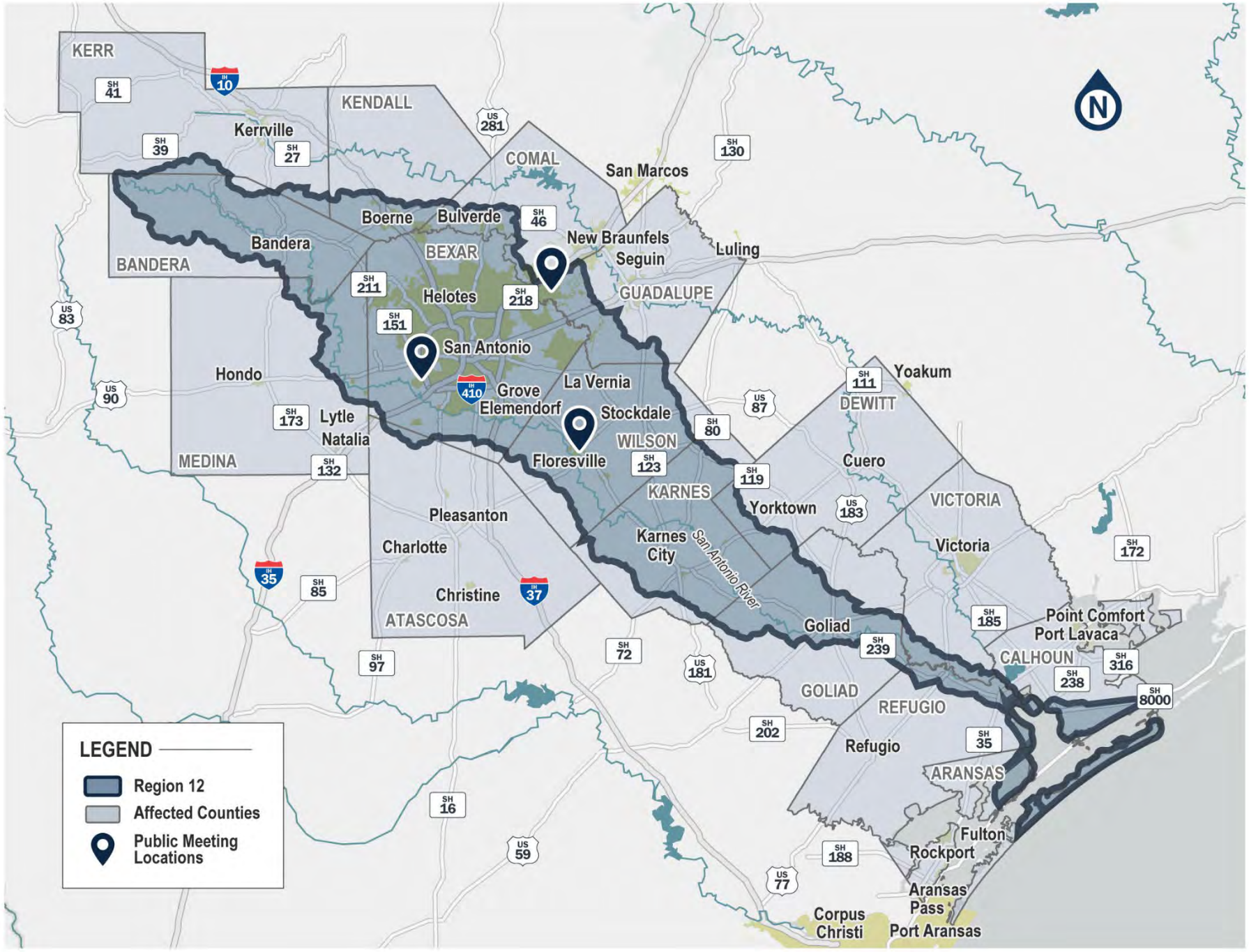
- **San Antonio Region Flood Planning Group (SARFPG)**
  - Created to represent diverse interest and to deliver the 2023 regional flood plan
- **Sponsor**
  - San Antonio River Authority
- **Technical Team**
  - HDR/Halff team selected as consultant to prepare plan

San Antonio Regional Flood Planning Group

- Flood Districts: Nefi Garza, *City of San Antonio (Chair)*
- River Authorities: Derek Boese, *SARA (Vice-Chair)*
- Water Districts: David Mauk, *Bandera Co River Authority & GWD*
- Municipalities: Jeffery Carrol, *City of Boerne*
- Agriculture: Brian Yanta, *Goliad County Ag-Extension*
- Counties: David Wegmann, *Bexar County*
- Electric-generating Utilities: Doris Cooksey, *CPS Energy*
- Environment: Debbie Reed, *Greater Edwards Aquifer Alliance*
- Industries: Cara Tackett, *Pape-Dawson Engineers*
- Non-Profit: Suzanne Scott, *Nature Conservancy*
- Public: John Beasley, *US Army Environmental Command*
- Small Business: Steve Gonzales, *Civil Tech Engineering, Inc.*
- Water Utilities: Steven Clouse, *SAWS*

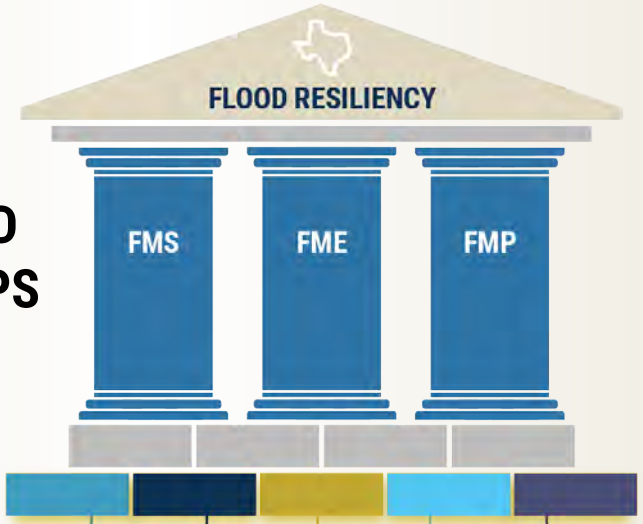
Plan Objectives

- Document existing flood infrastructure and preparedness
- Identify current and future flood risk and hazard
- Develop flood mitigation/management goals
- Identify and evaluate flood management strategies and mitigation projects
- Evaluate benefits/impacts to water supply environment, and economics



Additional Relevant Flood Studies and Coordination

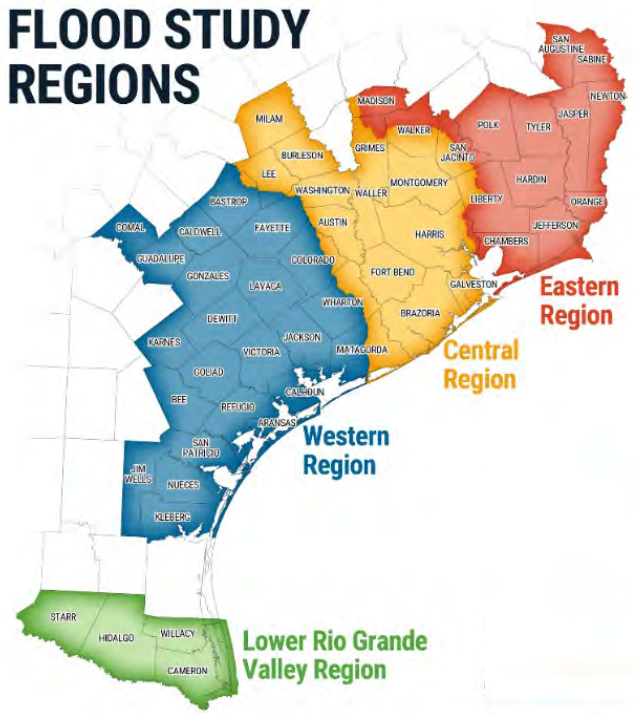
REGIONAL FLOOD PLANNING GROUPS



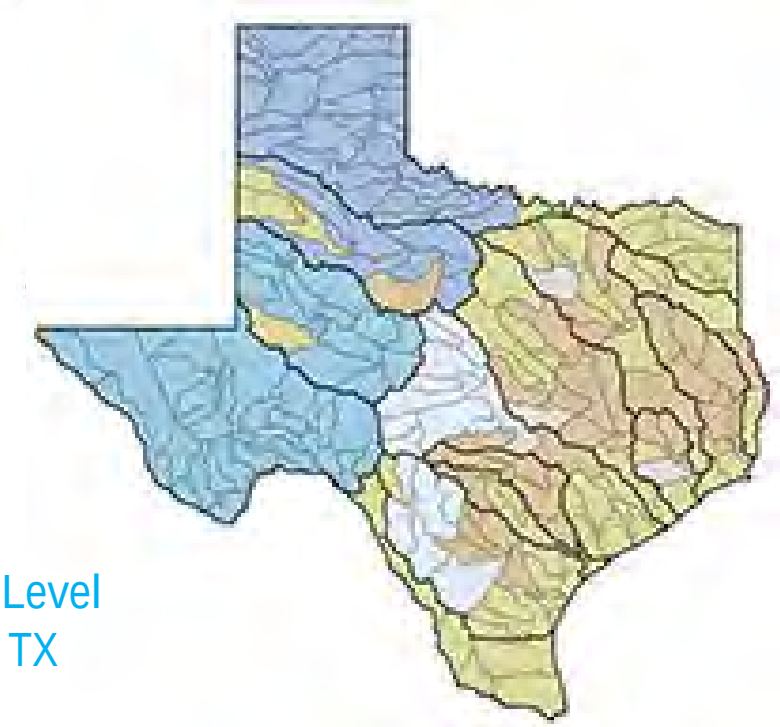
RIVER BASIN FLOOD STUDY

ACRONYMS

- FMS: Flood Management Strategies
- FME: Flood Management Evaluations
- FMP: Flood Mitigation Projects



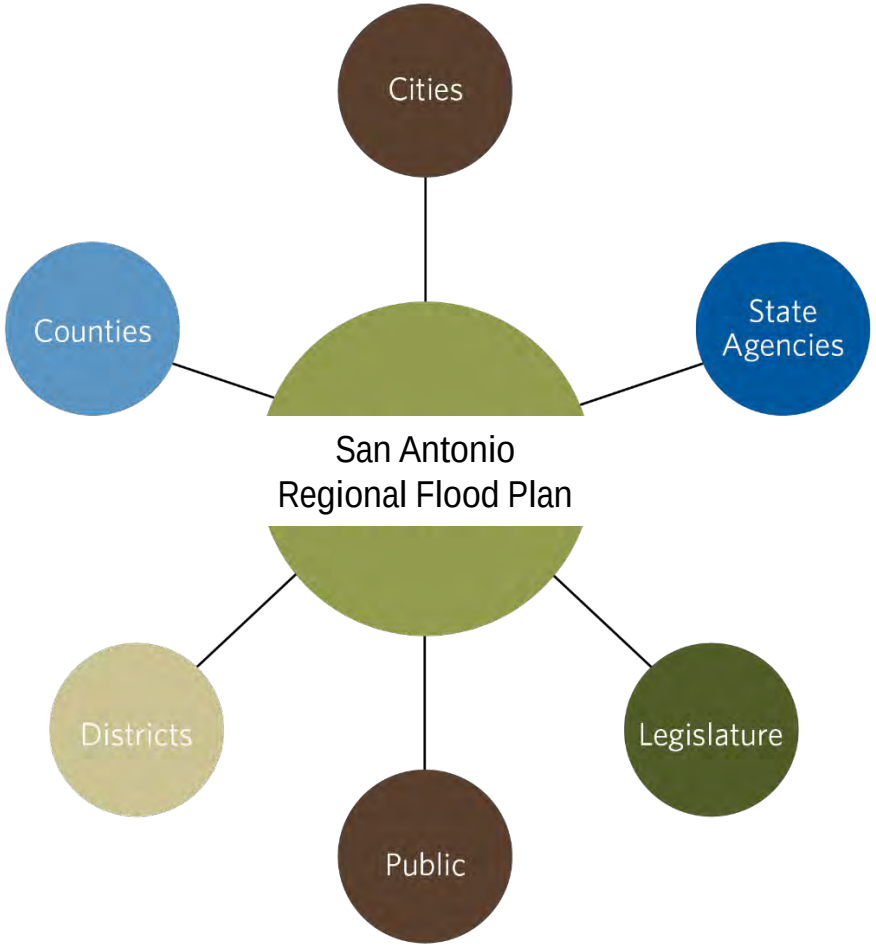
GLO, Lower Rio Grande Valley Flood Study - TX



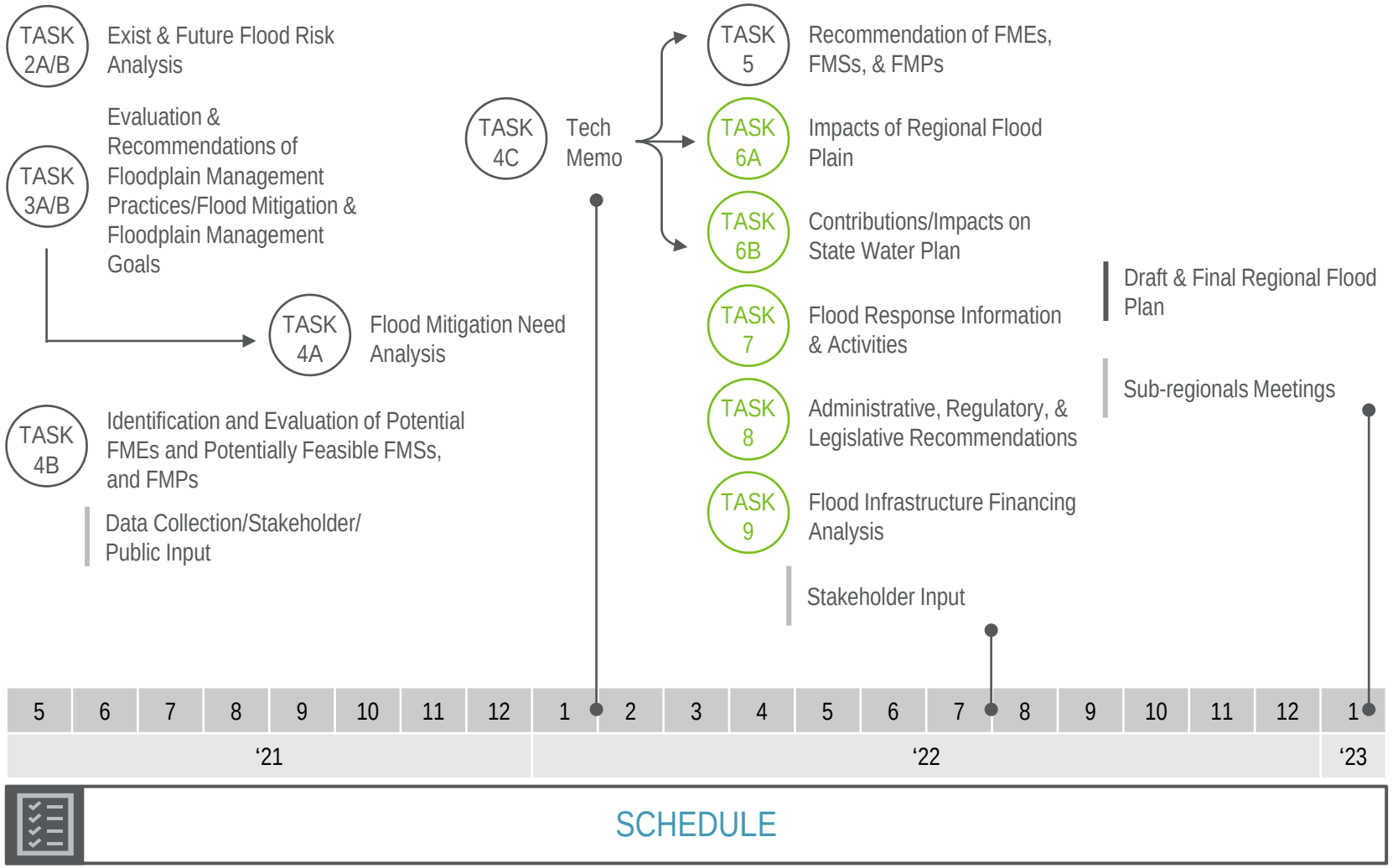
TWDB, Base Level Engineering- TX

Stakeholder Input

- Local knowledge, needs, and goals
  - **Flood Prone Areas**
  - **Flood Mitigation Projects, Evaluations and Strategies**
  - Existing “Major” Flood Infrastructure
  - Proposed or Ongoing Flood Mitigation Projects
  - Existing flood management practices
  - Short- and long-term management goals
- Stay in touch through the Region 12 Website: https://region12texas.org
- Anyone else that needs to be a part of this conversation?



TWDB Flood Planning Tasks



Story Map

[Region 12 Flood Plan (arcgis.com)]

GOALS

The purpose of this task is to identify flood mitigation and floodplain management goals for the San Antonio River region. The overarching intent of the goals is "to protect against the loss of life and property" set out to:

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

Table 3.1, Flood Planning Goal Categories and Benefits

Benefits / Overarching Goals	Category 1 Flood Education and Outreach	Category 2 Flood Warning and Readiness	Category 3 Flood Studies and Analysis	Category 4 Flood Prevention	Category 5 Non-Structural Flood Infrastructure Projects	Category 6 Structural Flood Infrastructure Projects
Protect life	◑	●	◑	◑	●	●
Protect infrastructure		◑	◑	●	◑	●
Protect property		◑	◑	●	●	●
Protect the environment	◑		◑	●	●	●
Protect/enhance water supply				◑	◑	◑
Sustain the economy		◑		◑	●	◑
Realize multiple benefits*				◑	◑	◑
Increase public awareness	●	●	◑	◑	◑	◑
Build community support	●	●	◑	◑		

◑ – *Potential benefit*

● – *Direct benefit*

** multiple benefits could include improved flood protection while improving water supply, increasing public recreation opportunities, etc.*

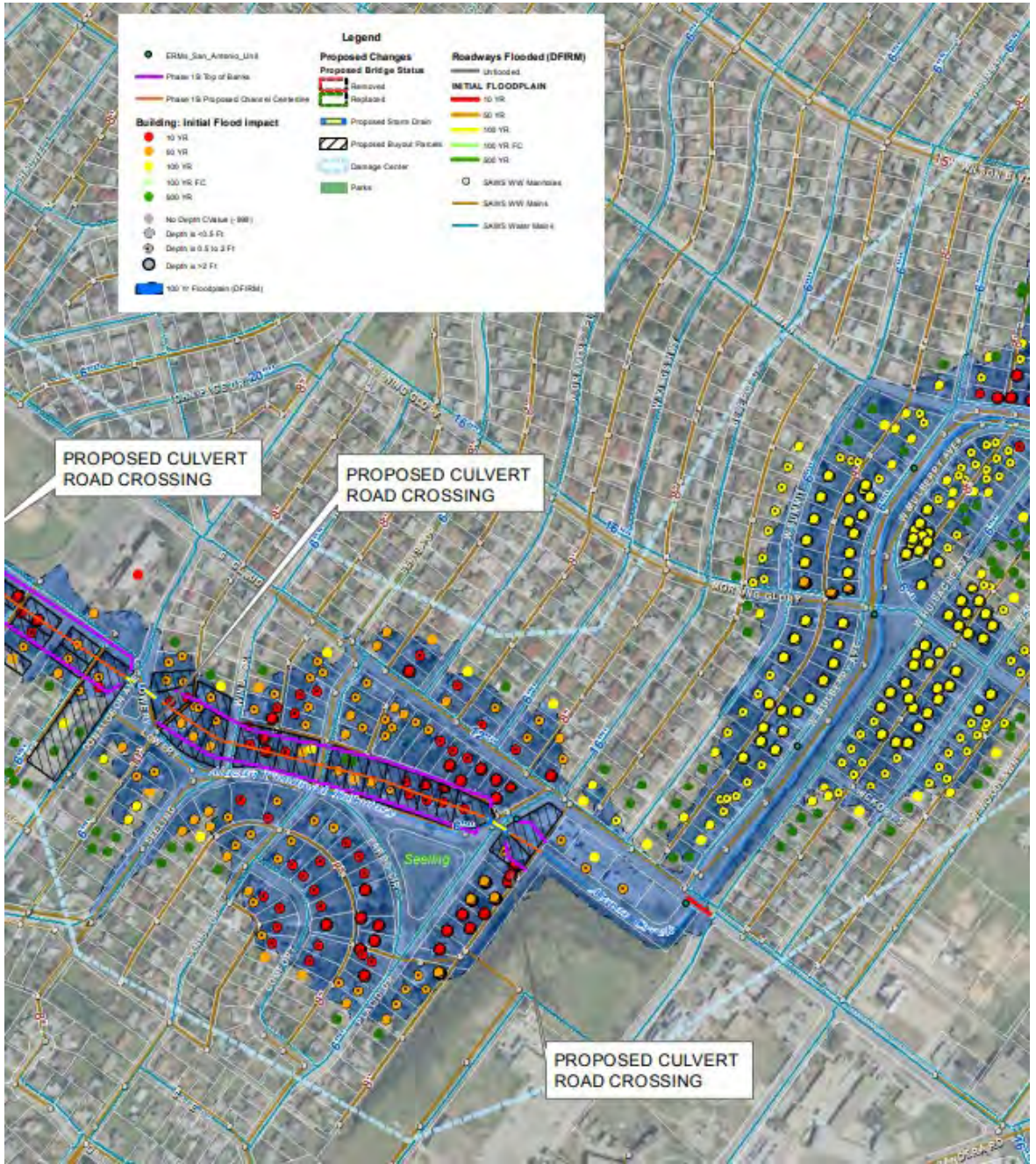
GOAL SURVEY

https://www.surveymonkey.com/r/25ZX6Z6

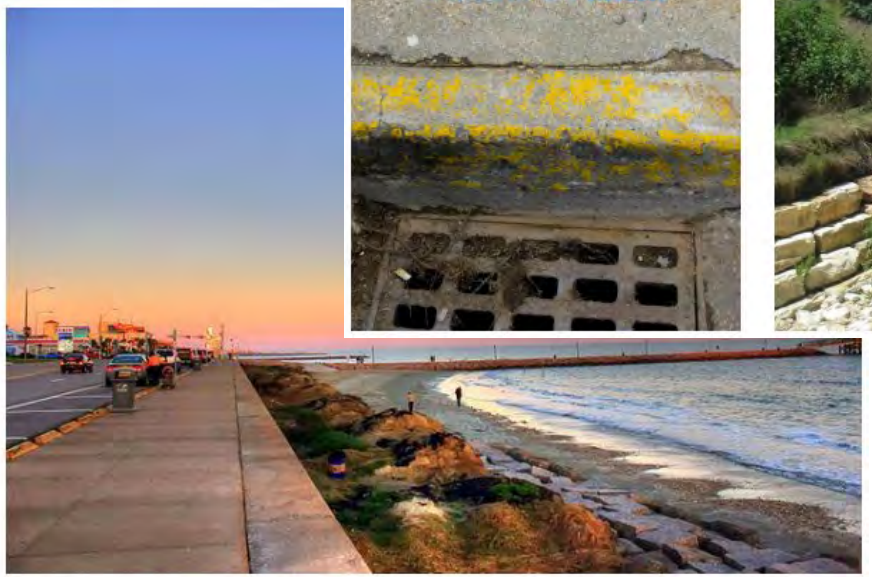
Flood Mitigation Alternatives

What is an FMP, FME and FMS?

