



Texas Water Journal

Volume 12 Number 1 | 2021





Texas Water Journal

Volume 12, Number 1

2021

ISSN 2160-5319

texaswaterjournal.org

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Commentary: Texas Reimagines the Fight Against Floods

Peter Lake^{1*}

Editor-in-Chief's Note: The Texas Water Journal invited former Chairman of the Texas Water Development Board (TWDB) and current Chairman of the Public Utility Commission of Texas, Peter Lake, to share his thoughts on the 2019 state flood assessment and other framework efforts. The opinion expressed in this commentary is the opinion of the individual author and not the opinion of the Texas Water Journal or the Texas Water Resources Institute.

Abstract: In response to the TWDB's 2019 state flood assessment and other efforts initiated in the wake of Hurricane Harvey, the 86th Texas Legislature developed a visionary new framework to fight future floods. The TWDB was tasked with overseeing and coordinating this new effort in conjunction with fellow state and federal agencies. In accordance with the guiding legislation, the TWDB is using a familiar framework based on key functional areas: science, planning, and financing. In the case of floods, that framework transforms into mapping, planning, and mitigation—the three pillars of fighting floods in Texas.

Keywords: Texas flood, flood planning, flood mitigation, flood mapping, floods

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Received 14 February 2021, Accepted 14 February 2021, Published online 10 June 2021.

Citation: Lake, Peter. 2021. Texas Reimagines the Fight Against Floods. Texas Water Journal. 12(1):58-67. Available from: <https://doi.org/10.21423/twj.v12i1.7133>.

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Terms used in paper

Acronym/Initialism	Descriptive Name
AMHI	Annual Median Household Income
BLE	Base Level Engineering
FEMA	Federal Emergency Management Agency
FIF	Flood Infrastructure Fund
FIRM	Flood Insurance Rate Map
FLICC	Flood Information Clearinghouse Committee
HUC	Hydrologic Unit Code
InFRM	Interagency Flood Risk Management
LiDAR	light detection and ranging
NFIP	National Flood Insurance Program
NWS	National Weather Service
RFPG	regional flood planning group
SVI	Social Vulnerability Index
SWIFT	State Water Implementation Fund for Texas
TNRIS	Texas Natural Resources Information System
TWDB	Texas Water Development Board
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey

INTRODUCTION

For more than 60 years, the Texas Water Development Board (TWDB) has been tasked with leading Texas efforts in securing the state’s water supply through the conservation and development of Texas’ water resources. The agency’s framework for fulfilling this mission combines the three key functions of science, planning, and financing. The TWDB’s scientific efforts identify and quantify Texas’ water resources, laying the foundation for the state water plan, which guides billions of dollars of financing to build Texas’ water supply through the State Water Implementation Fund for Texas (SWIFT) and other programs. In 2019, the 86th Texas Legislature tasked the TWDB with addressing the state’s flood issues by providing a dramatically enhanced toolbox built on a framework similar to that used to secure water supply. The Legislature’s vision of a comprehensive flood program that integrates science, planning, and financing establishes the state as a global leader in flood mitigation. Launching this groundbreaking effort is a monumental task, but thanks to the TWDB staff’s determined efforts, the program’s implementation is well under way.

BACKGROUND

Historically, the TWDB’s efforts related to flood mitigation were substantial but piecemeal. These efforts have included providing more than \$20 million in state-funded Flood Protection Grants, acting as the state’s National Flood Insurance Program (NFIP) coordinator, executing the Federal Emergency Management Agency’s (FEMA’s) Flood Mitigation Assistance Grant Program, and participating in FEMA’s Cooperating Technical Partners Program. In fiscal year 2019, the TWDB issued \$47 million in FEMA Flood Mitigation Assistance grants. In the same fiscal year, the agency’s Community Assistance Program staff also traveled 28,815 miles to provide technical assistance and conduct floodplain management workshops for local officials.