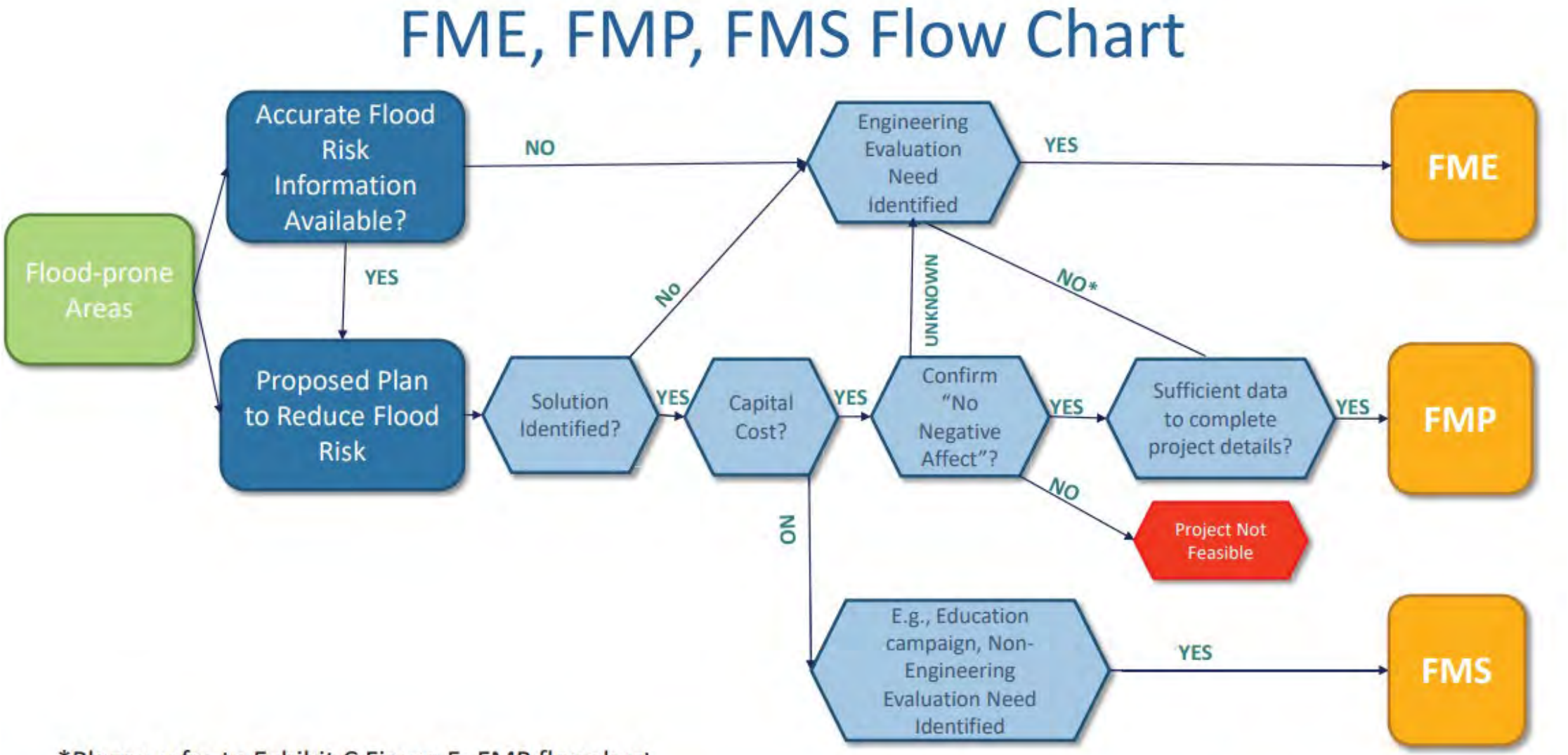
- **FMP – Flood Mitigation Project**
  - Structural: Bridges, culverts, storm drain, regional detention, nature-based projects
  - Non-structural: Property or easement acquisition, flood warning system, flood proofing
- **FME – Flood Mitigation Evaluation**
  - H&H Modeling, Flood Mapping Updates, Flood studies
- **FMS – Flood Mitigation Strategy**
  - Proposed plan to mitigate flood hazard
  - Flood Policy



Flood Mitigation Alternatives



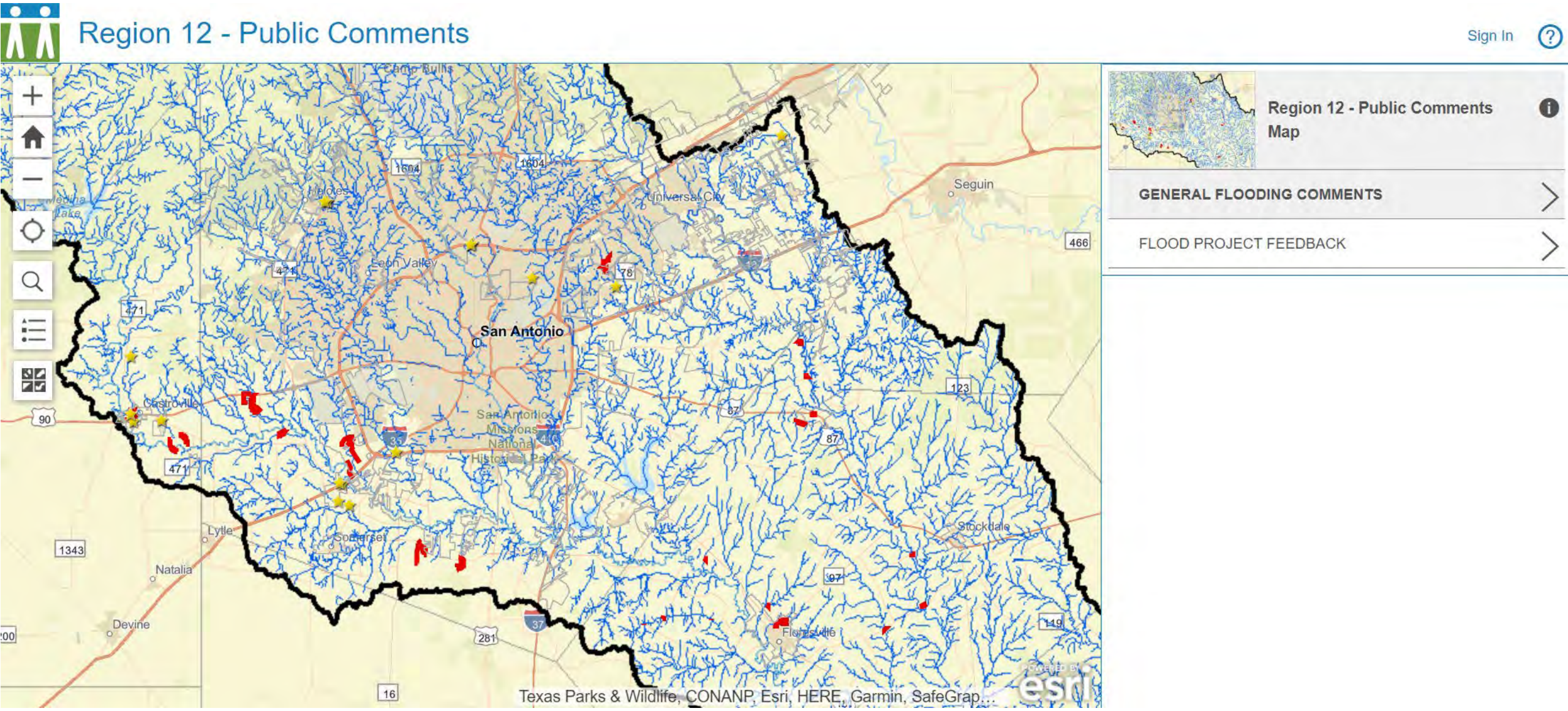
Flood Mitigation Alternatives



*Please refer to Exhibit C Figure 5: FMP flowchart.

Interactive Comment Map

[Region 12 - Public Comments (arcgis.com)]



Stakeholder Input

- **Your insight is valuable**
  - Tell us your experience, where you have seen or know of flood concerns
  - Tell us where you need flood mitigation projects
- No one size fits all solutions, unique needs for each basin in the region
  - A plan is only as good as the input
  - The flood plan needs to represent ALL community needs

Stakeholder Input

- **FMPs, FMEs and FMSs must be included in the State Flood Plan to receive future funding.**

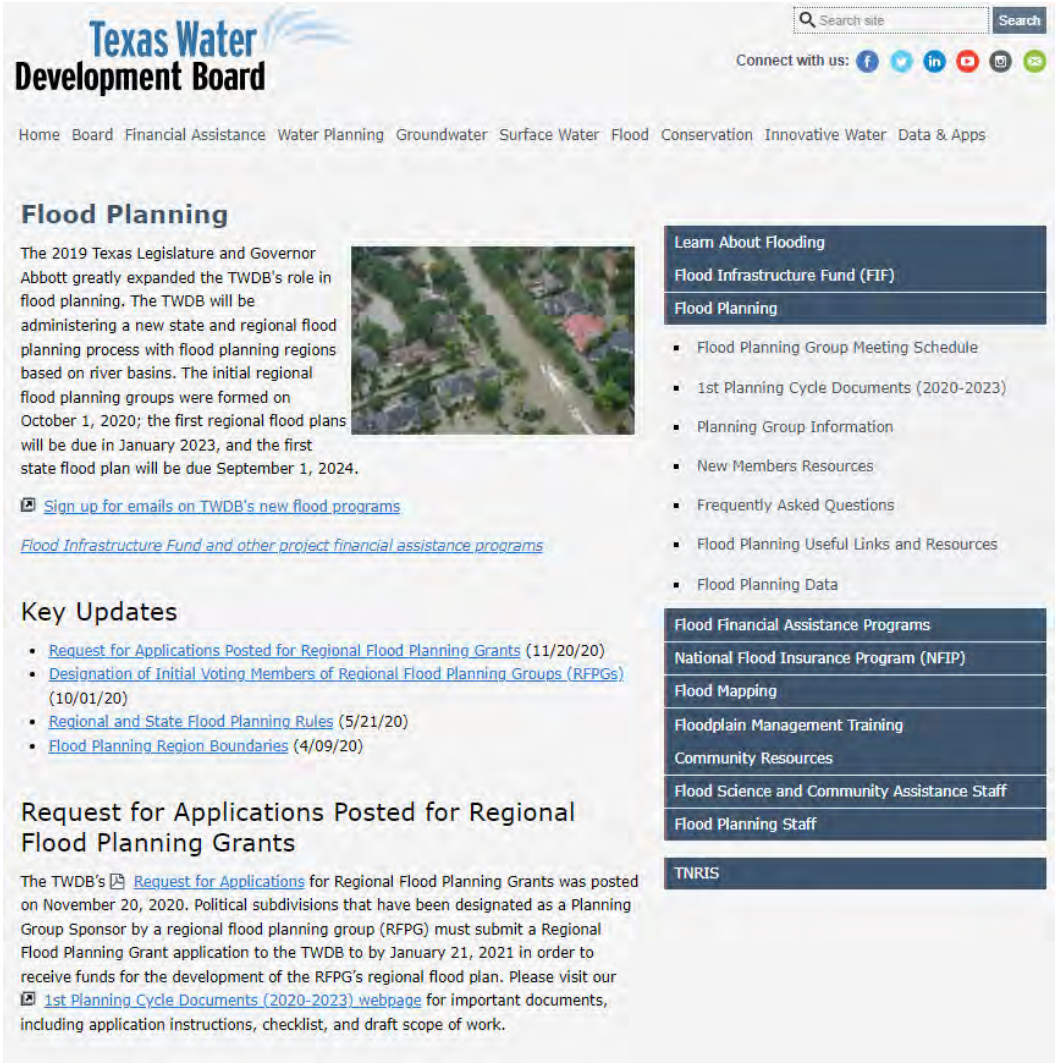
Stakeholder Input: How to Engage

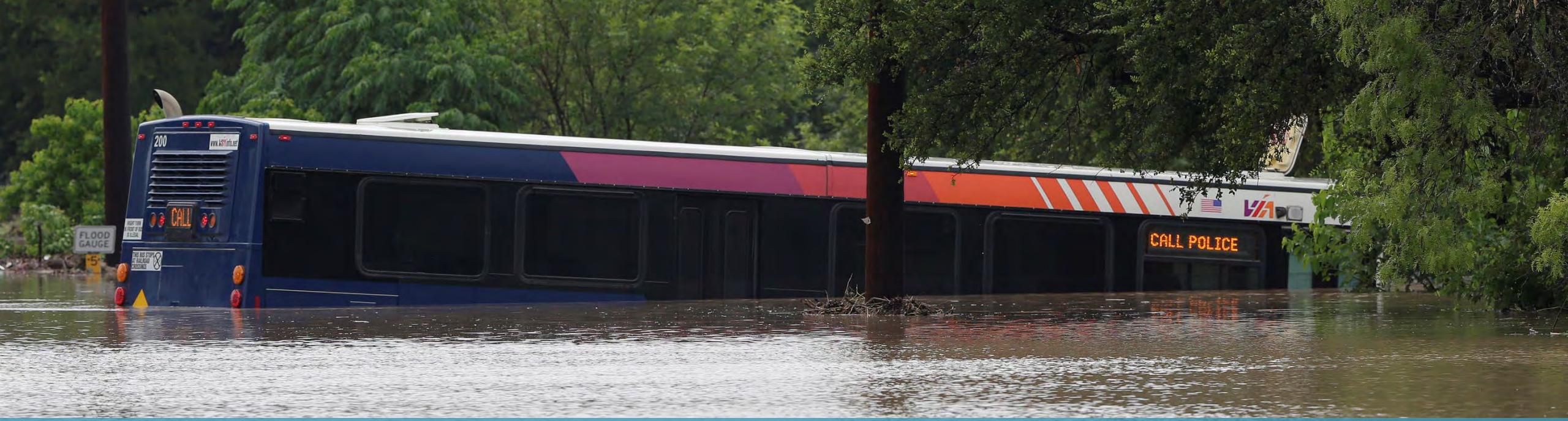
- Contact us:

  https://region12texas.wpengine.com/contact-us/

- Share or visit the Region 12 Website: https://www.region12texas.org
  - Learn more about the Regional Flood Plan Public Meetings (all public)
  - See Stakeholder Surveys/ Interactive Map
- Learn more about state flood planning efforts:

  https://www.twdb.texas.gov/flood/planning/index.asp





Questions?

- **Contact info:** Ron Branyon
- **Email:** Ronald.Branyon@hdrinc.com
- **Phone:** 210.912.7105

E. Photos

SARFPG PUBLIC MEETING
San Antonio, TX
June 6, 2022

San Antonio Regional Flood Planning Group
Public Meeting Documentation

Planning Region

Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

Meeting Date, Time, and Location

Tuesday, June 7, 2022, 6:30 p.m. to 8 p.m.
City of Schertz North Center
3501 Morning Dr.
Schertz, TX 78108

Presenters

Ronald Branson, P.E, Project Manager, HDR, Inc.

Elected Officials in Attendance

1

Total Number of Attendees (approx.)

6

Number of Comments Submitted at Meeting

1

Contents

A. Comments Received

One comment was submitted online at the Public Meeting. To view this and other comments submitted online, go to https://www.region12texas.org/, and click on the Region 12 Flood Plan Comment Map in the Comments and Feedback section.

B. Notice to the Public (flyer, emails, social media, and other outreach)

SARFPG PUBLIC MEETING FLYER EMAILED MAY 25, 2022 TO ELECTED OFFICIALS AND STAKEHOLDERS FOR POSTING & DISTRIBUTION

REGION 12 FLOOD PLANNING PUBLIC MEETINGS

Help Protect our Communities from Future Flooding!

The San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for Region 12, which includes counties along the San Antonio River Basin. Join us for our upcoming public meetings to help us build a strong flood plan that keeps our local communities, families, and homes safe from flooding for years to come.

About Region 12

Region 12 includes parts of Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria and Wilson counties.

About the Region 12 Flood Plan

As part of a statewide initiative, this flood plan will recommend projects to prevent flood damage to lives and property across our region. Earlier this year, SARFPG hosted a series of meetings to gather community input. Now, we're reaching out to:

- Provide flood planning status updates.
- Share potential short- and long-term flooding recommendations and get your feedback.
- Learn more about your flooding experiences.
- Provide an opportunity to speak directly with our project team.

June Public Meetings

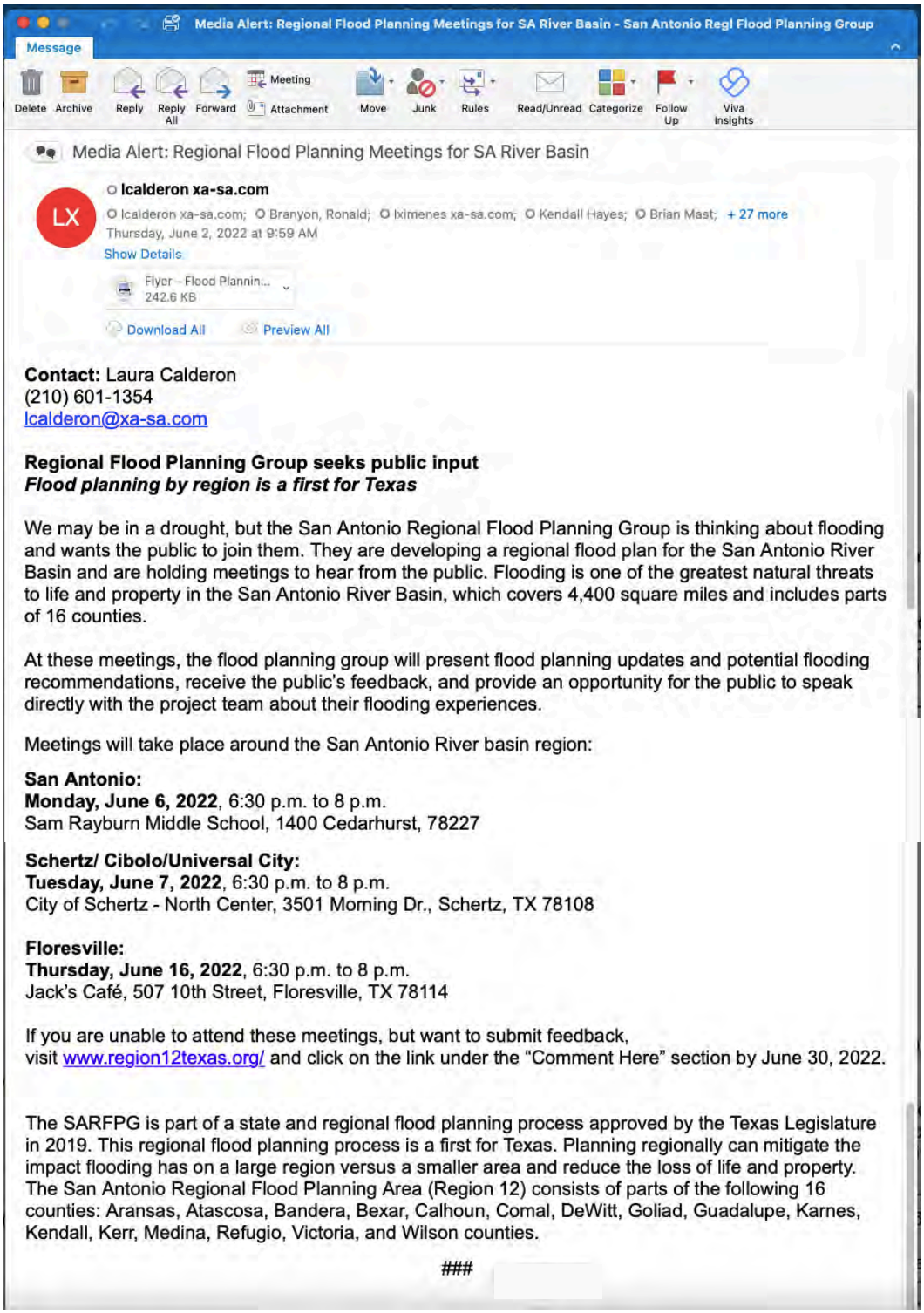
West San Antonio	Schertz-Cibolo/Universal City	Floresville
WHEN: Monday, June 6, 2022, 6:30-8:00 p.m. **WHERE:** Sam Rayburn Middle School 1400 Cedarhurst Dr. San Antonio, TX 78227	**WHEN:** Tuesday, June 7, 2022, 6:30-8:00 p.m. **WHERE:** City of Schertz - North Center 3501 Morning Dr. Schertz, TX 78108	**WHEN:** Thursday, June 16, 2022, 6:30-8:00 p.m. **WHERE:** Jack's Café (large meeting room) 507 10th St. Floresville, TX 78114

Share Your Feedback

Unable to stop by a public meeting? You can still share feedback on the Region 12 Flood Plan. Go to bit.ly/Region12FloodPlanning or scan this QR code with your smart phone's camera to take our survey.

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
Region12Texas.org
(210) 227-1373

SARFPG PUBLIC MEETING
Sample Media Advisory email sent
June 2, 2022 to media outlets within Region 12



Media Alert: Regional Flood Planning Meetings for SA River Basin - San Antonio Regl Flood Planning Group

Message

Delete Archive Reply Reply All Forward Meeting Attachment Move Junk Rules Read/Unread Categorize Follow Up Viva Insights

Media Alert: Regional Flood Planning Meetings for SA River Basin

LX lcalderon xa-sa.com

lcalderon xa-sa.com; Branyon, Ronald; lximenes xa-sa.com; Kendall Hayes; Brian Mast; + 27 more

Thursday, June 2, 2022 at 9:59 AM

Show Details

Flyer – Flood Plannin... 242.6 KB

Download All Preview All

Contact: Laura Calderon
(210) 601-1354
lcalderon@xa-sa.com

Regional Flood Planning Group seeks public input
Flood planning by region is a first for Texas

We may be in a drought, but the San Antonio Regional Flood Planning Group is thinking about flooding and wants the public to join them. They are developing a regional flood plan for the San Antonio River Basin and are holding meetings to hear from the public. Flooding is one of the greatest natural threats to life and property in the San Antonio River Basin, which covers 4,400 square miles and includes parts of 16 counties.

At these meetings, the flood planning group will present flood planning updates and potential flooding recommendations, receive the public's feedback, and provide an opportunity for the public to speak directly with the project team about their flooding experiences.

Meetings will take place around the San Antonio River basin region:

San Antonio:
Monday, June 6, 2022, 6:30 p.m. to 8 p.m.
Sam Rayburn Middle School, 1400 Cedarhurst, 78227

Schertz/ Cibolo/Universal City:
Tuesday, June 7, 2022, 6:30 p.m. to 8 p.m.
City of Schertz - North Center, 3501 Morning Dr., Schertz, TX 78108

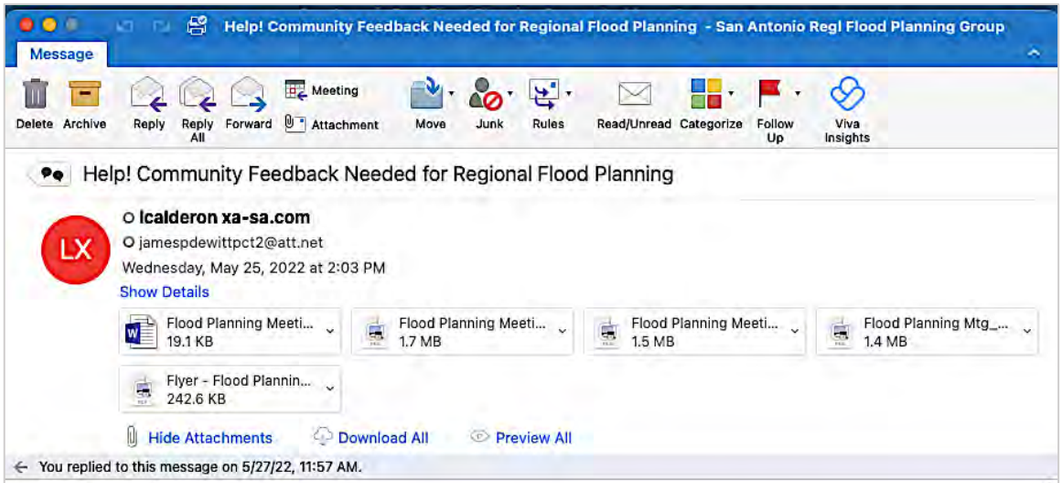
Floresville:
Thursday, June 16, 2022, 6:30 p.m. to 8 p.m.
Jack's Café, 507 10th Street, Floresville, TX 78114

If you are unable to attend these meetings, but want to submit feedback,
visit www.region12texas.org/ and click on the link under the "Comment Here" section by June 30, 2022.

The SARFPG is part of a state and regional flood planning process approved by the Texas Legislature in 2019. This regional flood planning process is a first for Texas. Planning regionally can mitigate the impact flooding has on a large region versus a smaller area and reduce the loss of life and property. The San Antonio Regional Flood Planning Area (Region 12) consists of parts of the following 16 counties: Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

###

SARFPG PUBLIC MEETING
Sample email sent May 25, 2022 to elected county officials within Region 12, which includes Bexar & Comal counties. Email database follows.



Dear Commissioner Pilchiek,

As a leader in your community, you are aware that flooding is one of the greatest natural threats to life and property in the San Antonio River Basin, which includes parts of De Witt County. The San Antonio Regional Flood Planning Group (SARFPG) is working to reduce the devastation caused by flood events and make the region safer by protecting lives, homes and property. **We need your help to reach these goals.** On behalf of the SARFPG, I am asking for your assistance to inform your community about important upcoming meetings to address flood events.

SARFPG background
The SARFPG is part of a state and regional flood planning process approved by the Texas Legislature in 2019. This **regional** flood planning process is a **first** for Texas. **It can help mitigate flooding that impacts a large region versus a smaller area and help reduce the loss of life and property.** The San Antonio River Basin, the regional focus for this planning effort, covers more than 4,400 square miles encompassing parts of 16 counties, including De Witt County.

Flooding is a growing problem as flood events are becoming more frequent and intense. The SARFPG wants to continue receiving public feedback because ultimately, there may be opportunities to leverage state funding for flood and drainage issues. The next round of public meetings will be held:

- **Monday, June 6, 2022**: Sam Rayburn Middle School, 1400 Cedarhurst, San Antonio, TX 78227, 6:30 p.m. to 8 p.m.
- **Tuesday, June 7, 2022**: City of Schertz - North Center, 3501 Morning Dr., Schertz, TX 78108, 6:30 p.m. to 8 p.m.
- **Thursday, June 16, 2022**: Jack's Café, 507 10th Street, Floresville, TX 78114

The goals for these meetings are to:

- Provide flood planning status updates.
- Share potential short- and long-term flooding recommendations and get your feedback.
- Learn more about your flooding experiences.
- Provide an opportunity to speak directly with our project team.

Attached is a meeting flyer and social media posts and pictures for your use. **Please help us by posting this information on your personal or organizational social media account, by including meeting information in your newsletter, and sharing the flyer with your community.**

If you or your constituents are unable to attend these meetings, but want to submit feedback, please visit https://www.region12texas.org/ and click on the link under the "Comment Here" section. If you have any upcoming community meetings, we are also available to present information and receive community feedback. The final draft plan is due August 2022, so we are trying to gather community feedback by June 30, 2022.

If you have any questions, need more information or would like to request a presentation, please contact Project Manager Ron Branyon, P.E. at ronald.branyon@hdrinc.com or (210) 841-2922.

Thank you for your consideration!

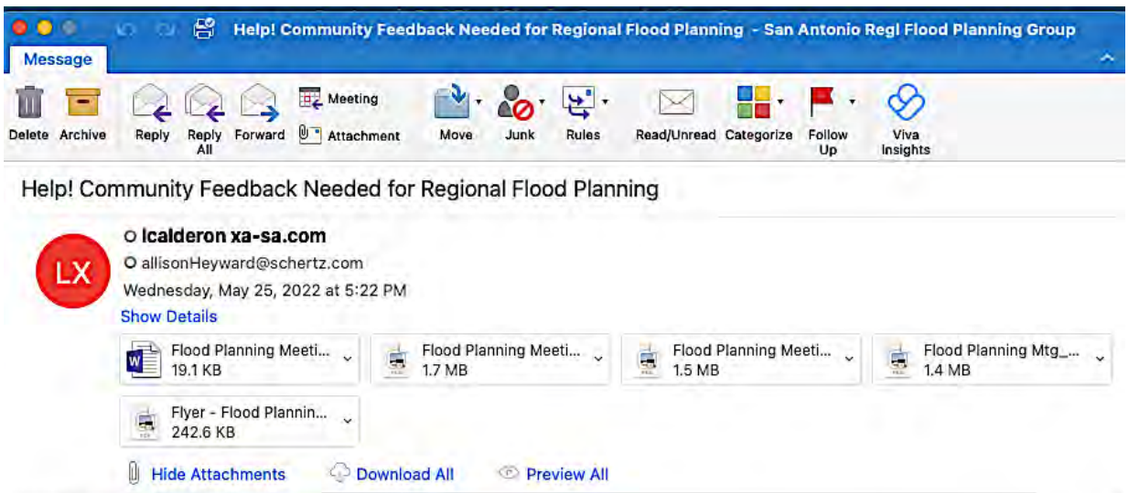
Laura A. Calderon
SARFPG Project Team Member
Ximenes & Associates, Inc.
Facilitating communication and consensus since 1984
500 Sixth Street
San Antonio, Texas 78215
(210) 354-2925 (office)
(210) 601-1354 (cell)

Email Database for Region 12 County Commissioners				
First	**Last**	**Title**	**Pct-District**	**Email**
Robert L.	Hurley	County Judge	Atascosa County	countyjudge@atascosacounty.texas.gov
Mark	Gillespie	Commissioner	Precint 1	commissioner1@atascosacounty.texas.gov
Stuart	Knowlton	Commissioner	Precinct 2	commissioner2@atascosacounty.texas.gov
Eliseo	Perez	Commissioner	Precinct 3	commissioner3@atascosacounty.texas.gov
Kennard	Riley	Commissioner	Precinct 4	commissioner4@atascosacounty.texas.gov
Richard	Meyer	County Judge	Calhoun County	Richard.Meyer@calhouncotx.org
David	Hall	Commissioner	Precint 1	david.hall@calhouncotx.org
Vern	Lyssy	Commissioner	Precinct 2	vern.lyssy@calhouncotx.org
Joel M.	Behrens	Commissioner	Precinct 3	Joel.Behrens@calhouncotx.org
Gary D.	Reese	Commissioner	Precinct 4	gary.reese@calhouncotx.org
C.H. "Burt"	Mills	County Judge	Aransas County	judge@aransascounty.org
Jack	Chaney	Commissioner	Precint 1	jchaney@aransascounty.org
Leslie	Casterline	Commissioner	Precinct 2	bcasterline@aransascounty.org
Pat	Rousseau	Commissioner	Precinct 3	prousseau@aransascounty.org
Wendy	Laubach	Commissioner	Precinct 4	wlaubach@aransascounty.org
Robert E.	Blaschke	County Judge	Refugio County	judge.blaschke@gmail.com
Ben	Zeller	County Judge	Victoria County	bzeller@vctx.org
Danny	Garcia	Commissioner	Precint 1	dgarcia@vctx.org
Kevin M.	Janak	Commissioner	Precinct 2	kjanak@vctx.org
Gary	Burns	Commissioner	Precinct 3	gburns@vctx.org
Clint	Ives	Commissioner	Precinct 4	cives@vctx.org
Mike	Bennett	County Judge	Goliad County	mbennett@goliadcountytx.gov
Kenneth	Edwards	Commissioner	Precint 1	kedwards@goliadcountytx.gov
Alonzo	Morales	Commissioner	Precinct 2	amorales@goliadcountytx.gov
Kirby	Brumby	Commissioner	Precinct 3	kbrumby@goliadcountytx.gov
David	Bruns	Commissioner	Precinct 4	dbruns@goliadcountytx.gov
Daryl L.	Fowler	County Judge	De Witt County	daryl.fowler@co.dewitt.tx.us
Curtis	Afflerbach	Commissioner	Precint 1	commish1@co.dewitt.tx.us
James	Pilchiek	Commissioner	Precinct 2	jamespdewittpct2@att.net
James	Kaiser	Commissioner	Precinct 3	jkaiserk@gmail.com
Richard	Randle	Commissioner	Precinct 4	richard.randle@co.dewitt.tx.us
Wade	Hedtke	County Judge	Karnes County	wade.hedtke@co.karnes.tx.us

Email Database for Region 12 County Commissioners				
First	**Last**	**Title**	**Pct-District**	**Email**
Shelby	Dupnik	Commissioner	Precint 1	shelby.dupnik@co.karnes.tx.us
Bernard	Lyssy	Commissioner	Precinct 2	benny.lyssy@co.karnes.tx.us
Sean	O'Brien	Commissioner	Precinct 3	sean.obrien@co.karnes.tx.us
Sharon	Chesser	Commissioner	Precinct 4	schesser@co.karnes.tx.us
Kyle	Kutscher	County Judge	Guadalupe County	kyle.kutscher@co.guadalupe.tx.us
Greg	Seidenberger	Commissioner	Precint 1	greg.seidenberger@co.guadalupe.tx.us
Drew	Engelke	Commissioner	Precinct 2	Drew.Engelke@co.guadalupe.tx.us
Michael	Carpenter	Commissioner	Precinct 3	Michael.Carpenter@co.guadalupe.tx.us
Judy	Cope	Commissioner	Precinct 4	judy.cope@co.guadalupe.tx.us
Chris	Schuchart	County Judge	Medina County	countyjudge@medinacountytexas.org
Timothy	Neuman	Commissioner	Precint 1	angie.zapata@medinacountytexas.org
Larry	Sittre	Commissioner	Precinct 2	lydia.aguinaga@medinacountytexas.org
David	Lynch	Commissioner	Precinct 3	david.lynch@medinatx.org
Jerry	Beck	Commissioner	Precinct 4	gracie.martinez@medinacountytexas.org
Darrel L.	Lux	County Judge	Kendall County	judge@co.kendall.tx.us
Christina	Bergmann	Commissioner	Precint 1	christina.bergmann@co.kendall.tx.us
Richard W.	Elkins	Commissioner	Precinct 2	richard.elkins@co.kendall.tx.us
Richard	Chapman	Commissioner	Precinct 3	richard.chapman@co.kendall.tx.us
Don	Durden	Commissioner	Precinct 4	don.durden@co.kendall.tx.us
				commissioners@co.kendall.tx.us
Sherman	Krause	County Judge	Comal County	krause@co.comal.tx.us
Donna	Eccleston	Commissioner	Precint 1	cctdme@co.comal.tx.us
Scott	Haag	Commissioner	Precinct 2	haagsc@co.comal.tx.us
Kevin	Webb	Commissioner	Precinct 3	webbke@co.comal.tx.us
Jen	Crownover	Commissioner	Precinct 4	crownj@co.comal.tx.us
Richard	Evans	County Judge	Bandera County	countyjudge@banderacounty.org
H. Bruce	Eliker	County Commissioner	Precint 1	eliker@banderacounty.org
Robert	Harris	Commissioner	Precinct 2	
Jack U.	Moseley	Commissioner	Precinct 3	jmoseley@banderacounty.org
Jordan	Rutherford	Commissioner	Precinct 4	jrutherford@banderacounty.org
Nelson W.	Wolff	County Judge	Bexar County	nwolff@Bexar.org
Rebeca	Clayton-Flores	Commissioner	Precinct 1	CommissionerPct1@bexar.org

Email Database for Region 12 County Commissioners				
First	**Last**	**Title**	**Pct-District**	**Email**
Justin	Rodriguez	Commissioner	Precinct 2	precinct2commissioner@bexar.org
Marialyn	Barnard	Commissioner	Precinct 3	
Tommy	Calvert	Commissioner	Precinct 4	tc@bexar.org
Richard L.	Jackson	County Judge	Wilson County	judge@wilsoncountytx.gov
Gary	Martin	Commissioner	Precint 1	gmartin@wilsoncountytx.gov
Paul W.	Pfeil	Commissioner	Precinct 2	ppfeil@wilsoncountytx.gov
Jeffery	Pierdolla	Commissioner	Precinct 3	jPierdolla@wilsoncountytx.gov
Larry A.	Wiley	Commissioner	Precinct 4	lwiley@wilsoncountytx.gov
Robert	Kelly	County Judge	Kerr County	cojudge@co.kerr.tx.us
Harley David	Belew	Commissioner	Precint 1	hbelew@co.kerr.tx.us
Beck	Gipson	Commissioner	Precinct 2	bgipson@co.kerr.tx.us
Jonathan	Letz	Commissioner	Precinct 3	jletz@co.kerr.tx.us
Don	Harris	Commissioner	Precinct 4	dharris@co.kerr.tx.us

SARFPG PUBLIC MEETING
Sample email sent May 25, 2022 to elected city officials within Region 12 which includes Schertz. Email database follows.



Help! Community Feedback Needed for Regional Flood Planning

LX

lcalderon xa-sa.com
allisonHeyward@schertz.com
Wednesday, May 25, 2022 at 5:22 PM
Show Details

Flood Planning Meeti... 19.1 KB
Flood Planning Meeti... 1.7 MB
Flood Planning Meeti... 1.5 MB
Flood Planning Mtg_... 1.4 MB
Flyer - Flood Plannin... 242.6 KB

Hide Attachments Download All Preview All

Dear Council Member Heyward,

As a leader in your community, you are aware that flooding is one of the greatest natural threats to life and property in the San Antonio River Basin, which includes Schertz. The San Antonio Regional Flood Planning Group (SARFPG) is working to reduce the devastation caused by flood events and make the region safer by protecting lives, homes and property. **We need your help to reach these goals.** On behalf of the SARFPG, I am asking for your assistance to inform your community about important upcoming meetings to address flood events.

SARFPG background
The SARFPG is part of a state and regional flood planning process approved by the Texas Legislature in 2019. This **regional** flood planning process is a **first** for Texas. **It can help mitigate flooding that impacts a large region versus a smaller area and help reduce the loss of life and property.** The San Antonio River Basin, the regional focus for this planning effort, covers more than 4,400 square miles encompassing parts of 16 counties, including Bexar, Comal and Guadalupe counties.

Help us inform your community about regional flood planning
Flooding is a growing problem as flood events are becoming more frequent and intense. The SARFPG wants to continue receiving public feedback because ultimately, there may be opportunities to leverage state funding for flood and drainage issues. The next round of public meetings will be held:

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The goals for these meetings are to:

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- Share potential short- and long-term flooding recommendations and get your feedback.
- Learn more about your flooding experiences.
- Provide an opportunity to speak directly with our project team.

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If you or your constituents are unable to attend these meetings, but want to submit feedback, please visit https://www.region12texas.org/ and click on the link under the "Comment Here" section. If you have any upcoming community meetings, we are also available to present information and receive community feedback. The final draft plan is due August 2022, so we are trying to gather community feedback by June 30, 2022.

If you have any questions, need more information or would like to request a presentation, please contact Project Manager Ron Branyon, P.E. at ronald.branyon@hdrinc.com or (210) 841-2922.

Thank you for your consideration!

Laura A. Calderon
SARFPG Project Team Member
Ximenes & Associates, Inc.
Facilitating communication and consensus since 1984
500 Sixth Street
San Antonio, Texas 78215
(210) 354-2925 (office)
(210) 601-1354 (cell)
lcalderon@xa-sa.com

Email Database for Region 12 Elected City Officials				
First	**Last**	**Title**	**City**	**Email**
Suzanne	Schauman	Mayor	Bandera	mayor@cityofbandera.org
Rebecca	Gibson	Mayor Pro-Tem	Bandera	txbecalou@gmail.com
Darcy	Hasty	Council Member	Bandera	darcy.keepbanderabandera@gmail.com
Toni	Kunz	Council Member	Bandera	cobtonikunz@yahoo.com
Christine	Morse	Council Member	Bandera	christinemorse68@gmail.com
Jerry	Russe	Council Member	Bandera	jerryrusse@gmail.com
David	Jordan	City Administrator	Bandera	cityadmin@cityofbandera.org
Jeffrey	Carroll	Mr.	Boerne	jcarroll@boerne-tx.gov
Stosh	Boyle	Mayor	Cibolo	mayor@cibolotx.gov
Mark	Allen	Council Member	Cibolo	district5@cibolotx.gov
T.G.	Benson	Council Member	Cibolo	district1@cibolotx.gov
Reggie	Bone	Council Member	Cibolo	rbone@cibolotx.gov
Katie	Cunningham	Council Member	Cibolo	district4@cibolotx.gov
Dick	Hetzel	Council Member	Cibolo	district6@cibolotx.gov
Joel	Hicks	Council Member	Cibolo	district7@cibolotx.gov
Victor	Osorio	Council Member	Cibolo	district2@cibolotx.gov
Wayne	Reed	Mr.	Cibolo	wreed@cibolotx.gov
Cecelia	Gonzalez-Dippel	Mayor	Floresville	mayor@floresvilletx.gov
Gloria	Cantu	Council Member	Floresville	councilplace5@floresvilletx.gov
Jade	Jimenez	Council Member	Floresville	councilplace4@floresvilletx.gov
Terry	Rolland	Council Member	Floresville	councilplace2@floresvilletx.gov
Eduardo Ortiz	Villarreal	Mayor Pro Tem	Floresville	councilplace3@floresvilletx.gov
Marissa	Ximenez	Council Member	Floresville	councilplace1@floresvilletx.gov
Andy	Joslin	Mr.	Floresville	citymanager@floresvilletx.gov
Luis	Rodriguez	Mayor Pro Tem	Goliad	ljrodriguez9245@gmail.com
Robin	Alaniz	Alderman	Goliad	ralanizcitycouncil@goliadtx.net
Mary	Gleinser	Alderman	Goliad	mary.gleinser@goliadtx.net
Yolanda	Ramirez	Alderman	Goliad	yramirezcitycouncil@goliadtx.net
Lorinda	Rangel	Alderman	Goliad	lrangelcitycouncil@goliadtx.net
	City	Secretary	Goliad	citysecretary@goliadtx.net
Leroy	Skloss	Mayor	Karnes City	lskloss@cityofkctx.com
Jimmy	Loya	Mayor Pro Tem	Karnes City	jloya@cityofkctx.com
Robert	Ebrom	Council Member	Karnes City	rebrom@cityofkctx.com
Larry	Franke	Council Member	Karnes City	lfranke@cityofkctx.com

Email Database for Region 12 Elected City Officials				
First	**Last**	**Title**	**City**	**Email**
Lillian	Lyssy	Council Member	Karnes City	llyssy@cityofkctx.com
Aaron	Rosales	Council Member	Karnes City	arosales@cityofkctx.com
Ken	Roberts	Mr.	Karnes City	kroberts@cityofkctx.com
Joe	Baker	Mayor	Kenedy	mayor@cityofkenedy.org
James	Douglas	Alderman	Kenedy	district4@cityofkenedy.org
Christopher	Parker	Alderman	Kenedy	district3@cityofkenedy.org
John	Rodriguez	Alderman	Kenedy	district2@cityofkenedy.org
Cindy	Saenz	Alderman	Kenedy	district1@cityofkenedy.org
Sandra	Schultz	Alderman	Kenedy	district5@cityofkenedy.org
William	Linn	Mr.	Kenedy	citymanager@cityofkenedy.org
Mary M.	Dennis	Mayor	Live Oak	yourmayormary@yahoo.com
Ed	Cimics	Council Member	Live Oak	edcimics@sbcglobal.net
Aaron	Dahl	Council Member	Live Oak	liveoakplace5@gmail.com
Mendell	Morgan	Council Member	Live Oak	liveoakplace1@gmail.com
Erin	Dr. Perez	Council Member	Live Oak	erin@erinperez.com
Robert	Tullgren	Council Member	Live Oak	btullgrenplace2@liveoaktx.net
Glen	Martel	City Manager	Live Oak	gmartel@liveoaktx.net
Chrystal	Eckel	Mayor	Poth	mayor@cityofpoth.org
Ron	Nirenberg	Mayor	San Antonio	ron.nirenberg@sanantonio.gov
Mario	Bravo	Councilman	San Antonio	district1@sanantonio.gov
Jalen	McKee-Rodriguez	Councilwoman	San Antonio	district2@sanantonio.gov
Phyllis	Viagran	Councilwoman	San Antonio	district3@sanantonio.gov
Adriana	Rocha Garcia, PhD	Councilwoman	San Antonio	district4@sanantonio.gov
Teri	Castillo	Councilwoman	San Antonio	district5@sanantonio.gov
Melissa	Cabello Havrda	Councilwoman	San Antonio	district6@sanantonio.gov
Ana	Sandoval	Councilman	San Antonio	district7@sanantonio.gov
Manny	Pelaez	Councilman	San Antonio	district8@sanantonio.gov
John	Courage	Councilman	San Antonio	district9@sanantonio.gov
Clayton	Perry	Councilman	San Antonio	district10@sanantonio.gov
Eric	Walsh	Mr.	San Antonio	citymanager@sanantonio.gov
Ralph	Gutierrez	Mayor	Schertz	ralphgutierrez@schertz.com
Tim	Brown	Council Member	Schertz	timbrown@schertz.com
Michael	Dahle	Council Member	Schertz	mdahle@schertz.com
Mark	Davis	Council Member	Schertz	markdavis@schertz.com

Email Database for Region 12 Elected City Officials				
First	**Last**	**Title**	**City**	**Email**
Allison	Heyward	Council Member	Schertz	allisonHeyward@schertz.com
David	Scagliola	Council Member	Schertz	davidscagliola@schertz.com
Rosemary	Scott	Council Member	Schertz	rscott@schertz.com
Jill	Whitaker	Council Member	Schertz	jwhittaker@schertz.com
Mark	Browne	Mr.	Schertz	mbrowne@schertz.com
John	Williams	Mayor	Universal City	mayor@uctx.gov
Richard	Neville	Mayor Pro Tem	Universal City	council1@uctx.gov
Steven R.	Buck	Council Member	Universal City	Council3@uctx.gov
Bear	Goolsby	Council Member	Universal City	Council2@uctx.gov
Paul	Najarian	Council Member	Universal City	council6@uctx.gov
William	Shelby	Council Member	Universal City	Council5@uctx.gov
Phil	Vaughan	Council Member	Universal City	Council4@uctx.gov
Kim	Turner	City Manager	Universal City	citymanager@uctx.gov
Jeff	Bauknight	Mayor	Victoria	jbauknight@victoriatx.gov
Duane	Crocker	Council Member	Victoria	dcrocker@victoriatx.gov
Rafael	DeLaGarza	Council Member	Victoria	rdelagarza@victoriatx.gov
Mark	Loffgren	Council Member	Victoria	mloffgren@victoriatx.gov
Jan	Scott	Council Member	Victoria	janscott@victoriatx.gov
Josephine	Soliz	Council Member	Victoria	jsoliz@victoriatx.gov

SOCIAL MEDIA

The SARFPG used social media to raise awareness of the upcoming meetings. Region 12 city and county elected officials and stakeholders were asked to help inform the community of the meetings by posting on their social media platforms.

The SARFPG supplied the social media graphics (shown here) and content for the posts (shown on the following page) to the elected officials for ease and convenience.

Social Media Content – Twitter, Facebook, LinkedIn, Nextdoor

Social media graphics and content were provided to Region 12 city and county elected officials and stakeholders for use on their social media platforms. Below are posts that were provided

Date	Twitter Post	Facebook/LinkedIn Post	Nextdoor Post
Tuesday, 6/1	Learn about flood planning recommendations for our region and share your feedback in 3 public meetings! Join the San Antonio Regional Flood Planning Group in San Antonio on 6/6, Schertz on 6/7, and Floresville on 6/16. Learn more: Region12Texas.org	Flood events pose one of the greatest natural threats to life and property in the San Antonio River Basin, and they are becoming more frequent and intense. To help protect lives, homes and communities, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio on 6/6, Schertz on 6/7, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org	**HEADING:** San Antonio, Schertz, and Floresville: Share Your Feedback on Flooding in 3 Public Meetings! **POST:** Flood events pose one of the greatest natural threats to life and property in the San Antonio River Basin, and they are becoming more frequent and intense. To help protect lives, homes and communities, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio on 6/6, Schertz on 6/7, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org
Monday, 6/6	REMINDER: Learn about flood planning recommendations for our region and share your feedback in 3 public meetings! Join the San Antonio Regional Flood Planning Group tonight in San Antonio, in Schertz tomorrow, and Floresville on 6/16. Learn more: Region12Texas.org	REMINDER: San Antonio, Schertz, and Floresville: Share Your Feedback on Flooding in 3 Public Meetings! To help protect lives, homes and communities from more frequent and intense flood events, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio tonight, in Schertz on tomorrow, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org	**HEADING:** REMINDER: San Antonio, Schertz, and Floresville: Share Your Feedback on Flooding in 3 Public Meetings! **POST:** To help protect lives, homes and communities from more frequent and intense flood events, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio tonight, in Schertz on tomorrow, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org

SARFPG PUBLIC MEETING
Facebook posts

SARFPG PUBLIC MEETING
Facebook posts

SARFPG PUBLIC MEETING
Nextdoor post

C. Sign-in Sheets

WELCOME! PLEASE SIGN IN

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
TUESDAY, JUNE 7, 2022 - 6:30 P.M. – 8 P.M.
NORTH CENTER, 3501 MORNING DR., SCHERTZ, TX 78108

PLEASE PRINT

NAME	ADDRESS/ZIP CODE	EMAIL ADDRESS
		City of Schertz Public Works
Charles Kelm	1400 Schertz Pkwy	CKelm@Schertz.com
Alfred Janysek	318 Avalon Ave, 78154	ajej67@gmail.com
Larry Busch	11 Commercial Place	larry.busch@schertz.com
DWAYNE HAMILTON	531 CANYON RISE 78258	dhamilton@maesce.com dhamilton@Maesce.com
*Doug Letbetter Submitted comment during presentation	10 commercial Pl 78154	COS public works/engineering dletbetter@schertz.com
Hetzel, Richard (EO)	110 Sweetgum Cv, Cibolo 78108	rghetzel@sbcglobal.net
Debbie Reid		
Doris Cooksey	110 Hillcrest Dr LaVernia 78121	dmcooksey@cpsenergy.com

STAFF/ CONSULTANTS SIGN IN SHEET

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
TUESDAY, JUNE 7, 2022 - 6:30 P.M. – 8 P.M.
NORTH CENTER, 3501 MORNING DR., SCHERTZ, TX 78108

Name	Affiliation	Email Address
Laura Calderon	Ximenes & Assoc	lcalderon@xa-sa.com
Sydney Bratton	Halff Associates	sbratton@halff.com
Suzanne Scott	Region 12 FPG	Suzanne.scott@tnc.org
Linda Ximenes	Ximenes & Assoc., Inc.	lximenes@xa-sa.com
Laura Vasquez	Ximenes & Assoc., Inc.	lvasquez@xa-sa.com
Ron Branyan	HDR	
Sara Page	HDR	

D. Presentation

San Antonio Regional Flood Plan

June 6, 2022

Agenda

- Introductions
- Plan Objectives and Benefits
- Background
- Planning Process and Other Studies
- Stakeholder Input
- Next Steps

Meeting Purpose

- Introduce the regional flood planning process and gather local knowledge of flood-prone areas, flood mitigation projects and needs.

Local management team has dedicated their careers to San Antonio Basin

Ron Branyon, PE, CFM

Project Manager

Point of contact/HDR

Added Value To SARFPG

- **Local, Responsive Project Manager**
- **20 years of experience delivering TWDB flood mitigation studies, drainage master plans, and floodplain mapping studies, in San Antonio River Basin**
- **Extensive experience in public outreach related to flood mitigation and mapping projects**
- **A strong working relationship with members of the Bexar Regional Watershed Management partnership.**
- **Track record for successful delivery of local high-profile projects, including nature- based solutions**

Relevant Experience To SARFP Tasks

- **SARA, City of San Antonio Drainage Master Plan — TX**
- **SARA, San Antonio River Watershed Cooperating Technical Partners (CTP) — TX**
- **SARA/Bexar County, San Pedro Creek Improvements Project — TX**
- **USACE, Leon Creek Master Plan — TX**
- **FEMA, DFIRM-Refugio, Calhoun, Aransas — TX**
- **USACE, Lower San Antonio River Basin Hydraulic Routing Models — TX**

"I work in Bexar County, reside in Wilson County and ranch in Goliad County, so this watershed is my home! From the headwaters to the Gulf I have seen it all and protecting the watershed and those who live here is what excites me about this opportunity."

What is the Region 12 Flood Plan?

- Historic Flooding – Realization of the need for flood planning
- In 2019, the 86th Texas legislature created and funded the first-ever regional and state flood planning process
- Schedule
  - Regional flood plans to be delivered by January 10, 2023, and then every five years thereafter
  - State plan to be adopted by September 1, 2024, and then every five years thereafter
- TWDB Flood Planning website: https://www.twdb.texas.gov/flood/planning/

Region 12 Background

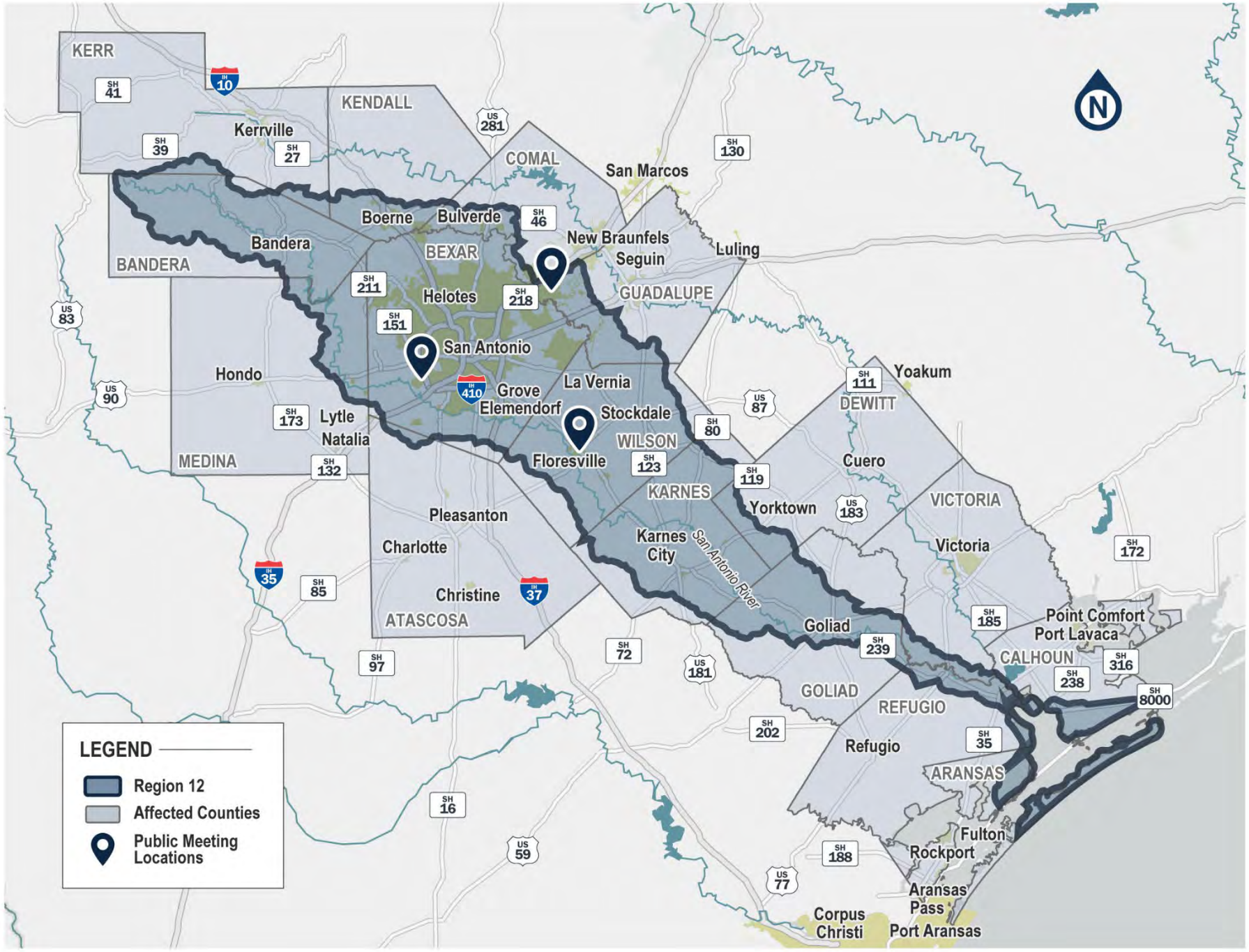
- **San Antonio Region Flood Planning Group (SARFPG)**
  - Created to represent diverse interest and to deliver the 2023 regional flood plan
- **Sponsor**
  - San Antonio River Authority
- **Technical Team**
  - HDR/Halff team selected as consultant to prepare plan

San Antonio Regional Flood Planning Group

- Flood Districts: Nefi Garza, *City of San Antonio (Chair)*
- River Authorities: Derek Boese, *SARA (Vice-Chair)*
- Water Districts: David Mauk, *Bandera Co River Authority & GWD*
- Municipalities: Jeffery Carrol, *City of Boerne*
- Agriculture: Brian Yanta, *Goliad County Ag-Extension*
- Counties: David Wegmann, *Bexar County*
- Electric-generating Utilities: Doris Cooksey, *CPS Energy*
- Environment: Debbie Reed, *Greater Edwards Aquifer Alliance*
- Industries: Cara Tackett, *Pape-Dawson Engineers*
- Non-Profit: Suzanne Scott, *Nature Conservancy*
- Public: John Beasley, *US Army Environmental Command*
- Small Business: Steve Gonzales, *Civil Tech Engineering, Inc.*
- Water Utilities: Steven Clouse, *SAWS*

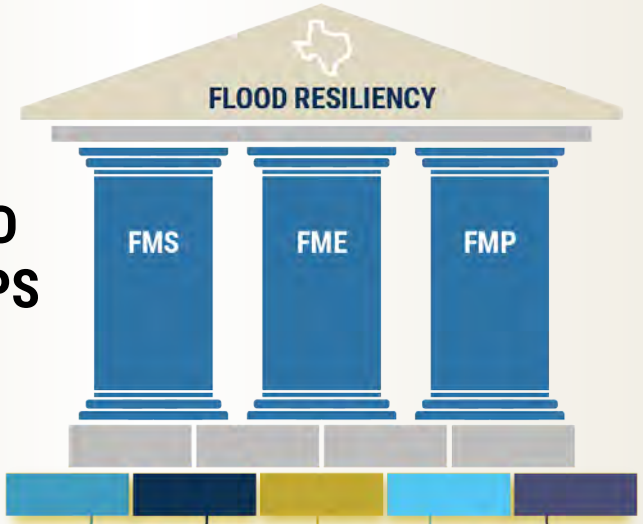
Plan Objectives

- Document existing flood infrastructure and preparedness
- Identify current and future flood risk and hazard
- Develop flood mitigation/management goals
- Identify and evaluate flood management strategies and mitigation projects
- Evaluate benefits/impacts to water supply environment, and economics



Additional Relevant Flood Studies and Coordination

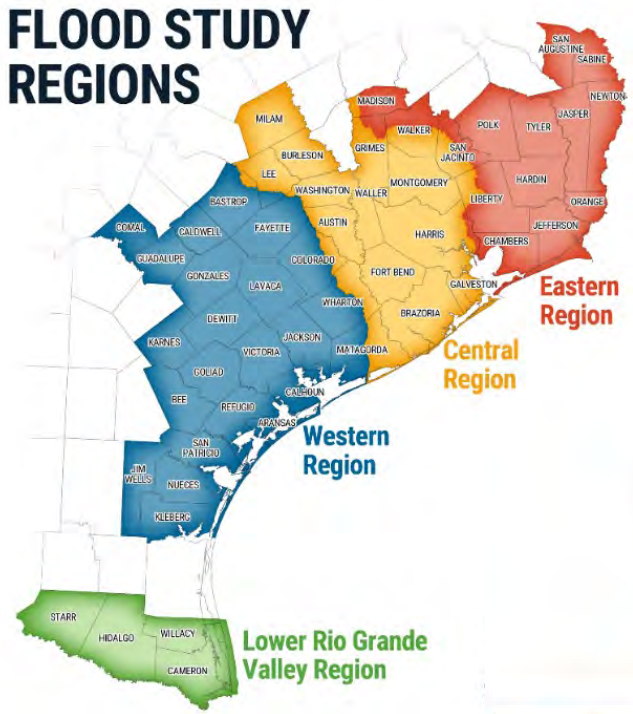
REGIONAL FLOOD PLANNING GROUPS



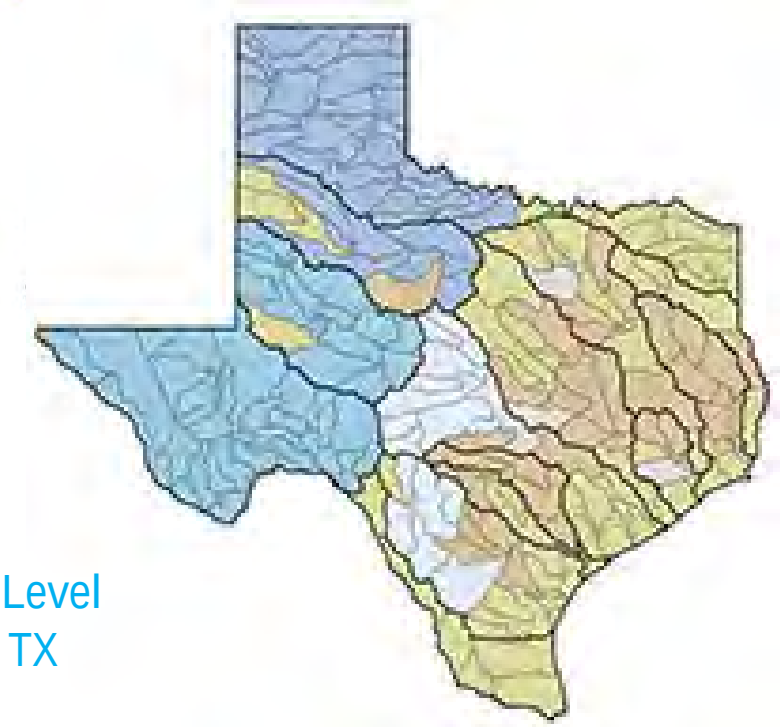
RIVER BASIN FLOOD STUDY

ACRONYMS

- FMS: Flood Management Strategies
- FME: Flood Management Evaluations
- FMP: Flood Mitigation Projects



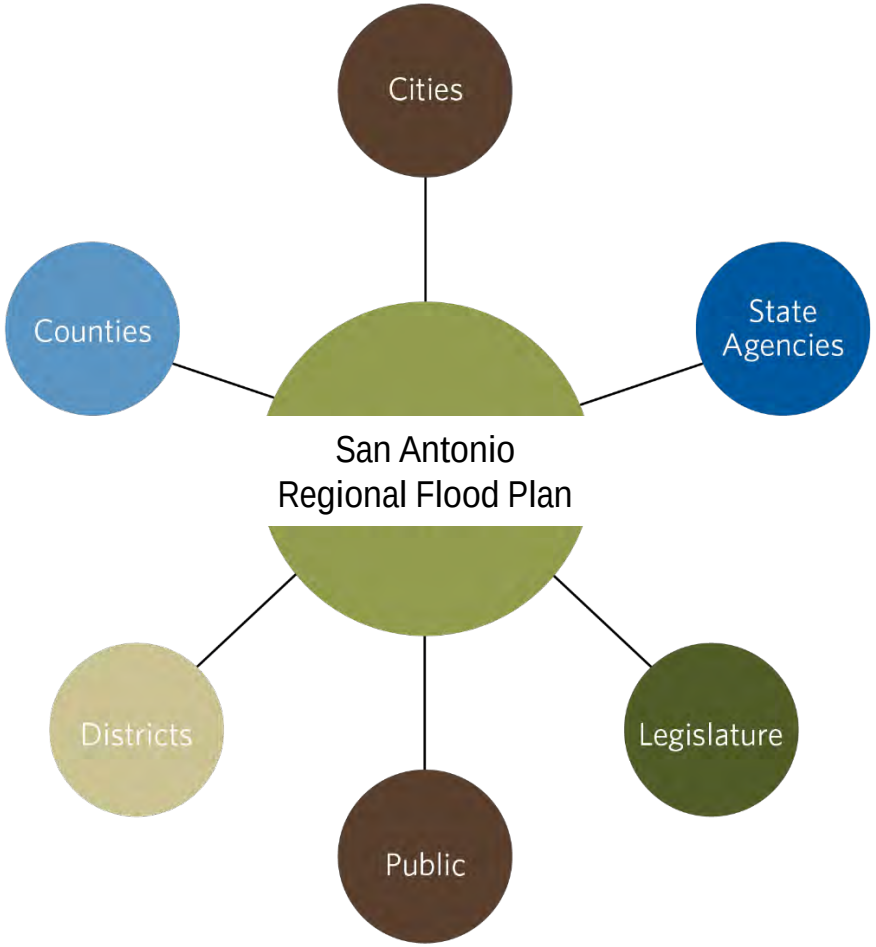
GLO, Lower Rio Grande Valley Flood Study - TX



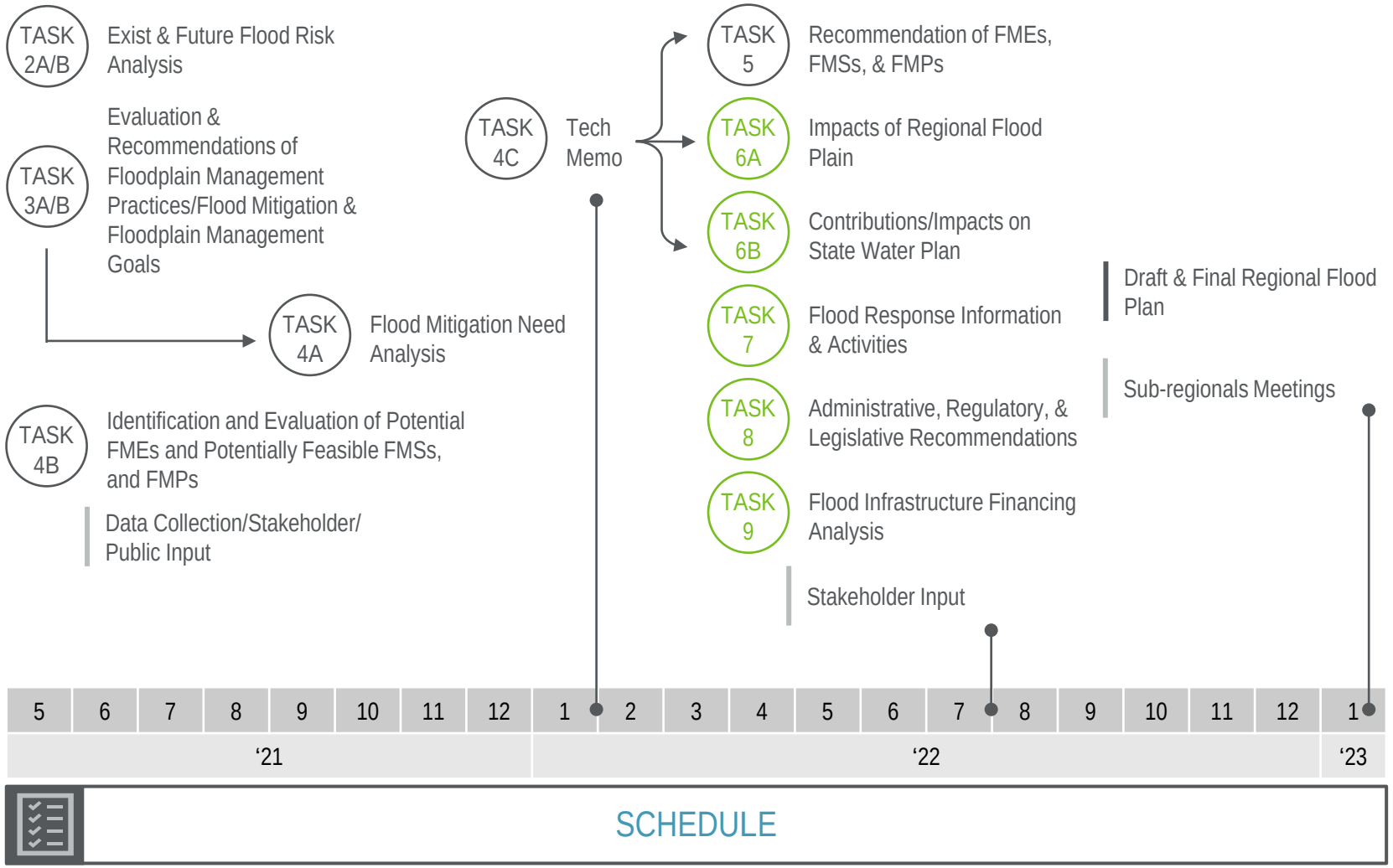
TWDB, Base Level Engineering- TX

Stakeholder Input

- Local knowledge, needs, and goals
  - **Flood Prone Areas**
  - **Flood Mitigation Projects, Evaluations and Strategies**
  - Existing “Major” Flood Infrastructure
  - Proposed or Ongoing Flood Mitigation Projects
  - Existing flood management practices
  - Short- and long-term management goals
- Stay in touch through the Region 12 Website: https://region12texas.org
- Anyone else that needs to be a part of this conversation?



TWDB Flood Planning Tasks



Story Map

[Region 12 Flood Plan (arcgis.com)]

GOALS

The purpose of this task is to identify flood mitigation and floodplain management goals for the San Antonio River region. The overarching intent of the goals is "to protect against the loss of life and property" set out to:

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

Table 3.1, Flood Planning Goal Categories and Benefits

Benefits / Overarching Goals	Category 1 Flood Education and Outreach	Category 2 Flood Warning and Readiness	Category 3 Flood Studies and Analysis	Category 4 Flood Prevention	Category 5 Non-Structural Flood Infrastructure Projects	Category 6 Structural Flood Infrastructure Projects
Protect life	◑	●	◑	◑	●	●
Protect infrastructure		◑	◑	●	◑	●
Protect property		◑	◑	●	●	●
Protect the environment	◑		◑	●	●	●
Protect/enhance water supply				◑	◑	◑
Sustain the economy		◑		◑	●	◑
Realize multiple benefits*				◑	◑	◑
Increase public awareness	●	●	◑	◑	◑	◑
Build community support	●	●	◑	◑		

◑ – *Potential benefit*

● – *Direct benefit*

** multiple benefits could include improved flood protection while improving water supply, increasing public recreation opportunities, etc.*

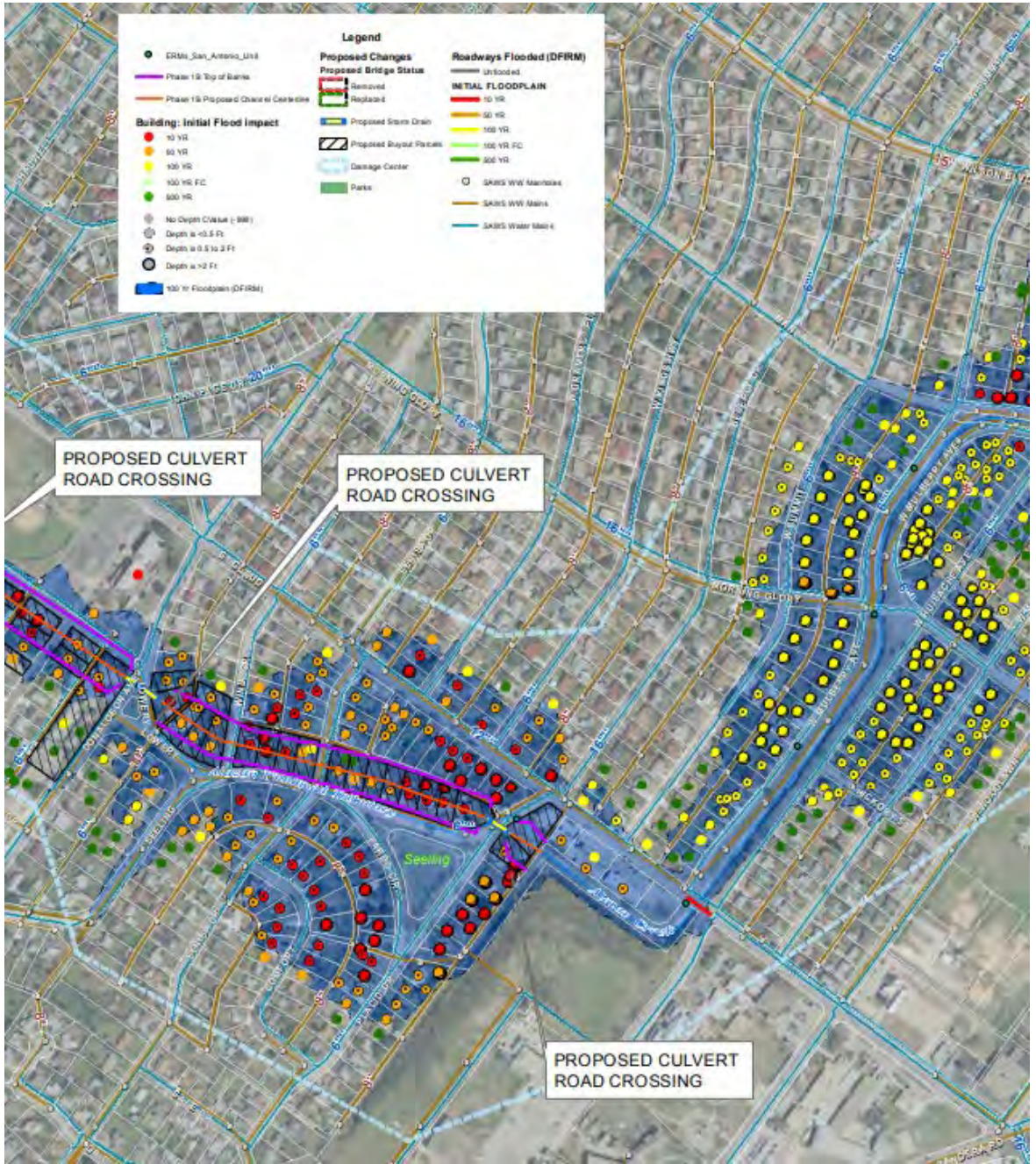
GOAL SURVEY

https://www.surveymonkey.com/r/25ZX6Z6

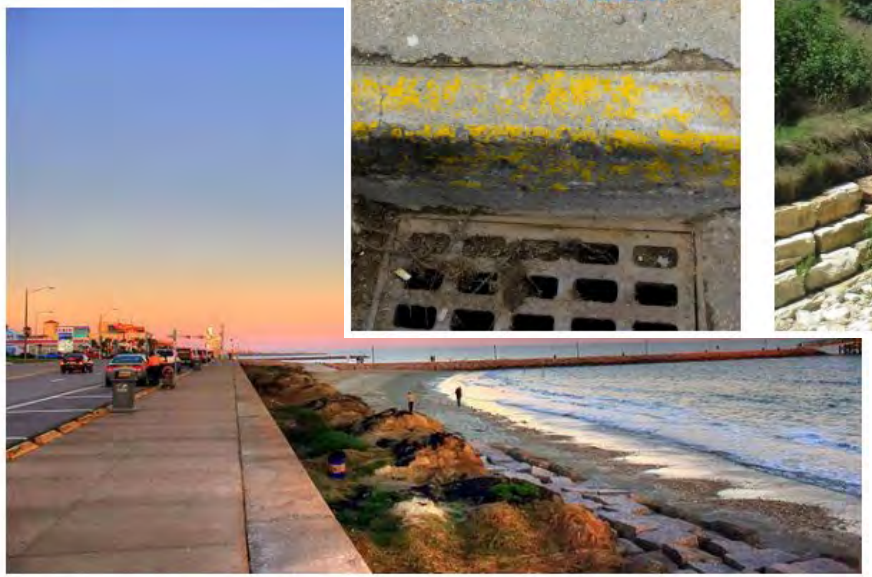
Flood Mitigation Alternatives

What is an FMP, FME and FMS?

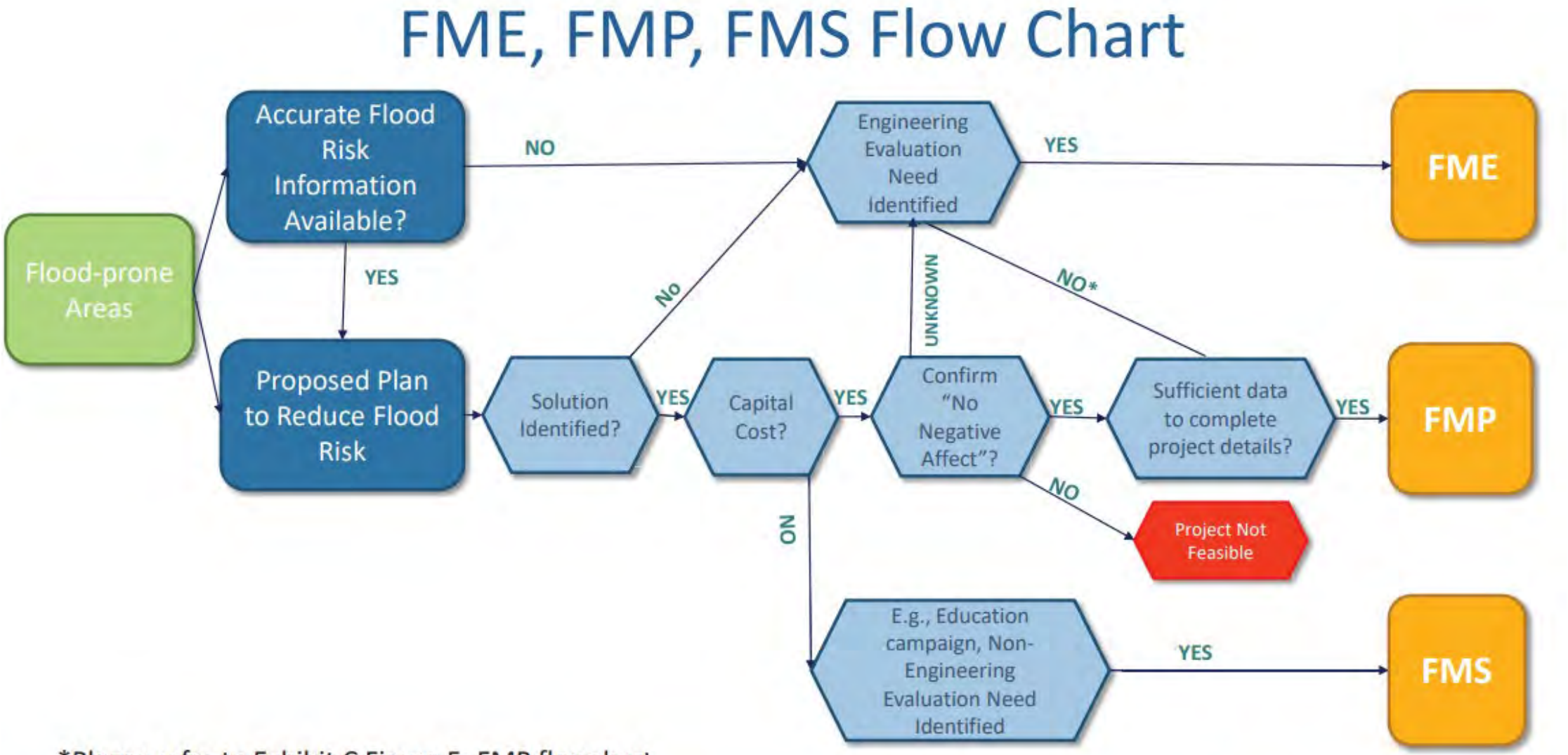
- **FMP – Flood Mitigation Project**
  - Structural: Bridges, culverts, storm drain, regional detention, nature-based projects
  - Non-structural: Property or easement acquisition, flood warning system, flood proofing
- **FME – Flood Mitigation Evaluation**
  - H&H Modeling, Flood Mapping Updates, Flood studies
- **FMS – Flood Mitigation Strategy**
  - Proposed plan to mitigate flood hazard
  - Flood Policy



Flood Mitigation Alternatives



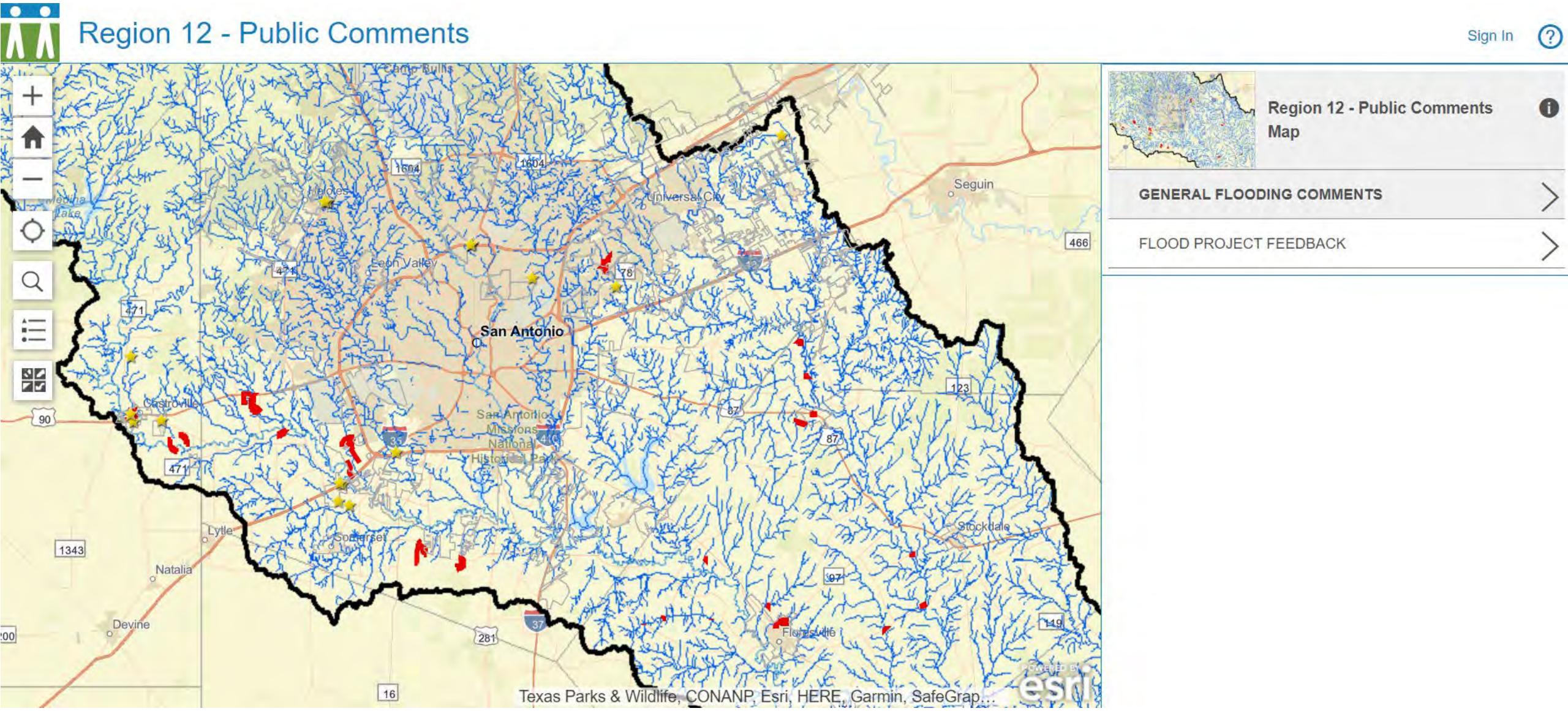
Flood Mitigation Alternatives



*Please refer to Exhibit C Figure 5: FMP flowchart.

Interactive Comment Map

[Region 12 - Public Comments (arcgis.com)]



Stakeholder Input

- **Your insight is valuable**
  - Tell us your experience, where you have seen or know of flood concerns
  - Tell us where you need flood mitigation projects
- No one size fits all solutions, unique needs for each basin in the region
  - A plan is only as good as the input
  - The flood plan needs to represent ALL community needs

Stakeholder Input

- **FMPs, FMEs and FMSs must be included in the State Flood Plan to receive future funding.**

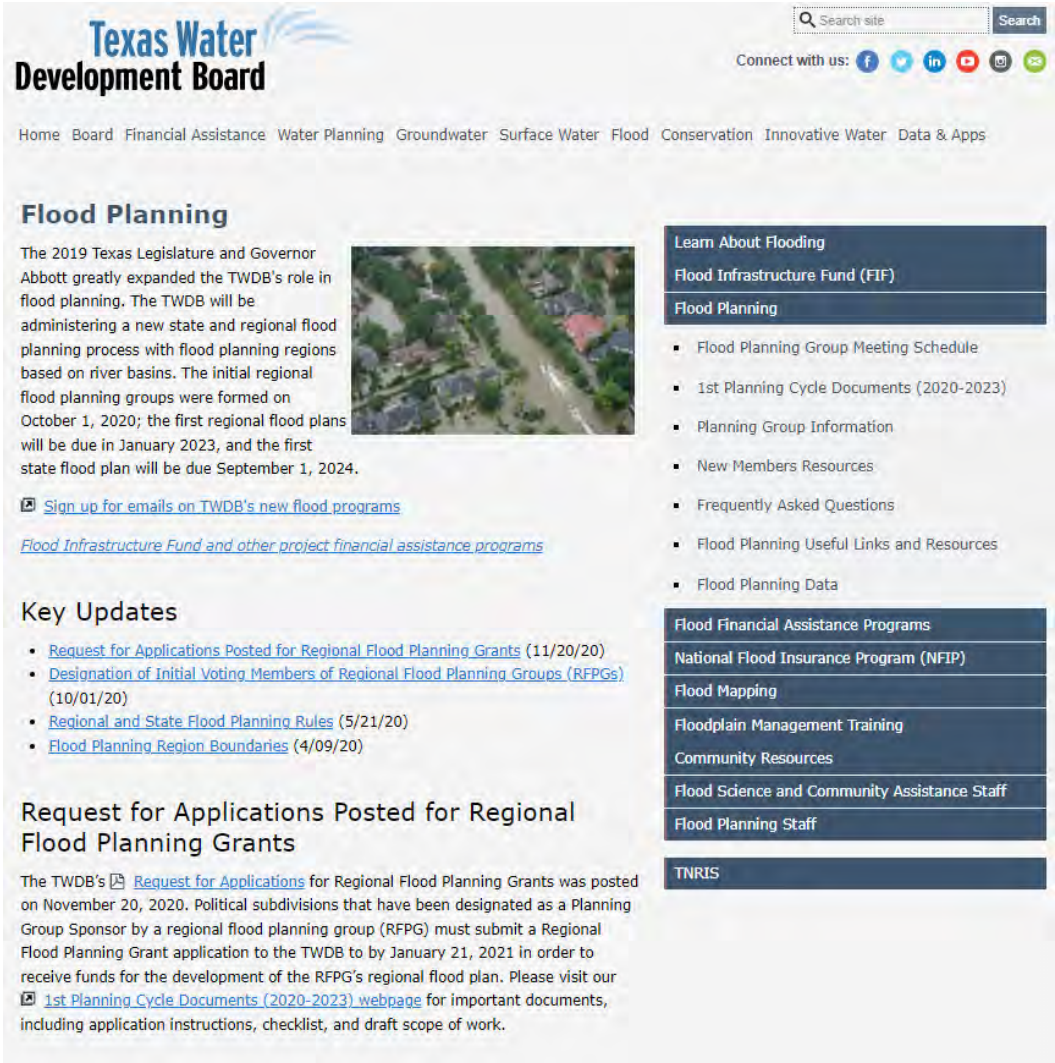
Stakeholder Input: How to Engage

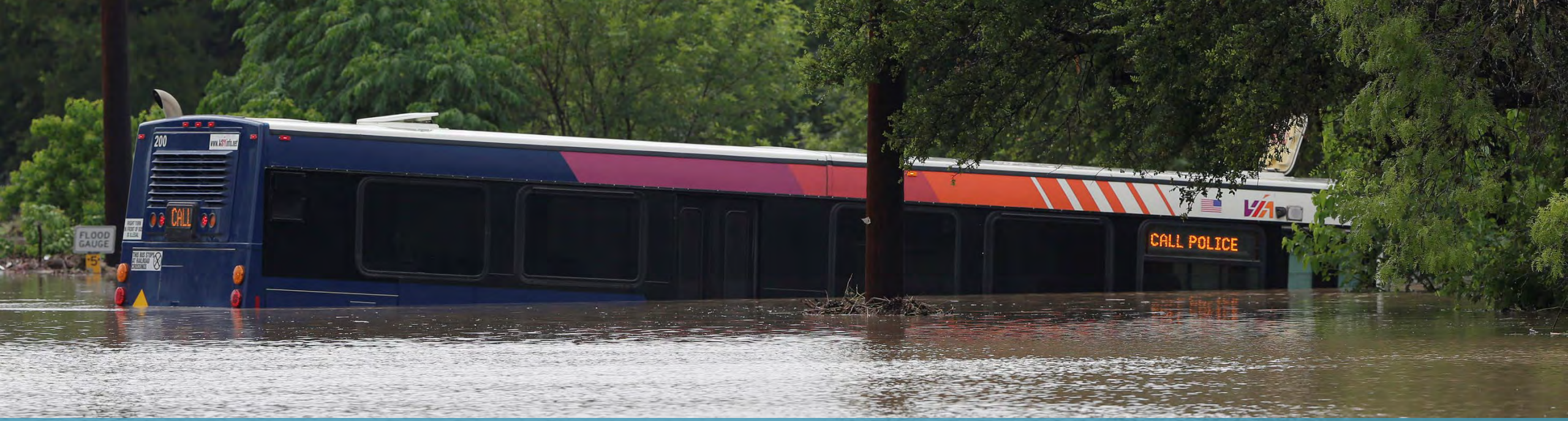
- Contact us:

  https://region12texas.wpengine.com/contact-us/

- Share or visit the Region 12 Website: https://www.region12texas.org
  - Learn more about the Regional Flood Plan Public Meetings (all public)
  - See Stakeholder Surveys/ Interactive Map
- Learn more about state flood planning efforts:

  https://www.twdb.texas.gov/flood/planning/index.asp





Questions?

- **Contact info:** Ron Branyon
- **Email:** Ronald.Branyon@hdrinc.com
- **Phone:** 210.912.7105

E. Photos and Media Coverage

SARFPG PUBLIC MEETING
Schertz, Tx
June 7, 2022

San Antonio Regional Flood Planning Group to hold meeting in Schertz

By Jarrett Whitener | 4:26 PM Jun 6, 2022 CDT
Updated 4:26 PM Jun 6, 2022 CDT

The San Antonio Regional Flood Planning Group will host an open meeting June 7 from 6:30-8 p.m. (Jarrett Whitener/Community Impact)

The San Antonio Regional Flood Planning Group is creating their first regional flood plan as part of an effort to help protect lives, homes and communities from flood events, according to a June 1 news release.

On June 7, the group will host an open meeting from 6:30-8 p.m. at the Schertz North Center, located at 3501 Morning Drive, Schertz, the release states.

Residents living in and around the area are encouraged to attend and learn more about flood management and mitigation.

To share the plan on how to resolve short and long term flooding issues, SARFPG is hosting a series of public meetings where the community can provide input and ask questions regarding the flood plan, the release states.

SARFPG consists of 12 counties along the San Antonio River Basin, and is composed of members representing various interest groups from the area, according to information from the group.

San Antonio Regional Flood Planning Group
Public Meeting Documentation

Planning Region

Region 12 consisting of parts of Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

Meeting Location, Time, and Date

Thursday, June 16, 2022, 6:30 p.m. to 8 p.m.
Jack's Café
507 Tenth Street
Floresville, TX 78114

Presenters

Ronald Branson, P.E, Project Manager, HDR, Inc.

Elected Officials in Attendance

2

Total Number of Attendees (approx.)

6

Number of Comments Submitted at Meeting

2

Contents

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A. Comments Received

The following comments were submitted at the Public Meeting. To view these comments and others submitted online, go to https://www.region12texas.org/ and click on the Region 12 Flood Plan Comment Map in the Comments and Feedback section.

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San Antonio Regional Flood Planning Group

Community Survey

Thank you for attending this meeting to learn more about the San Antonio Regional Flood Planning Group's (SARFPG) activities to develop a plan to prevent and reduce flooding in this entire region. By informing you of its goals, the SARFPG is seeking to enhance your understanding of the kinds of activities included in flood prevention and reduction. We are asking you to review the goal statements listed below and indicate your level of support for these goals.

Before we ask you to give us your opinion on the goals, it might be helpful to provide definitions of some of the terms and acronyms used in the statements. Definitions include:

- **NFIP**-National Flood Insurance Program
- **FEMA**-Federal Emergency Assistance
- **FPR**-Flood Planning Region
- **NBS**-Nature-based Solutions: actions to protect, sustainably manage, and restore natural or modified ecosystems simultaneously providing human well-being and biodiversity benefits.
- **100-year flood**- indicates the likelihood of a given flood event to be equaled or exceeded in any given year. In other words, there's one chance in a hundred that a flood like that would happen again in one year.
- **1% chance future conditions floodplain**- the 100-year flood estimated future inundation boundary due to a creek or river.
- **500-year flood**- Indicates there is a one in 500 chance that any given flood event may happen again in one year.
- **NFHL**- National Flood Hazard Layer- current effective flood hazard data to support the National Flood Insurance Program. You can use the information to better understand your level of flood risk and type of flooding.
- **FIS**- Flood Insurance Study - A compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community.

Below you will find summary statements of the SARFG's goals for the next 30 years. Some are expected to be achieved in 10 years and others are on the 30-year planning horizon.
(Please note that the statements below are summaries of the actual goal statements. If you would like to see the complete goal statements, along with their with success measures, please go to https://www.region12texas.org.) This survey includes a scale to allow you to indicate your level of support for the statement. Please indicate by checking the appropriate box below.

Improve Public Safety and Risk Management

1. Support and expand the development of a regionally coordinated warning and emergency response program that can detect the flood threat and provide timely warning of impending flood danger to reduce flood deaths and high-water rescues across the region.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
2. Decrease the average age of FEMA Flood Insurance Rate Maps (FIRMs/NFHL/FIS) to less than 10 years.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
3. Increase the number of entities that regulate new development and redevelopment in the future 100-year floodplain.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
4. Reduce the number of repetitive-loss NFIP properties in the flood planning region.
   - ☐ Strongly agree
   - ☑ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
5. Reduce the number of existing (2022) residential properties in the 100-year floodplain.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
6. Reduce the number of vulnerable critical facilities (such as hospitals, schools and public safety locations) located within the existing and future 100-year floodplain.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
7. Identify and eliminate or mitigate the eligible top 50 vulnerable roadway segments and low water crossings located within the existing and future 100-year floodplain.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

Enhance Emergency Response

8. Increase the number of flood gauges (rainfall, stream, reservoir, etc.) in the region to provide localized information to emergency responders, and access to that data for future reference.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

9. Increase the number of entities that communicate real time flood warnings to the public. Leverage mobile phone navigation apps to provide real time rerouting for the public.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
10. Increase the number to 100% of entities that conduct detailed studies to update their local flood risk.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

INCREASE AWARENESS AND EDUCATION

11. Track and document existing public outreach and education activities and increase them from 6 to 12 per year to improve awareness of flood hazards and benefits of flood planning including nature-based solutions in the region.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
12. Increase the proficiency of stakeholders and floodplain managers across the region, adding to their knowledge of nature-based solutions, floodplain preservation, and cost/benefit of traditional structural solutions.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

STRENGTHEN INFRASTRUCTURE

13. Increase the number of entities that have adopted a holistic watershed approach using existing Natural Flood Mitigation Features (NFMF) such as headwaters, buffers, and conservation easements for flood risk reduction as a basis for comprehensive subdivision regulations.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
14. Establish a baseline and increase the number of acres of publicly protected and restored open space as part of land conservation and acquisitions to reduce future impacts of flooding.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
15. Increase the number of structural projects that include a Nature-Based Solution (NBS) or Green Infrastructure (GI) component.
   - ☑ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

PLEASE RESPOND TO THE STATEMENTS BELOW USING THE SCALE PROVIDED.

16. Flooding is not a concern in my community.
    - ☐ Strongly agree
    - ☐ Agree
    - ☐ Not Sure
    - ☐ Disagree
    - ☑ Strongly disagree

17. The community is prepared to respond to flood events.
    - ☐ Strongly agree
    - ☐ Agree
    - ☑ Not Sure
    - ☐ Disagree
    - ☐ Strongly disagree

18. If the goals listed above are achieved, the community will be safer and better prepared to respond to flood events.
    - ☑ Strongly agree
    - ☐ Agree
    - ☐ Not Sure
    - ☐ Disagree
    - ☐ Strongly disagree

19. What other flood-related goals do you think the San Antonio Regional Flood Planning Group should be considering?

- Increase the number and geographic distribution of near realtime precipitation gauges with online/public access

20. Please give us a little information about yourself. What is your zip code? 78230

21. How did you find out about this meeting?
    - ☐ Email from a friend
    - ☐ A friend told me.
    - ☐ Email from an organization I belong to
    - ☐ At the meeting of an organization I belong to
    - ☐ Notice from an elected official or her/his office
    - ☐ Ad in the newspaper
    - ☑ Social Media (Twitter, Facebook, TikTok, etc.)
    - ☐ Other, please specify. _____

San Antonio Regional Flood Planning Group

Community Survey

Thank you for attending this meeting to learn more about the San Antonio Regional Flood Planning Group's (SARFPG) activities to develop a plan to prevent and reduce flooding in this entire region. By informing you of its goals, the SARFPG is seeking to enhance your understanding of the kinds of activities included in flood prevention and reduction. We are asking you to review the goal statements listed below and indicate your level of support for these goals.

Before we ask you to give us your opinion on the goals, it might be helpful to provide definitions of some of the terms and acronyms used in the statements. Definitions include:

- **NFIP**-National Flood Insurance Program
- **FEMA**-Federal Emergency Assistance
- **FPR**-Flood Planning Region
- **NBS**-Nature-based Solutions: actions to protect, sustainably manage, and restore natural or modified ecosystems simultaneously providing human well-being and biodiversity benefits.
- **100-year flood**- indicates the likelihood of a given flood event to be equaled or exceeded in any given year. In other words, there's one chance in a hundred that a flood like that would happen again in one year.
- **1% chance future conditions floodplain**- the 100-year flood estimated future inundation boundary due to a creek or river.
- **500-year flood**- Indicates there is a one in 500 chance that any given flood event may happen again in one year.
- **NFHL**- National Flood Hazard Layer- current effective flood hazard data to support the National Flood Insurance Program. You can use the information to better understand your level of flood risk and type of flooding.
- **FIS**- Flood Insurance Study - A compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community.

Below you will find summary statements of the SARFG's goals for the next 30 years. Some are expected to be achieved in 10 years and others are on the 30-year planning horizon.
(Please note that the statements below are summaries of the actual goal statements. If you would like to see the complete goal statements, along with their with success measures, please go to https://www.region12texas.org.) This survey includes a scale to allow you to indicate your level of support for the statement. Please indicate by checking the appropriate box below.

Improve Public Safety and Risk Management

1. Support and expand the development of a regionally coordinated warning and emergency response program that can detect the flood threat and provide timely warning of impending flood danger to reduce flood deaths and high-water rescues across the region.
   - ☒ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
2. Decrease the average age of FEMA Flood Insurance Rate Maps (FIRMs/NFHL/FIS) to less than 10 years.
   - ☒ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
3. Increase the number of entities that regulate new development and redevelopment in the future 100-year floodplain.
   - ☐ Strongly agree
   - ☐ Agree
   - ☒ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
4. Reduce the number of repetitive-loss NFIP properties in the flood planning region.
   - ☐ Strongly agree
   - ☒ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
5. Reduce the number of existing (2022) residential properties in the 100-year floodplain.
   - ☐ Strongly agree
   - ☒ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
6. Reduce the number of vulnerable critical facilities (such as hospitals, schools and public safety locations) located within the existing and future 100-year floodplain.
   - ☐ Strongly agree
   - ☒ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
7. Identify and eliminate or mitigate the eligible top 50 vulnerable roadway segments and low water crossings located within the existing and future 100-year floodplain.
   - ☒ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

Enhance Emergency Response

8. Increase the number of flood gauges (rainfall, stream, reservoir, etc.) in the region to provide localized information to emergency responders, and access to that data for future reference.
   - ☒ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

9. Increase the number of entities that communicate real time flood warnings to the public. Leverage mobile phone navigation apps to provide real time rerouting for the public.
   - ☒ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
10. Increase the number to 100% of entities that conduct detailed studies to update their local flood risk.
   - ☐ Strongly agree
   - ☒ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

INCREASE AWARENESS AND EDUCATION

11. Track and document existing public outreach and education activities and increase them from 6 to 12 per year to improve awareness of flood hazards and benefits of flood planning including nature-based solutions in the region.
   - ☐ Strongly agree
   - ☒ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
12. Increase the proficiency of stakeholders and floodplain managers across the region, adding to their knowledge of nature-based solutions, floodplain preservation, and cost/benefit of traditional structural solutions.
   - ☒ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

STRENGTHEN INFRASTRUCTURE

13. Increase the number of entities that have adopted a holistic watershed approach using existing Natural Flood Mitigation Features (NFMF) such as headwaters, buffers, and conservation easements for flood risk reduction as a basis for comprehensive subdivision regulations.
   - ☐ Strongly agree
   - ☒ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
14. Establish a baseline and increase the number of acres of publicly protected and restored open space as part of land conservation and acquisitions to reduce future impacts of flooding.
   - ☐ Strongly agree
   - ☒ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree
15. Increase the number of structural projects that include a Nature-Based Solution (NBS) or Green Infrastructure (GI) component.
   - ☒ Strongly agree
   - ☐ Agree
   - ☐ Neither agree nor disagree
   - ☐ Disagree
   - ☐ Strongly disagree

PLEASE RESPOND TO THE STATEMENTS BELOW USING THE SCALE PROVIDED.

16. Flooding is not a concern in my community.
    - ☐ Strongly agree
    - ☐ Agree
    - ☐ Not Sure
    - ☐ Disagree
    - ☒ Strongly disagree

17. The community is prepared to respond to flood events.
    - ☐ Strongly agree
    - ☐ Agree
    - ☒ Not Sure
    - ☐ Disagree
    - ☐ Strongly disagree

18. If the goals listed above are achieved, the community will be safer and better prepared to respond to flood events.
    - ☒ Strongly agree
    - ☐ Agree
    - ☐ Not Sure
    - ☐ Disagree
    - ☐ Strongly disagree

19. What other flood-related goals do you think the San Antonio Regional Flood Planning Group should be considering?

    _____

    _____

    _____

    _____

20. Please give us a little information about yourself. What is your zip code? 78121

21. How did you find out about this meeting?
    - ☐ Email from a friend
    - ☐ A friend told me.
    - ☒ Email from an organization I belong to
    - ☐ At the meeting of an organization I belong to
    - ☐ Notice from an elected official or her/his office
    - ☐ Ad in the newspaper
    - ☐ Social Media (Twitter, Facebook, TikTok, etc.)
    - ☐ Other, please specify. _____

.

B. Notice to the Public (newspaper ad, flyer, social media, and other outreach)

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Honoring the fallen

Wilson County communities observe Memorial Day

Across the *Wilson County News* readership area, communities and organizations held Memorial Day events, honoring those who've given their lives in service to our country.

FELIPE SALAZAR/Photographer, www.Flickr.com/sal2182000

Community members gather May 30 outside American Legion Post 38 in downtown Floresville for the post's annual Memorial Day service. See more photos on page 1B.

GREGORY RIPPS/Wilson County New

Retired U.S. Navy Chief Warrant Officer Fred San Ramon, standing in the shadow of a pavilion in Fort Sam Houston National Cemetery, plays "Taps" at the conclusion of a May 29 memorial service.

FELIPE SALAZAR/Photographer, www.Flickr.com/sal2182000

Officers with American Legion Post 38 honor fallen U.S. military with a wreath May 30 at the Iwo Jima replica outside their hall on the Wilson County Courthouse square in Floresville.

FELIPE SALAZAR/Photographer, www.Flickr.com/sal2182000

Residents of New Haven Assisted Living & Memory Care in Floresville enjoy a visit May 30 by the Thunder Riders Motorcycle Club of Wilson County.

COURTESY/Larry Jackson

Sutherland Springs Cemetery Association President Bertha Cardenas-Lomas (left) and Vice President Juan Mata (second from right) recognize veterans Leroy Ploch (second from left) and Gary Spessard May 30, during a Memorial Day ceremony in the Sutherland Springs Cemetery. The names of veterans interred in the cemetery and families who served in U.S. wars were read during the annual event.

GREGORY RIPPS/Wilson County New

Father Abraham Chimese (right) leads prayers during a May 29 memorial mass at Fort Sam Houston National Cemetery. The San Antonio Archdiocesan Union of Holy Name Societies coordinated the worship service, which recognized the victims of the Uvalde shooting, as well as U.S. military members who sacrificed their lives for their country.

SARFPG PUBLIC MEETING FLYER EMAILED MAY 25, 2022 TO ELECTED OFFICIALS & STAKEHOLDERS FOR POSTING OR DISTRIBUTION.

REGION 12 FLOOD PLANNING PUBLIC MEETINGS

Help Protect our Communities from Future Flooding!

The San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for Region 12, which includes counties along the San Antonio River Basin. Join us for our upcoming public meetings to help us build a strong flood plan that keeps our local communities, families, and homes safe from flooding for years to come.

About Region 12

Region 12 includes parts of Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria and Wilson counties.

About the Region 12 Flood Plan

As part of a statewide initiative, this flood plan will recommend projects to prevent flood damage to lives and property across our region. Earlier this year, SARFPG hosted a series of meetings to gather community input. Now, we're reaching out to:

- Provide flood planning status updates.
- Share potential short- and long-term flooding recommendations and get your feedback.
- Learn more about your flooding experiences.
- Provide an opportunity to speak directly with our project team.

June Public Meetings

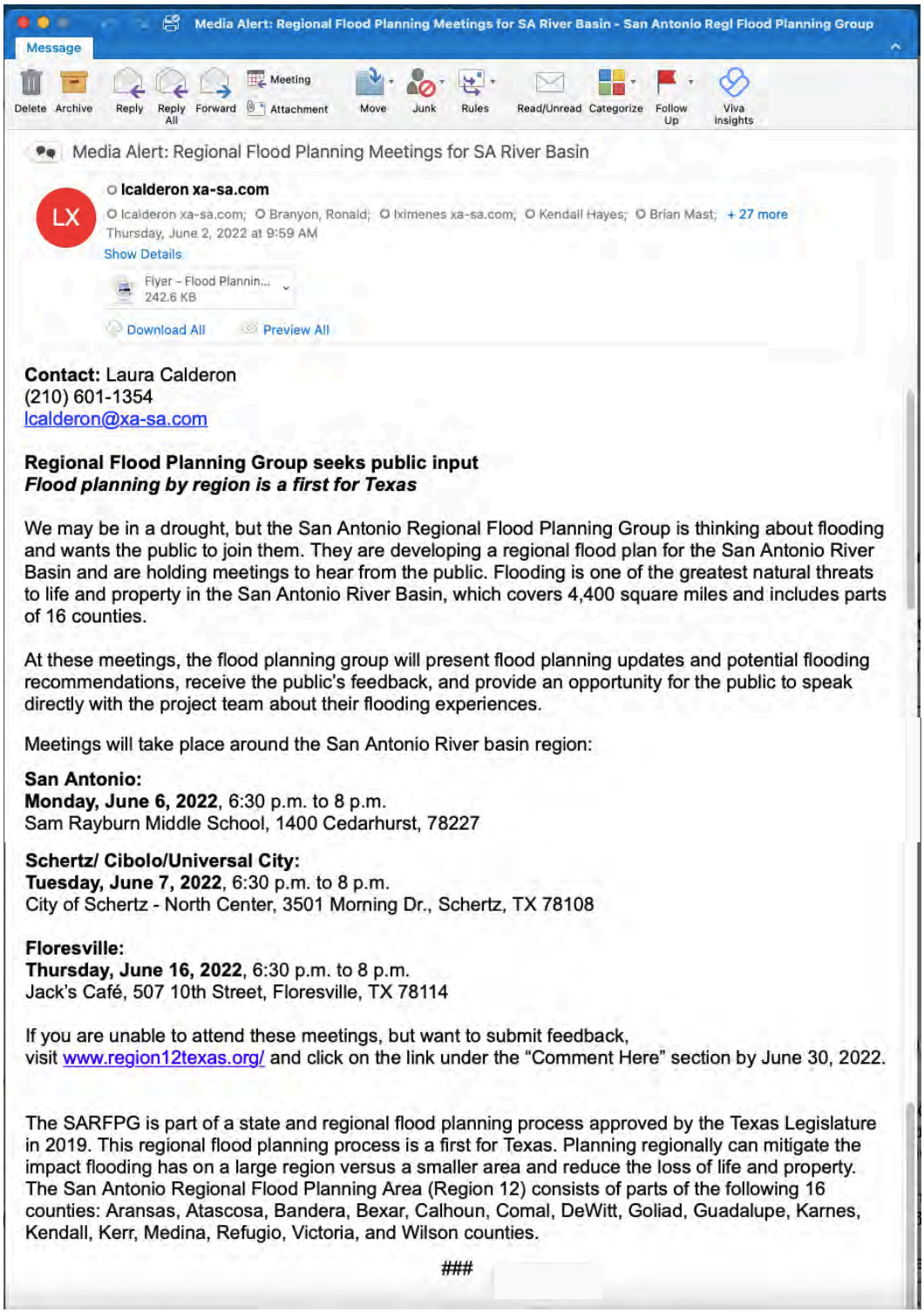
West San Antonio	Schertz-Cibolo/Universal City	Floresville
WHEN: Monday, June 6, 2022, 6:30-8:00 p.m. **WHERE:** Sam Rayburn Middle School 1400 Cedarhurst Dr. San Antonio, TX 78227	**WHEN:** Tuesday, June 7, 2022, 6:30-8:00 p.m. **WHERE:** City of Schertz - North Center 3501 Morning Dr. Schertz, TX 78108	**WHEN:** Thursday, June 16, 2022, 6:30-8:00 p.m. **WHERE:** Jack's Café (large meeting room) 507 10th St. Floresville, TX 78114

Share Your Feedback

Unable to stop by a public meeting? You can still share feedback on the Region 12 Flood Plan. Go to bit.ly/Region12FloodPlanning or scan this QR code with your smart phone's camera to take our survey.

SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
Region12Texas.org
(210) 227-1373

SARFPG PUBLIC MEETING
Sample Media Advisory email sent
June 2, 2022 to media outlets within Region 12



Media Alert: Regional Flood Planning Meetings for SA River Basin - San Antonio Regl Flood Planning Group

Message

Delete Archive Reply Reply All Forward Meeting Attachment Move Junk Rules Read/Unread Categorize Follow Up Viva Insights

Media Alert: Regional Flood Planning Meetings for SA River Basin

LX lcalderon xa-sa.com

lcalderon xa-sa.com; Branyon, Ronald; lximenes xa-sa.com; Kendall Hayes; Brian Mast; + 27 more

Thursday, June 2, 2022 at 9:59 AM

Show Details

Flyer – Flood Plannin... 242.6 KB

Download All Preview All

Contact: Laura Calderon
(210) 601-1354
lcalderon@xa-sa.com

Regional Flood Planning Group seeks public input
Flood planning by region is a first for Texas

We may be in a drought, but the San Antonio Regional Flood Planning Group is thinking about flooding and wants the public to join them. They are developing a regional flood plan for the San Antonio River Basin and are holding meetings to hear from the public. Flooding is one of the greatest natural threats to life and property in the San Antonio River Basin, which covers 4,400 square miles and includes parts of 16 counties.

At these meetings, the flood planning group will present flood planning updates and potential flooding recommendations, receive the public's feedback, and provide an opportunity for the public to speak directly with the project team about their flooding experiences.

Meetings will take place around the San Antonio River basin region:

San Antonio:
Monday, June 6, 2022, 6:30 p.m. to 8 p.m.
Sam Rayburn Middle School, 1400 Cedarhurst, 78227

Schertz/ Cibolo/Universal City:
Tuesday, June 7, 2022, 6:30 p.m. to 8 p.m.
City of Schertz - North Center, 3501 Morning Dr., Schertz, TX 78108

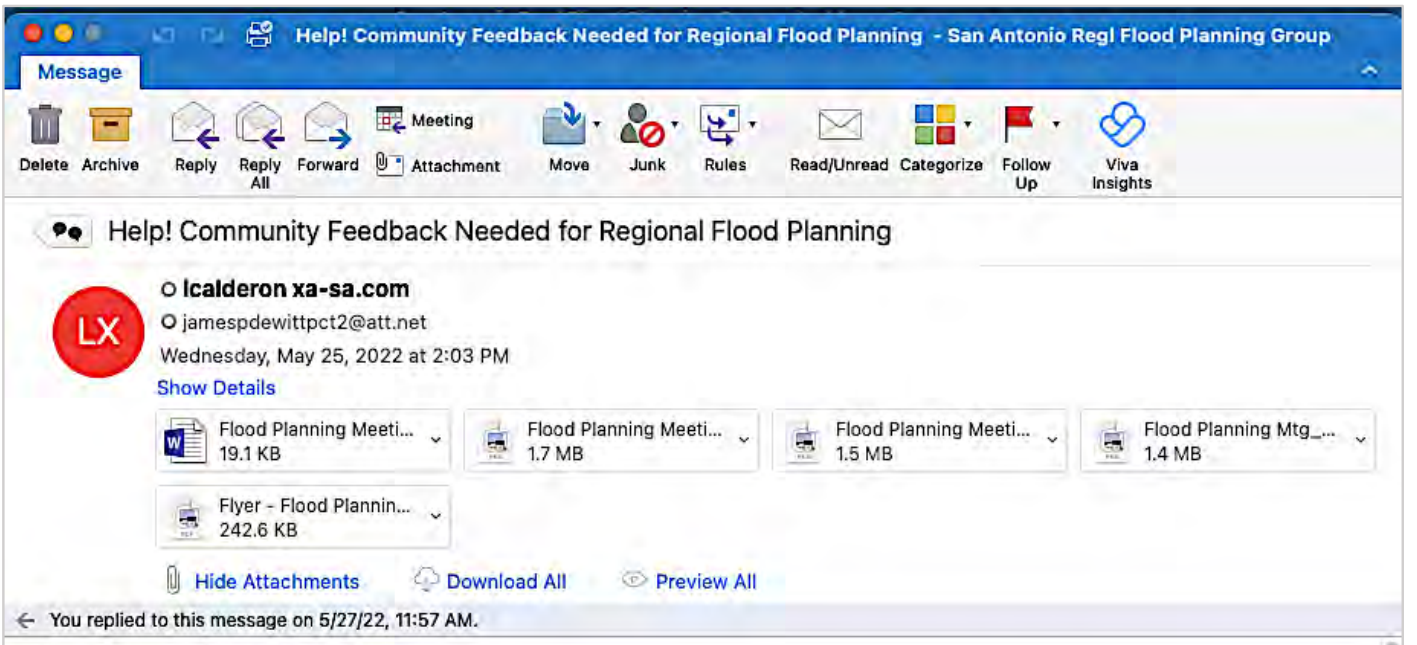
Floresville:
Thursday, June 16, 2022, 6:30 p.m. to 8 p.m.
Jack's Café, 507 10th Street, Floresville, TX 78114

If you are unable to attend these meetings, but want to submit feedback,
visit www.region12texas.org/ and click on the link under the "Comment Here" section by June 30, 2022.

The SARFPG is part of a state and regional flood planning process approved by the Texas Legislature in 2019. This regional flood planning process is a first for Texas. Planning regionally can mitigate the impact flooding has on a large region versus a smaller area and reduce the loss of life and property. The San Antonio Regional Flood Planning Area (Region 12) consists of parts of the following 16 counties: Aransas, Atascosa, Bandera, Bexar, Calhoun, Comal, DeWitt, Goliad, Guadalupe, Karnes, Kendall, Kerr, Medina, Refugio, Victoria, and Wilson counties.

###

SARFPG PUBLIC MEETING
Sample email sent May 25, 2022 to elected county officials within Region 12, which includes Wilson County. Email database follows.



Dear Commissioner Pilchiek,

As a leader in your community, you are aware that flooding is one of the greatest natural threats to life and property in the San Antonio River Basin, which includes parts of De Witt County. The San Antonio Regional Flood Planning Group (SARFPG) is working to reduce the devastation caused by flood events and make the region safer by protecting lives, homes and property. **We need your help to reach these goals.** On behalf of the SARFPG, I am asking for your assistance to inform your community about important upcoming meetings to address flood events.

SARFPG background
The SARFPG is part of a state and regional flood planning process approved by the Texas Legislature in 2019. This **regional** flood planning process is a **first** for Texas. **It can help mitigate flooding that impacts a large region versus a smaller area and help reduce the loss of life and property.** The San Antonio River Basin, the regional focus for this planning effort, covers more than 4,400 square miles encompassing parts of 16 counties, including De Witt County.

Flooding is a growing problem as flood events are becoming more frequent and intense. The SARFPG wants to continue receiving public feedback because ultimately, there may be opportunities to leverage state funding for flood and drainage issues. The next round of public meetings will be held:

- **Monday, June 6, 2022**: Sam Rayburn Middle School, 1400 Cedarhurst, San Antonio, TX 78227, 6:30 p.m. to 8 p.m.
- **Tuesday, June 7, 2022**: City of Schertz - North Center, 3501 Morning Dr., Schertz, TX 78108, 6:30 p.m. to 8 p.m.
- **Thursday, June 16, 2022**: Jack's Café, 507 10th Street, Floresville, TX 78114

The goals for these meetings are to:

- Provide flood planning status updates.
- Share potential short- and long-term flooding recommendations and get your feedback.
- Learn more about your flooding experiences.
- Provide an opportunity to speak directly with our project team.

Attached is a meeting flyer and social media posts and pictures for your use. **Please help us by posting this information on your personal or organizational social media account, by including meeting information in your newsletter, and sharing the flyer with your community.**

If you or your constituents are unable to attend these meetings, but want to submit feedback, please visit https://www.region12texas.org/ and click on the link under the "Comment Here" section. If you have any upcoming community meetings, we are also available to present information and receive community feedback. The final draft plan is due August 2022, so we are trying to gather community feedback by June 30, 2022.

If you have any questions, need more information or would like to request a presentation, please contact Project Manager Ron Branyon, P.E. at ronald.branyon@hdrinc.com or (210) 841-2922.

Thank you for your consideration!

Laura A. Calderon
SARFPG Project Team Member
Ximenes & Associates, Inc.
Facilitating communication and consensus since 1984
500 Sixth Street
San Antonio, Texas 78215
(210) 354-2925 (office)
(210) 601-1354 (cell)

Email Database for Region 12 County Commissioners				
First	**Last**	**Title**	**Pct-District**	**Email**
Robert L.	Hurley	County Judge	Atascosa County	countyjudge@atascosacounty.texas.gov
Mark	Gillespie	Commissioner	Precint 1	commissioner1@atascosacounty.texas.gov
Stuart	Knowlton	Commissioner	Precinct 2	commissioner2@atascosacounty.texas.gov
Eliseo	Perez	Commissioner	Precinct 3	commissioner3@atascosacounty.texas.gov
Kennard	Riley	Commissioner	Precinct 4	commissioner4@atascosacounty.texas.gov
Richard	Meyer	County Judge	Calhoun County	Richard.Meyer@calhouncotx.org
David	Hall	Commissioner	Precint 1	david.hall@calhouncotx.org
Vern	Lyssy	Commissioner	Precinct 2	vern.lyssy@calhouncotx.org
Joel M.	Behrens	Commissioner	Precinct 3	Joel.Behrens@calhouncotx.org
Gary D.	Reese	Commissioner	Precinct 4	gary.reese@calhouncotx.org
C.H. "Burt"	Mills	County Judge	Aransas County	judge@aransascounty.org
Jack	Chaney	Commissioner	Precint 1	jchaney@aransascounty.org
Leslie	Casterline	Commissioner	Precinct 2	bcasterline@aransascounty.org
Pat	Rousseau	Commissioner	Precinct 3	prousseau@aransascounty.org
Wendy	Laubach	Commissioner	Precinct 4	wlaubach@aransascounty.org
Robert E.	Blaschke	County Judge	Refugio County	judge.blaschke@gmail.com
Ben	Zeller	County Judge	Victoria County	bzeller@vctx.org
Danny	Garcia	Commissioner	Precint 1	dgarcia@vctx.org
Kevin M.	Janak	Commissioner	Precinct 2	kjanak@vctx.org
Gary	Burns	Commissioner	Precinct 3	gburns@vctx.org
Clint	Ives	Commissioner	Precinct 4	cives@vctx.org
Mike	Bennett	County Judge	Goliad County	mbennett@goliadcountytx.gov
Kenneth	Edwards	Commissioner	Precint 1	kedwards@goliadcountytx.gov
Alonzo	Morales	Commissioner	Precinct 2	amorales@goliadcountytx.gov
Kirby	Brumby	Commissioner	Precinct 3	kbrumby@goliadcountytx.gov
David	Bruns	Commissioner	Precinct 4	dbruns@goliadcountytx.gov
Daryl L.	Fowler	County Judge	De Witt County	daryl.fowler@co.dewitt.tx.us
Curtis	Afflerbach	Commissioner	Precint 1	commish1@co.dewitt.tx.us
James	Pilchiek	Commissioner	Precinct 2	jamespdewittpct2@att.net
James	Kaiser	Commissioner	Precinct 3	jkaiserk@gmail.com
Richard	Randle	Commissioner	Precinct 4	richard.randle@co.dewitt.tx.us
Wade	Hedtke	County Judge	Karnes County	wade.hedtke@co.karnes.tx.us

Email Database for Region 12 County Commissioners				
First	**Last**	**Title**	**Pct-District**	**Email**
Shelby	Dupnik	Commissioner	Precint 1	shelby.dupnik@co.karnes.tx.us
Bernard	Lyssy	Commissioner	Precinct 2	benny.lyssy@co.karnes.tx.us
Sean	O'Brien	Commissioner	Precinct 3	sean.obrien@co.karnes.tx.us
Sharon	Chesser	Commissioner	Precinct 4	schesser@co.karnes.tx.us
Kyle	Kutscher	County Judge	Guadalupe County	kyle.kutscher@co.guadalupe.tx.us
Greg	Seidenberger	Commissioner	Precint 1	greg.seidenberger@co.guadalupe.tx.us
Drew	Engelke	Commissioner	Precinct 2	Drew.Engelke@co.guadalupe.tx.us
Michael	Carpenter	Commissioner	Precinct 3	Michael.Carpenter@co.guadalupe.tx.us
Judy	Cope	Commissioner	Precinct 4	judy.cope@co.guadalupe.tx.us
Chris	Schuchart	County Judge	Medina County	countyjudge@medinacountytexas.org
Timothy	Neuman	Commissioner	Precint 1	angie.zapata@medinacountytexas.org
Larry	Sittre	Commissioner	Precinct 2	lydia.aguinaga@medinacountytexas.org
David	Lynch	Commissioner	Precinct 3	david.lynch@medinatx.org
Jerry	Beck	Commissioner	Precinct 4	gracie.martinez@medinacountytexas.org
Darrel L.	Lux	County Judge	Kendall County	judge@co.kendall.tx.us
Christina	Bergmann	Commissioner	Precint 1	christina.bergmann@co.kendall.tx.us
Richard W.	Elkins	Commissioner	Precinct 2	richard.elkins@co.kendall.tx.us
Richard	Chapman	Commissioner	Precinct 3	richard.chapman@co.kendall.tx.us
Don	Durden	Commissioner	Precinct 4	don.durden@co.kendall.tx.us
				commissioners@co.kendall.tx.us
Sherman	Krause	County Judge	Comal County	krause@co.comal.tx.us
Donna	Eccleston	Commissioner	Precint 1	cctdme@co.comal.tx.us
Scott	Haag	Commissioner	Precinct 2	haagsc@co.comal.tx.us
Kevin	Webb	Commissioner	Precinct 3	webbke@co.comal.tx.us
Jen	Crownover	Commissioner	Precinct 4	crownj@co.comal.tx.us
Richard	Evans	County Judge	Bandera County	countyjudge@banderacounty.org
H. Bruce	Eliker	County Commissioner	Precint 1	eliker@banderacounty.org
Robert	Harris	Commissioner	Precinct 2	
Jack U.	Moseley	Commissioner	Precinct 3	jmoseley@banderacounty.org
Jordan	Rutherford	Commissioner	Precinct 4	jrutherford@banderacounty.org
Nelson W.	Wolff	County Judge	Bexar County	nwolff@Bexar.org
Rebeca	Clayton-Flores	Commissioner	Precinct 1	CommissionerPct1@bexar.org

Email Database for Region 12 County Commissioners				
First	**Last**	**Title**	**Pct-District**	**Email**
Justin	Rodriguez	Commissioner	Precinct 2	precinct2commissioner@bexar.org
Marialyn	Barnard	Commissioner	Precinct 3	
Tommy	Calvert	Commissioner	Precinct 4	tc@bexar.org
Richard L.	Jackson	County Judge	Wilson County	judge@wilsoncountytx.gov
Gary	Martin	Commissioner	Precint 1	gmartin@wilsoncountytx.gov
Paul W.	Pfeil	Commissioner	Precinct 2	ppfeil@wilsoncountytx.gov
Jeffery	Pierdolla	Commissioner	Precinct 3	jPierdolla@wilsoncountytx.gov
Larry A.	Wiley	Commissioner	Precinct 4	lwiley@wilsoncountytx.gov
Robert	Kelly	County Judge	Kerr County	cojudge@co.kerr.tx.us
Harley David	Belew	Commissioner	Precint 1	hbelew@co.kerr.tx.us
Beck	Gipson	Commissioner	Precinct 2	bgipson@co.kerr.tx.us
Jonathan	Letz	Commissioner	Precinct 3	jletz@co.kerr.tx.us
Don	Harris	Commissioner	Precinct 4	dharris@co.kerr.tx.us

SARFPG PUBLIC MEETING
Sample email sent May 25, 2022 to elected city officials within Region 12, including Floresville. The email database follows.

Help! Community Feedback Needed for Regional Flood Planning

LX

lcalderon xa-sa.com
allisonHeyward@schertz.com
Wednesday, May 25, 2022 at 5:22 PM
Show Details

Flood Planning Meeti... 19.1 KB | Flood Planning Meeti... 1.7 MB | Flood Planning Meeti... 1.5 MB | Flood Planning Mtg_... 1.4 MB
Flyer - Flood Plannin... 242.6 KB

Hide Attachments | Download All | Preview All

Dear Council Member Heyward,

As a leader in your community, you are aware that flooding is one of the greatest natural threats to life and property in the San Antonio River Basin, which includes Schertz. The San Antonio Regional Flood Planning Group (SARFPG) is working to reduce the devastation caused by flood events and make the region safer by protecting lives, homes and property. **We need your help to reach these goals.** On behalf of the SARFPG, I am asking for your assistance to inform your community about important upcoming meetings to address flood events.

SARFPG background
The SARFPG is part of a state and regional flood planning process approved by the Texas Legislature in 2019. This **regional** flood planning process is a **first** for Texas. **It can help mitigate flooding that impacts a large region versus a smaller area and help reduce the loss of life and property.** The San Antonio River Basin, the regional focus for this planning effort, covers more than 4,400 square miles encompassing parts of 16 counties, including Bexar, Comal and Guadalupe counties.

Help us inform your community about regional flood planning
Flooding is a growing problem as flood events are becoming more frequent and intense. The SARFPG wants to continue receiving public feedback because ultimately, there may be opportunities to leverage state funding for flood and drainage issues. The next round of public meetings will be held:

- **Monday, June 6, 2022**: Sam Rayburn Middle School, 1400 Cedarhurst, San Antonio, TX 78227, 6:30 p.m. to 8 p.m.
- **Tuesday, June 7, 2022**: City of Schertz - North Center, 3501 Morning Dr., Schertz, TX 78108, 6:30 p.m. to 8 p.m.
- **Thursday, June 16, 2022**: Jack's Café, 507 10th Street, Floresville, TX 78114

The goals for these meetings are to:

- Provide flood planning status updates.
- Share potential short- and long-term flooding recommendations and get your feedback.
- Learn more about your flooding experiences.
- Provide an opportunity to speak directly with our project team.

Attached is a meeting flyer and social media posts and pictures for your use. **Please help us by posting this information on your personal or organizational social media account, by including meeting information in your newsletter, and sharing the flyer with your community.**

If you or your constituents are unable to attend these meetings, but want to submit feedback, please visit https://www.region12texas.org/ and click on the link under the "Comment Here" section. If you have any upcoming community meetings, we are also available to present information and receive community feedback. The final draft plan is due August 2022, so we are trying to gather community feedback by June 30, 2022.

If you have any questions, need more information or would like to request a presentation, please contact Project Manager Ron Branyon, P.E. at ronald.branyon@hdrinc.com or (210) 841-2922.

Thank you for your consideration!

Laura A. Calderon
SARFPG Project Team Member
Ximenes & Associates, Inc.
Facilitating communication and consensus since 1984
500 Sixth Street
San Antonio, Texas 78215
(210) 354-2925 (office)
(210) 601-1354 (cell)
lcalderon@xa-sa.com

Email Database for Region 12 Elected City Officials				
First	**Last**	**Title**	**City**	**Email**
Suzanne	Schauman	Mayor	Bandera	mayor@cityofbandera.org
Rebecca	Gibson	Mayor Pro-Tem	Bandera	txbecalou@gmail.com
Darcy	Hasty	Council Member	Bandera	darcy.keepbanderabandera@gmail.com
Toni	Kunz	Council Member	Bandera	cobtonikunz@yahoo.com
Christine	Morse	Council Member	Bandera	christinemorse68@gmail.com
Jerry	Russe	Council Member	Bandera	jerryrusse@gmail.com
David	Jordan	City Administrator	Bandera	cityadmin@cityofbandera.org
Jeffrey	Carroll	Mr.	Boerne	jcarroll@boerne-tx.gov
Stosh	Boyle	Mayor	Cibolo	mayor@cibolotx.gov
Mark	Allen	Council Member	Cibolo	district5@cibolotx.gov
T.G.	Benson	Council Member	Cibolo	district1@cibolotx.gov
Reggie	Bone	Council Member	Cibolo	rbone@cibolotx.gov
Katie	Cunningham	Council Member	Cibolo	district4@cibolotx.gov
Dick	Hetzel	Council Member	Cibolo	district6@cibolotx.gov
Joel	Hicks	Council Member	Cibolo	district7@cibolotx.gov
Victor	Osorio	Council Member	Cibolo	district2@cibolotx.gov
Wayne	Reed	Mr.	Cibolo	wreed@cibolotx.gov
Cecelia	Gonzalez-Dippel	Mayor	Floresville	mayor@floresvilletx.gov
Gloria	Cantu	Council Member	Floresville	councilplace5@floresvilletx.gov
Jade	Jimenez	Council Member	Floresville	councilplace4@floresvilletx.gov
Terry	Rolland	Council Member	Floresville	councilplace2@floresvilletx.gov
Eduardo Ortiz	Villarreal	Mayor Pro Tem	Floresville	councilplace3@floresvilletx.gov
Marissa	Ximenez	Council Member	Floresville	councilplace1@floresvilletx.gov
Andy	Joslin	Mr.	Floresville	citymanager@floresvilletx.gov
Luis	Rodriguez	Mayor Pro Tem	Goliad	ljrodriguez9245@gmail.com
Robin	Alaniz	Alderman	Goliad	ralanizcitycouncil@goliadtx.net
Mary	Gleinser	Alderman	Goliad	mary.gleinser@goliadtx.net
Yolanda	Ramirez	Alderman	Goliad	yramirezcitycouncil@goliadtx.net
Lorinda	Rangel	Alderman	Goliad	lrangelcitycouncil@goliadtx.net
	City	Secretary	Goliad	citysecretary@goliadtx.net
Leroy	Skloss	Mayor	Karnes City	lskloss@cityofkctx.com
Jimmy	Loya	Mayor Pro Tem	Karnes City	jloya@cityofkctx.com
Robert	Ebrom	Council Member	Karnes City	rebrom@cityofkctx.com
Larry	Franke	Council Member	Karnes City	lfranke@cityofkctx.com

Email Database for Region 12 Elected City Officials				
First	**Last**	**Title**	**City**	**Email**
Lillian	Lyssy	Council Member	Karnes City	llyssy@cityofkctx.com
Aaron	Rosales	Council Member	Karnes City	arosales@cityofkctx.com
Ken	Roberts	Mr.	Karnes City	kroberts@cityofkctx.com
Joe	Baker	Mayor	Kenedy	mayor@cityofkenedy.org
James	Douglas	Alderman	Kenedy	district4@cityofkenedy.org
Christopher	Parker	Alderman	Kenedy	district3@cityofkenedy.org
John	Rodriguez	Alderman	Kenedy	district2@cityofkenedy.org
Cindy	Saenz	Alderman	Kenedy	district1@cityofkenedy.org
Sandra	Schultz	Alderman	Kenedy	district5@cityofkenedy.org
William	Linn	Mr.	Kenedy	citymanager@cityofkenedy.org
Mary M.	Dennis	Mayor	Live Oak	yourmayormary@yahoo.com
Ed	Cimics	Council Member	Live Oak	edcimics@sbcglobal.net
Aaron	Dahl	Council Member	Live Oak	liveoakplace5@gmail.com
Mendell	Morgan	Council Member	Live Oak	liveoakplace1@gmail.com
Erin	Dr. Perez	Council Member	Live Oak	erin@erinperez.com
Robert	Tullgren	Council Member	Live Oak	btullgrenplace2@liveoaktx.net
Glen	Martel	City Manager	Live Oak	gmartel@liveoaktx.net
Chrystal	Eckel	Mayor	Poth	mayor@cityofpoth.org
Ron	Nirenberg	Mayor	San Antonio	ron.nirenberg@sanantonio.gov
Mario	Bravo	Councilman	San Antonio	district1@sanantonio.gov
Jalen	McKee-Rodriguez	Councilwoman	San Antonio	district2@sanantonio.gov
Phyllis	Viagran	Councilwoman	San Antonio	district3@sanantonio.gov
Adriana	Rocha Garcia, PhD	Councilwoman	San Antonio	district4@sanantonio.gov
Teri	Castillo	Councilwoman	San Antonio	district5@sanantonio.gov
Melissa	Cabello Havrda	Councilwoman	San Antonio	district6@sanantonio.gov
Ana	Sandoval	Councilman	San Antonio	district7@sanantonio.gov
Manny	Pelaez	Councilman	San Antonio	district8@sanantonio.gov
John	Courage	Councilman	San Antonio	district9@sanantonio.gov
Clayton	Perry	Councilman	San Antonio	district10@sanantonio.gov
Eric	Walsh	Mr.	San Antonio	citymanager@sanantonio.gov
Ralph	Gutierrez	Mayor	Schertz	ralphgutierrez@schertz.com
Tim	Brown	Council Member	Schertz	timbrown@schertz.com
Michael	Dahle	Council Member	Schertz	mdahle@schertz.com
Mark	Davis	Council Member	Schertz	markdavis@schertz.com

Email Database for Region 12 Elected City Officials				
First	**Last**	**Title**	**City**	**Email**
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David	Scagliola	Council Member	Schertz	davidscagliola@schertz.com
Rosemary	Scott	Council Member	Schertz	rscott@schertz.com
Jill	Whitaker	Council Member	Schertz	jwhittaker@schertz.com
Mark	Browne	Mr.	Schertz	mbrowne@schertz.com
John	Williams	Mayor	Universal City	mayor@uctx.gov
Richard	Neville	Mayor Pro Tem	Universal City	council1@uctx.gov
Steven R.	Buck	Council Member	Universal City	Council3@uctx.gov
Bear	Goolsby	Council Member	Universal City	Council2@uctx.gov
Paul	Najarian	Council Member	Universal City	council6@uctx.gov
William	Shelby	Council Member	Universal City	Council5@uctx.gov
Phil	Vaughan	Council Member	Universal City	Council4@uctx.gov
Kim	Turner	City Manager	Universal City	citymanager@uctx.gov
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Duane	Crocker	Council Member	Victoria	dcrocker@victoriatx.gov
Rafael	DeLaGarza	Council Member	Victoria	rdelagarza@victoriatx.gov
Mark	Loffgren	Council Member	Victoria	mloffgren@victoriatx.gov
Jan	Scott	Council Member	Victoria	janscott@victoriatx.gov
Josephine	Soliz	Council Member	Victoria	jsoliz@victoriatx.gov

SOCIAL MEDIA

The SARFPG used social media to raise awareness of the upcoming meetings. Region 12 city and county elected officials and stakeholders were asked to help inform the community of the meetings by posting on their social media platforms.

The SARFPG supplied the social media graphics (shown here) and content for the posts (shown on the following page) to the elected officials for ease and convenience.

Social Media Content – Twitter, Facebook, LinkedIn, Nextdoor

Social media graphics and content were provided to Region 12 city and county elected officials and stakeholders for use on their social media platforms. Below are posts that were provided

Date	Twitter Post	Facebook/LinkedIn Post	Nextdoor Post
Tuesday, 6/1	Learn about flood planning recommendations for our region and share your feedback in 3 public meetings! Join the San Antonio Regional Flood Planning Group in San Antonio on 6/6, Schertz on 6/7, and Floresville on 6/16. Learn more: Region12Texas.org	Flood events pose one of the greatest natural threats to life and property in the San Antonio River Basin, and they are becoming more frequent and intense. To help protect lives, homes and communities, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio on 6/6, Schertz on 6/7, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org	**HEADING:** San Antonio, Schertz, and Floresville: Share Your Feedback on Flooding in 3 Public Meetings! **POST:** Flood events pose one of the greatest natural threats to life and property in the San Antonio River Basin, and they are becoming more frequent and intense. To help protect lives, homes and communities, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio on 6/6, Schertz on 6/7, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org
Monday, 6/6	REMINDER: Learn about flood planning recommendations for our region and share your feedback in 3 public meetings! Join the San Antonio Regional Flood Planning Group tonight in San Antonio, in Schertz tomorrow, and Floresville on 6/16. Learn more: Region12Texas.org	REMINDER: San Antonio, Schertz, and Floresville: Share Your Feedback on Flooding in 3 Public Meetings! To help protect lives, homes and communities from more frequent and intense flood events, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio tonight, in Schertz on tomorrow, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org	**HEADING:** REMINDER: San Antonio, Schertz, and Floresville: Share Your Feedback on Flooding in 3 Public Meetings! **POST:** To help protect lives, homes and communities from more frequent and intense flood events, the San Antonio Regional Flood Planning Group (SARFPG) is creating the first-ever flood plan for our region. Join the SARFPG in San Antonio tonight, in Schertz on tomorrow, and Floresville on 6/16 to learn about potential flooding recommendations, share your ideas and get status updates. Learn more: Region12Texas.org

SARFPG PUBLIC MEETING
Facebook posts

SARFPG PUBLIC MEETING
Facebook posts

SARFPG PUBLIC MEETING
Nextdoor post

C. Sign-in Sheets

WELCOME! PLEASE SIGN IN

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
THURSDAY, JUNE 16, 2022 - 6:30 P.M. – 8 P.M.
JACK'S CAFE, 507 10TH ST., FLORESVILLE, TX 78114

PLEASE PRINT

NAME	ADDRESS/ZIP CODE	EMAIL ADDRESS
Gloria M Cantu (EO)	1013 2nd St.	Council place5@floresville.gov
Tom Cooksey	Stakeholder	tmcooksey@cpsenergy.com
Andy Joslin	City OF Floresville	citymanager@floresvilletx.gov
Lindsey Boyd	City of La Vernia	LBoyd@LaVernia-TX.gov
Rebekkah Scriven	Wilson County	wcoem@wilsoncountytx.gov
Debbie Reid	Region 12 member	
CHRISTOPHER FULLERTON	PUBLIC	christopher_fullerton@yahoo.com

ELECTED OFFICIALS SIGN IN SHEET

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
THURSDAY, JUNE 16, 2022 - 6:30 P.M. – 8 P.M.
JACK'S CAFE, 507 10TH ST., FLORESVILLE, TX 78114

Name	Affiliation	Email Address
Gary Martin	Wilson County Commissioner	gmartine wilsoncounty tx. gov
Gloria Cantu	see public sign-in	

STAFF SIGN IN SHEET

PUBLIC MEETING
SAN ANTONIO REGIONAL FLOOD PLANNING GROUP
THURSDAY, JUNE 16, 2022 - 6:30 P.M. – 8 P.M.
JACK'S CAFE, 507 10TH ST., FLORESVILLE, TX 78114

Name	Affiliation	Email Address
Edward Herolt	Halff Assoc.	eherolt@halff.com
Ron Branyon	HDR	
Ludivine Varza	HDR	
Laura Calderon	X&A	
Linda Ximenes	X&A	

D. Presentation

San Antonio Regional Flood Plan

June 6, 2022

Agenda

- Introductions
- Plan Objectives and Benefits
- Background
- Planning Process and Other Studies
- Stakeholder Input
- Next Steps

Meeting Purpose

- Introduce the regional flood planning process and gather local knowledge of flood-prone areas, flood mitigation projects and needs.

Ron Branyon, PE, CFM

Project Manager

Point of contact/HDR

Added Value To SARFPG

- **Local, Responsive Project Manager**
- **20 years of experience delivering TWDB flood mitigation studies, drainage master plans, and floodplain mapping studies, in San Antonio River Basin**
- **Extensive experience in public outreach related to flood mitigation and mapping projects**
- **A strong working relationship with members of the Bexar Regional Watershed Management partnership.**
- **Track record for successful delivery of local high-profile projects, including nature- based solutions**

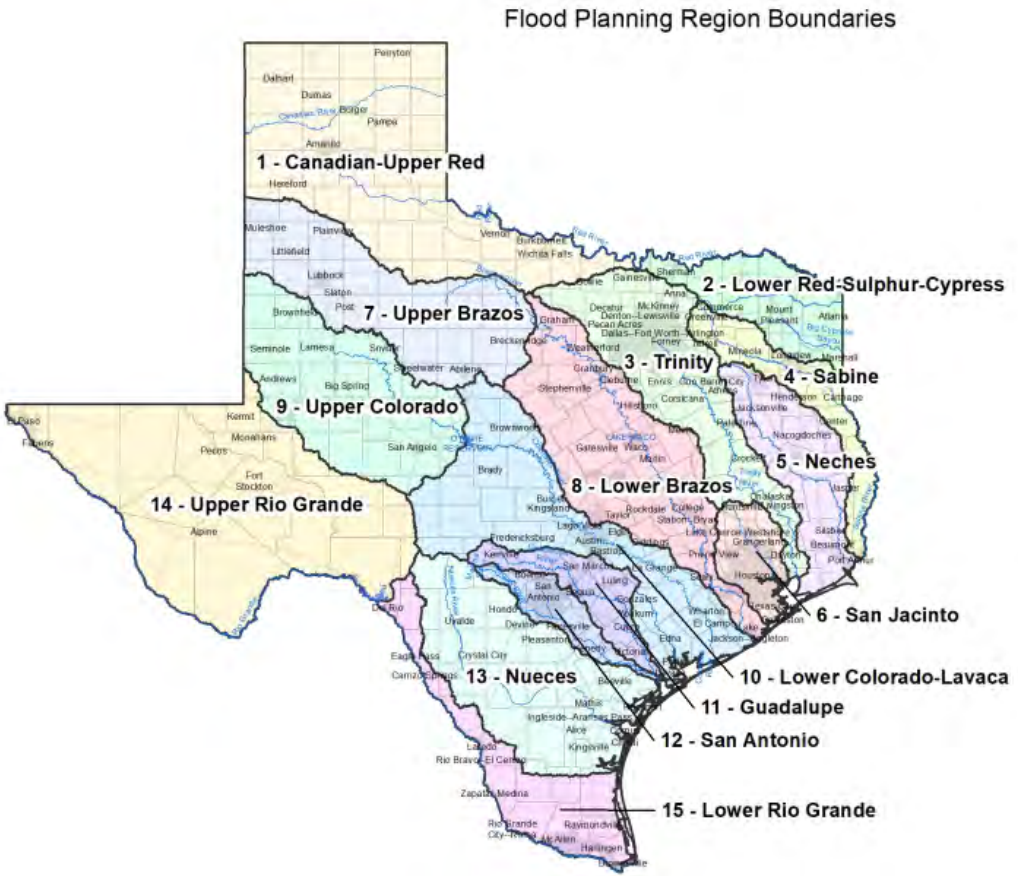
Relevant Experience To SARFP Tasks

- **SARA, City of San Antonio Drainage Master Plan — TX**
- **SARA, San Antonio River Watershed Cooperating Technical Partners (CTP) — TX**
- **SARA/Bexar County, San Pedro Creek Improvements Project — TX**
- **USACE, Leon Creek Master Plan — TX**
- **FEMA, DFIRM-Refugio, Calhoun, Aransas — TX**
- **USACE, Lower San Antonio River Basin Hydraulic Routing Models — TX**

"I work in Bexar County, reside in Wilson County and ranch in Goliad County, so this watershed is my home! From the headwaters to the Gulf I have seen it all and protecting the watershed and those who live here is what excites me about this opportunity."

What is the Region 12 Flood Plan?

- Historic Flooding – Realization of the need for flood planning
- In 2019, the 86th Texas legislature created and funded the first-ever regional and state flood planning process
- Schedule
  - Regional flood plans to be delivered by January 10, 2023, and then every five years thereafter
  - State plan to be adopted by September 1, 2024, and then every five years thereafter
- TWDB Flood Planning website: https://www.twdb.texas.gov/flood/planning/



Region 12 Background

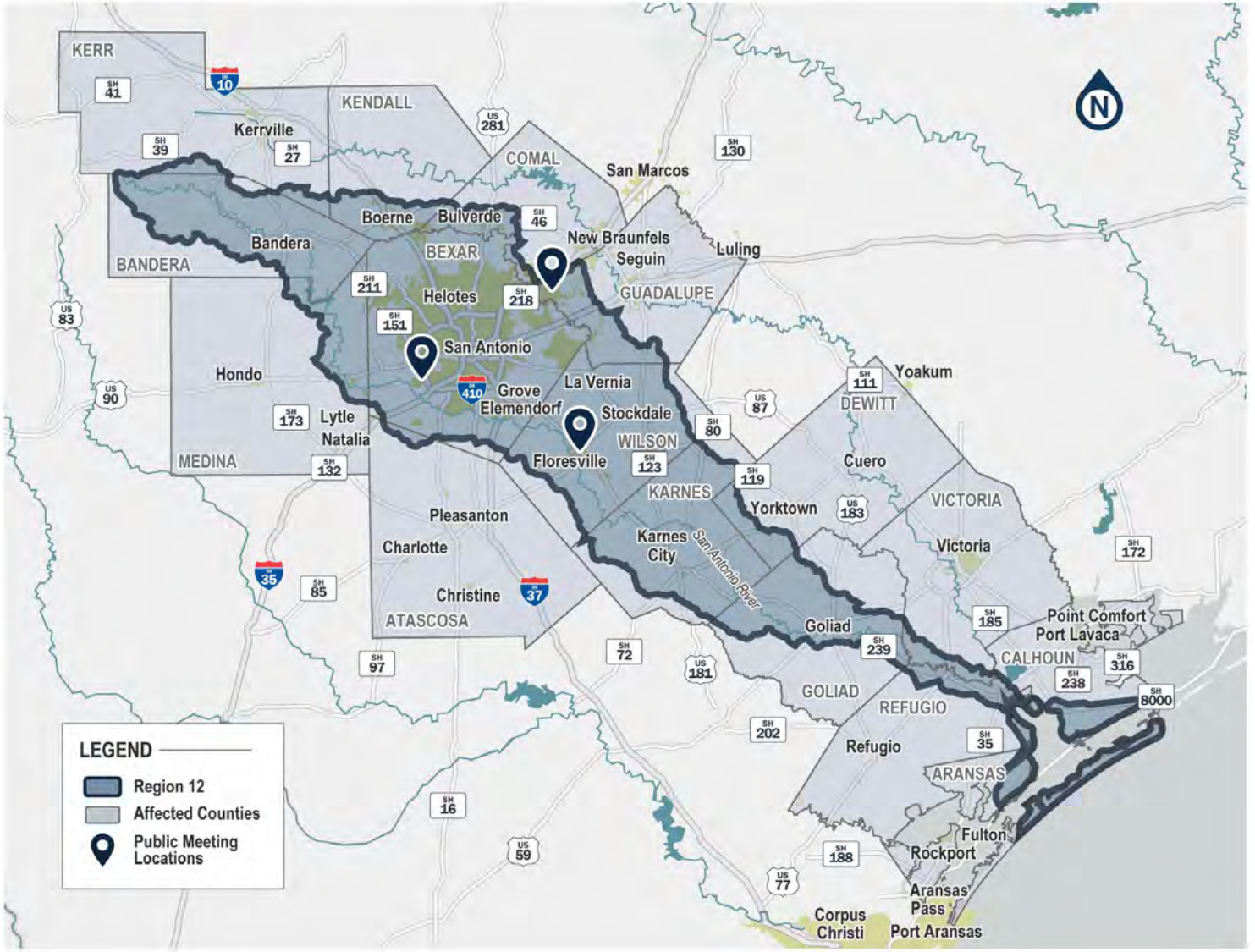
- **San Antonio Region Flood Planning Group (SARFPG)**
  - Created to represent diverse interest and to deliver the 2023 regional flood plan
- **Sponsor**
  - San Antonio River Authority
- **Technical Team**
  - HDR/Halff team selected as consultant to prepare plan

San Antonio Regional Flood Planning Group

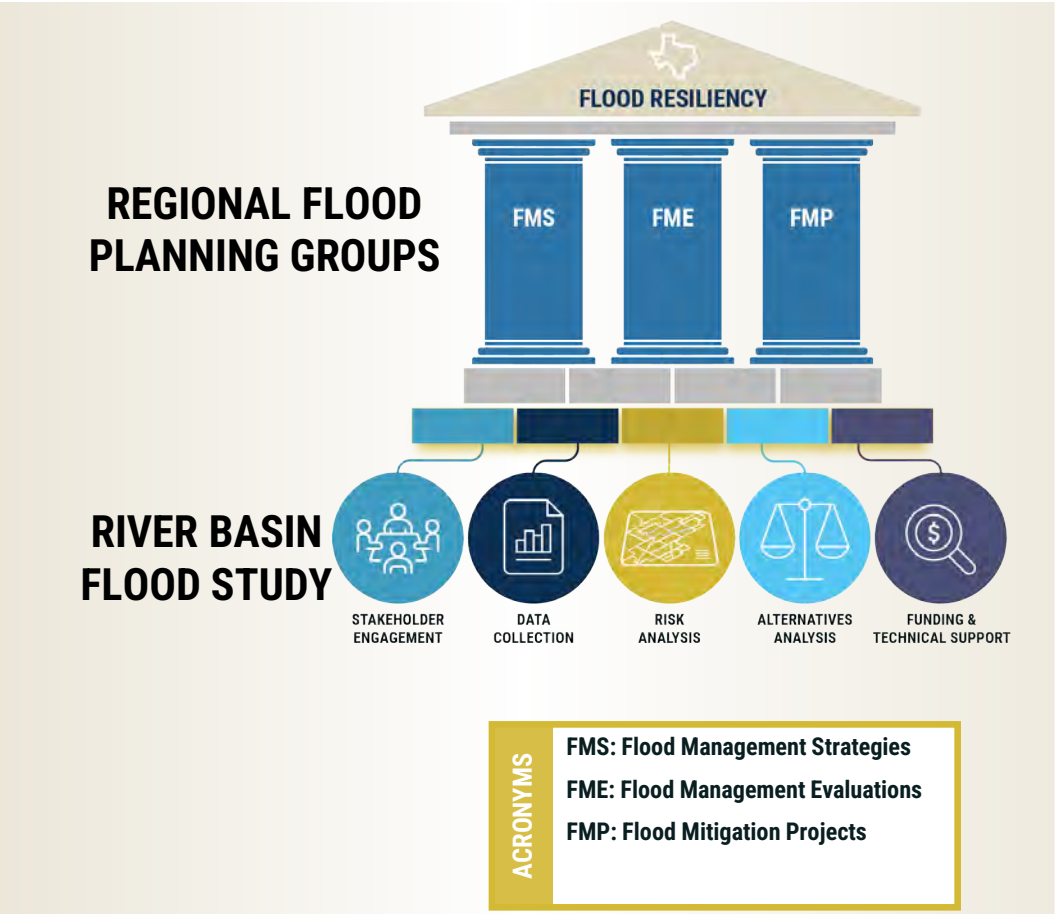
- Flood Districts: Nefi Garza, *City of San Antonio (Chair)*
- River Authorities: Derek Boese, *SARA (Vice-Chair)*
- Water Districts: David Mauk, *Bandera Co River Authority & GWD*
- Municipalities: Jeffery Carrol, *City of Boerne*
- Agriculture: Brian Yanta, *Goliad County Ag-Extension*
- Counties: David Wegmann, *Bexar County*
- Electric-generating Utilities: Doris Cooksey, *CPS Energy*
- Environment: Debbie Reed, *Greater Edwards Aquifer Alliance*
- Industries: Cara Tackett, *Pape-Dawson Engineers*
- Non-Profit: Suzanne Scott, *Nature Conservancy*
- Public: John Beasley, *US Army Environmental Command*
- Small Business: Steve Gonzales, *Civil Tech Engineering, Inc.*
- Water Utilities: Steven Clouse, *SAWS*

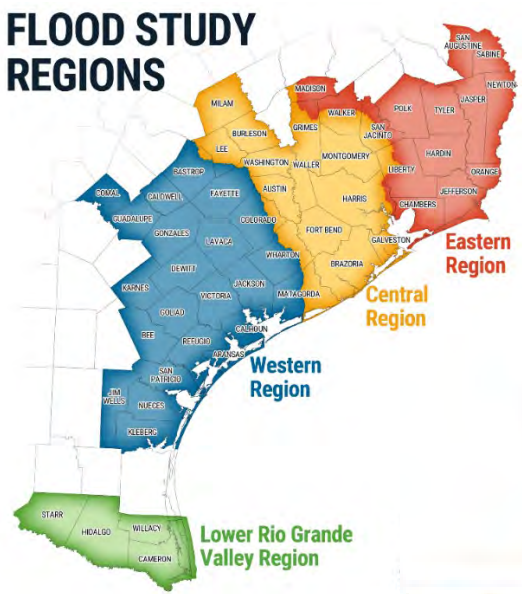
Plan Objectives

- Document existing flood infrastructure and preparedness
- Identify current and future flood risk and hazard
- Develop flood mitigation/management goals
- Identify and evaluate flood management strategies and mitigation projects
- Evaluate benefits/impacts to water supply environment, and economics

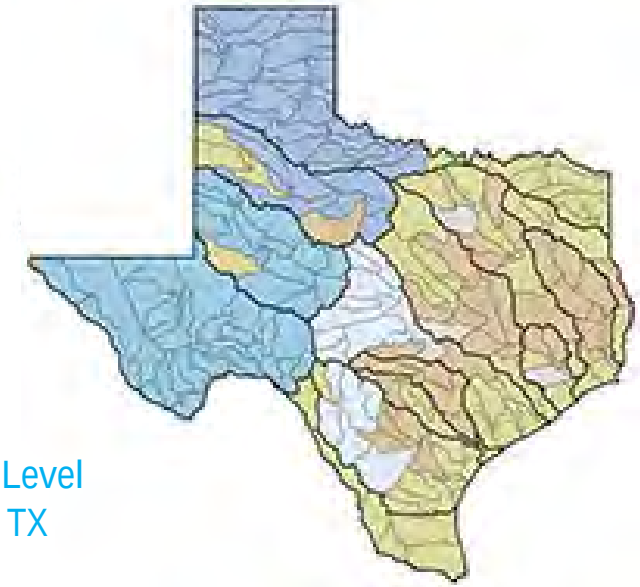


Additional Relevant Flood Studies and Coordination





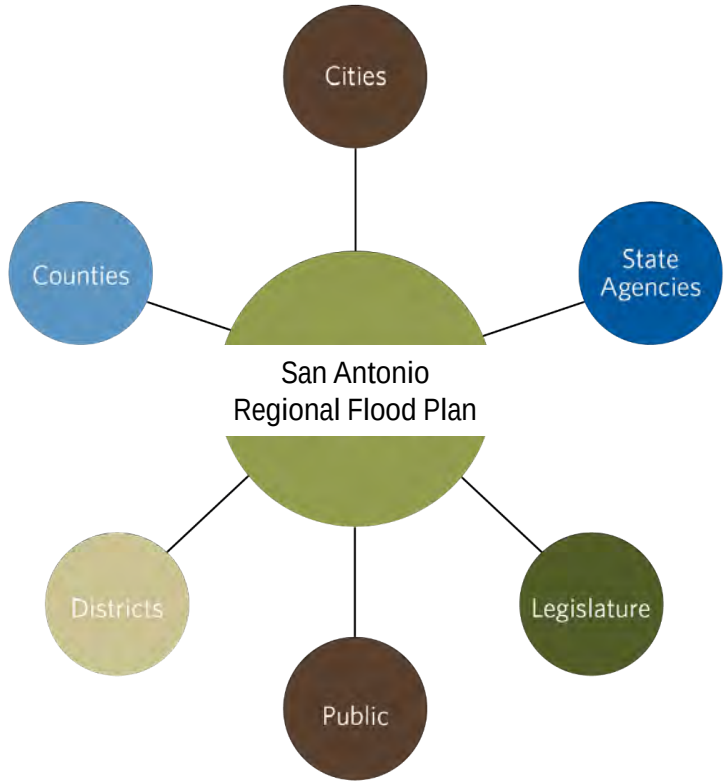
GLO, Lower Rio Grande Valley Flood Study - TX



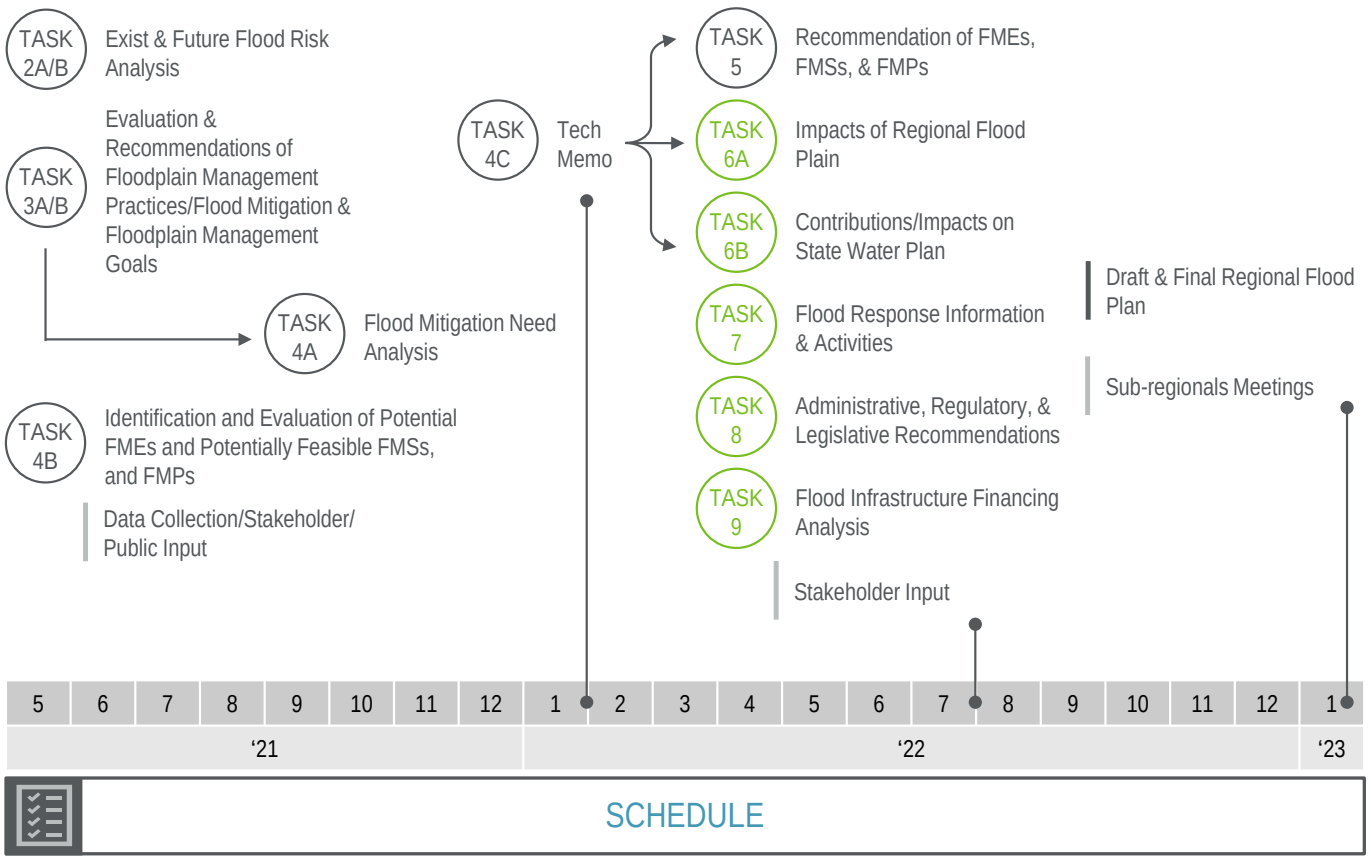
TWDB, Base Level Engineering- TX

Stakeholder Input

- Local knowledge, needs, and goals
  - **Flood Prone Areas**
  - **Flood Mitigation Projects, Evaluations and Strategies**
  - Existing “Major” Flood Infrastructure
  - Proposed or Ongoing Flood Mitigation Projects
  - Existing flood management practices
  - Short- and long-term management goals
- Stay in touch through the Region 12 Website: https://region12texas.org
- Anyone else that needs to be a part of this conversation?



TWDB Flood Planning Tasks



Story Map

[Region 12 Flood Plan (arcgis.com)]

GOALS

The purpose of this task is to identify flood mitigation and floodplain management goals for the San Antonio River region. The overarching intent of the goals is "to protect against the loss of life and property" set out to:

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

Table 3.1, Flood Planning Goal Categories and Benefits

Benefits / Overarching Goals	**Category 1** Flood Education and Outreach	**Category 2** Flood Warning and Readiness	**Category 3** Flood Studies and Analysis	**Category 4** Flood Prevention	**Category 5** Non-Structural Flood Infrastructure Projects	**Category 6** Structural Flood Infrastructure Projects
Protect life	◑	●	◑	◑	●	●
Protect infrastructure		◑	◑	●	◑	●
Protect property		◑	◑	●	●	●
Protect the environment	◑		◑	●	●	●
Protect/enhance water supply				◑	◑	◑
Sustain the economy		◑		◑	●	◑
Realize multiple benefits*				◑	◑	◑
Increase public awareness	●	●	◑	◑	◑	◑
Build community support	●	●	◑	◑		

◑ – *Potential benefit*

● – *Direct benefit*

** multiple benefits could include improved flood protection while improving water supply, increasing public recreation opportunities, etc.*

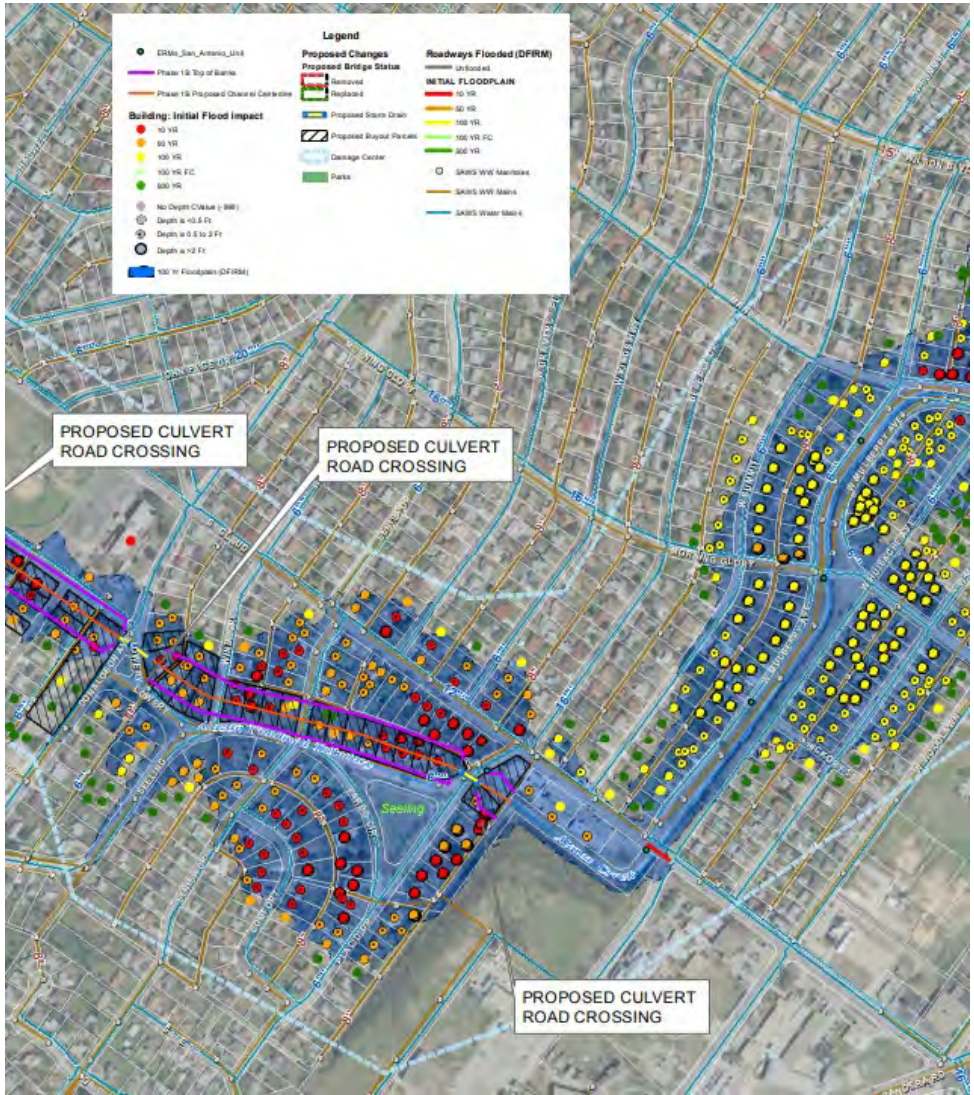
GOAL SURVEY

https://www.surveymonkey.com/r/25ZX6Z6

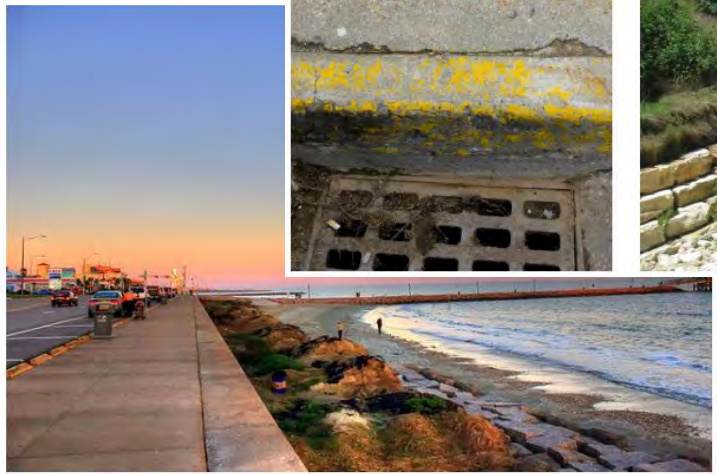
Flood Mitigation Alternatives

What is an FMP, FME and FMS?

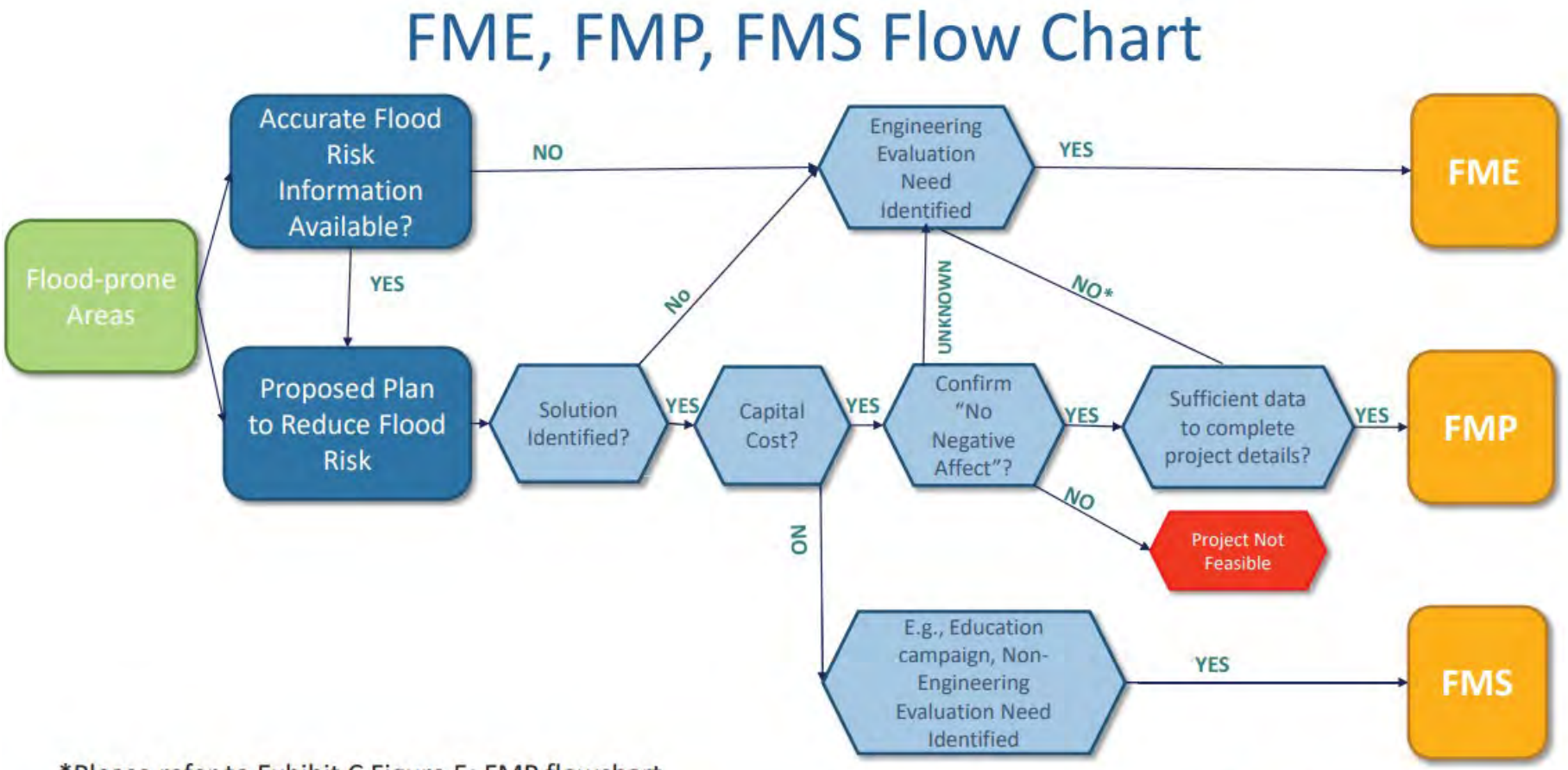
- **FMP – Flood Mitigation Project**
  - Structural: Bridges, culverts, storm drain, regional detention, nature-based projects
  - Non-structural: Property or easement acquisition, flood warning system, flood proofing
- **FME – Flood Mitigation Evaluation**
  - H&H Modeling, Flood Mapping Updates, Flood studies
- **FMS – Flood Mitigation Strategy**
  - Proposed plan to mitigate flood hazard
  - Flood Policy



Flood Mitigation Alternatives



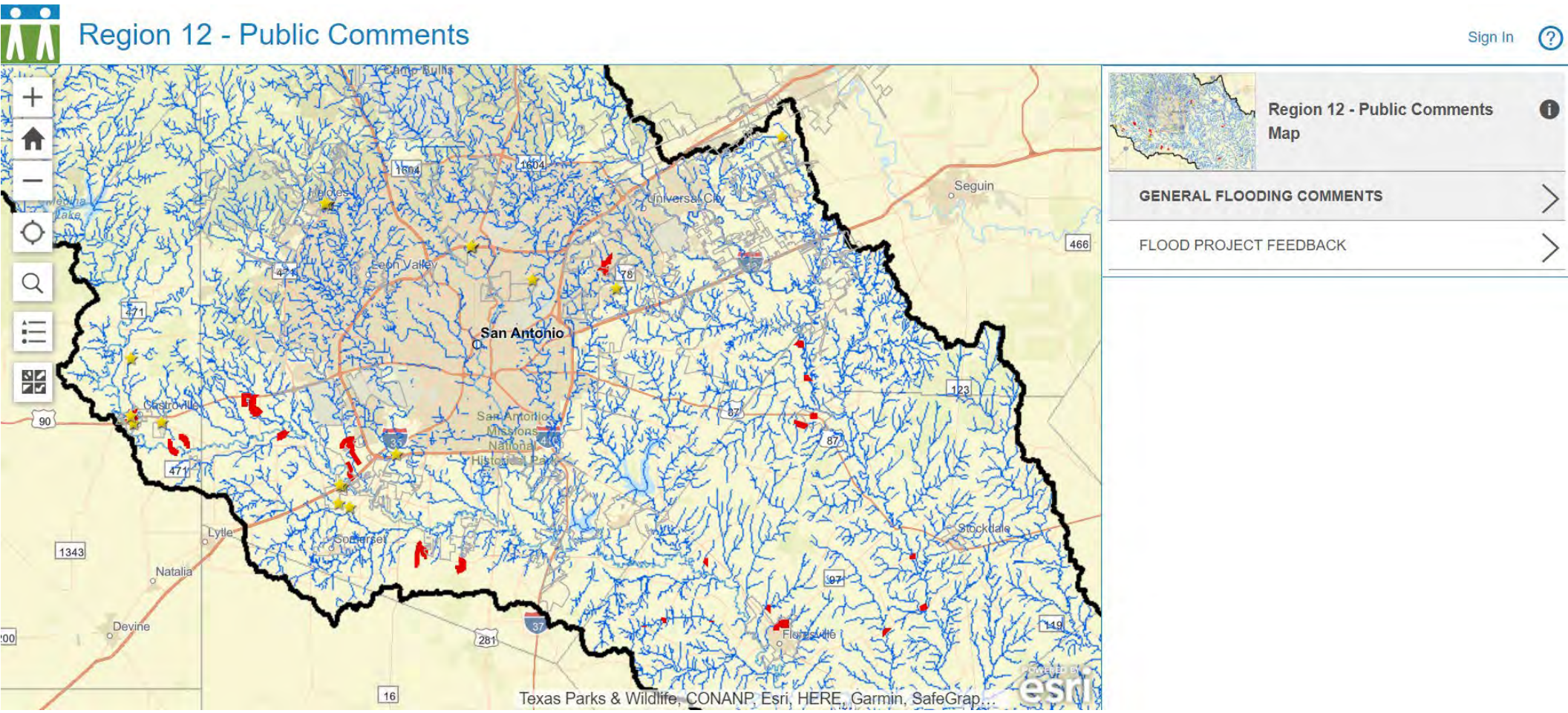
Flood Mitigation Alternatives



*Please refer to Exhibit C Figure 5: FMP flowchart.

Interactive Comment Map

[Region 12 - Public Comments (arcgis.com)]



Stakeholder Input

- **Your insight is valuable**
  - Tell us your experience, where you have seen or know of flood concerns
  - Tell us where you need flood mitigation projects
- No one size fits all solutions, unique needs for each basin in the region
  - A plan is only as good as the input
  - The flood plan needs to represent ALL community needs

Stakeholder Input

- **FMPs, FMEs and FMSs must be included in the State Flood Plan to receive future funding.**

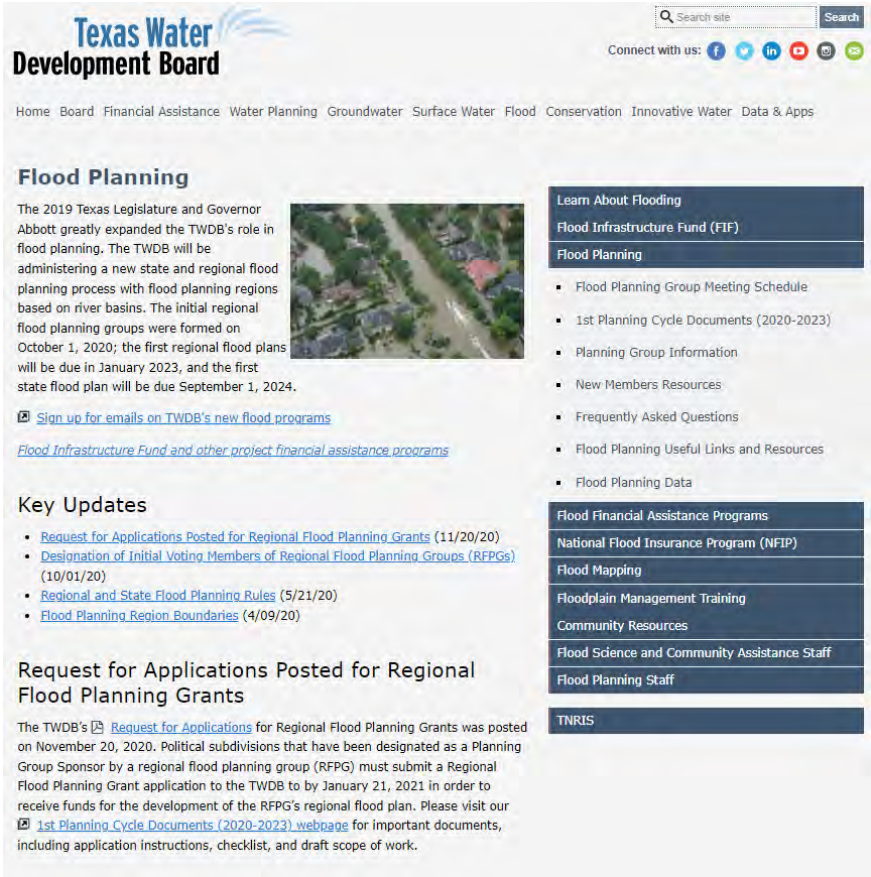
Stakeholder Input: How to Engage

- Contact us:

  https://region12texas.wpengine.com/contact-us/

- Share or visit the Region 12 Website: https://www.region12texas.org
  - Learn more about the Regional Flood Plan Public Meetings (all public)
  - See Stakeholder Surveys/ Interactive Map
- Learn more about state flood planning efforts:

  https://www.twdb.texas.gov/flood/planning/index.asp



Questions?

- **Contact info:** Ron Branyon
- **Email:** Ronald.Branyon@hdrinc.com
- **Phone:** 210.912.7105

E. Photos

SARFPG PUBLIC MEETING
Floresville, Tx
June 16, 2022