Most recently, the TWDB enhanced its services by creating the [TexMesonet](#) network of weather gages to monitor and report climatic data. This data is used to support flood monitoring and forecasting by the National Weather Service, river authorities, and emergency responders. In addition, the agency created the [Texas Flood Viewer](#) to provide near real-

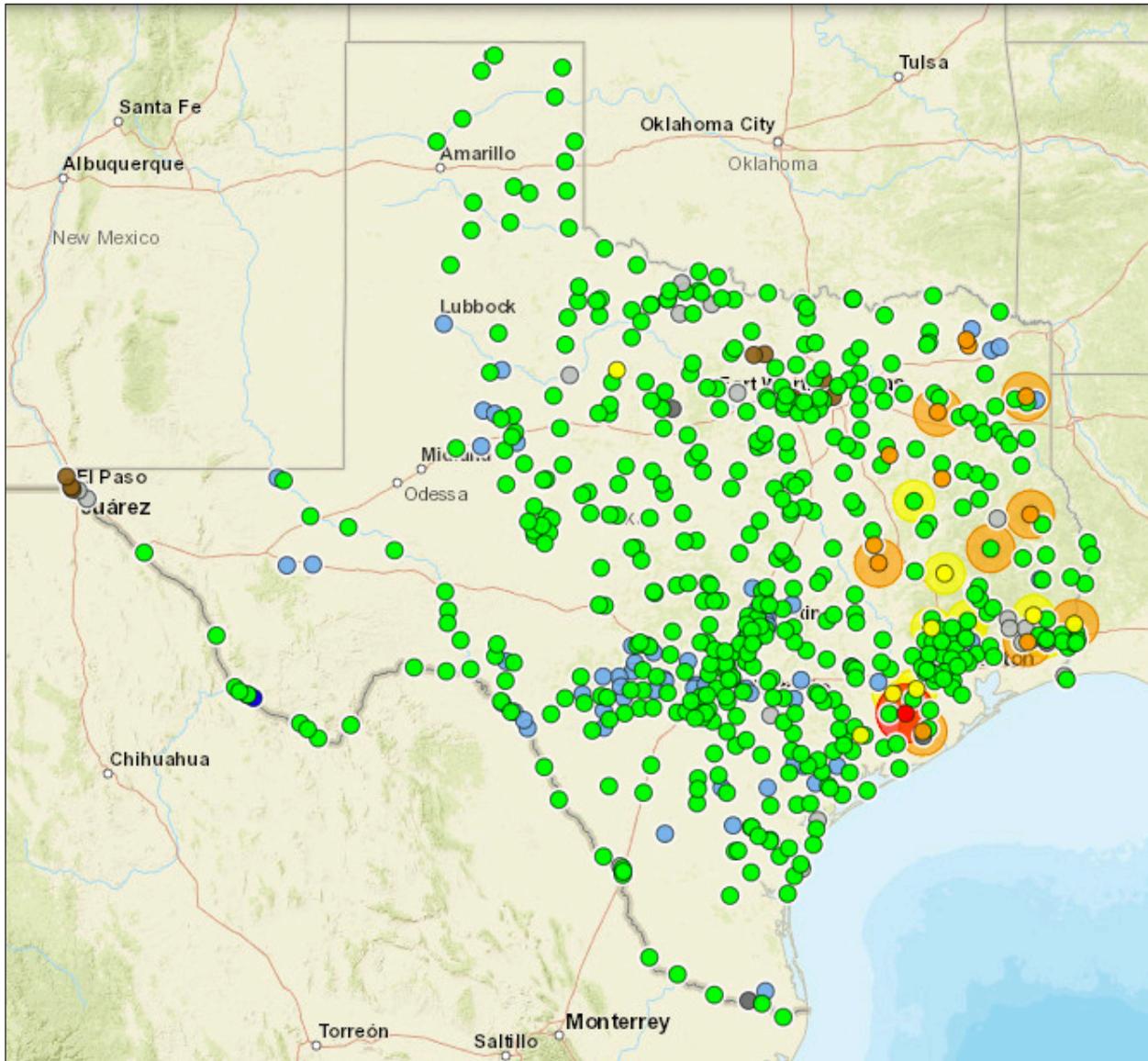


Figure 1. The Texas Flood Viewer website provides updates on flood conditions throughout the state.

time updates on current flood conditions across the state (Figure 1). Finally, after extensive stakeholder involvement, the TWDB generated a [state flood assessment](#) in 2019 to provide a comprehensive understanding of flood risks, challenges facing existing flood efforts, and needs for future flood mitigation. The assessment concluded that the lack of any coordinated planning efforts for flood events is a major shortfall, recognized that a substantial portion of Texas floodplain maps are woefully outdated, and that significant resources are needed to mitigate future flooding.

NEW FRAMEWORK

In response to the 2019 state flood assessment ([TWDB 2019](#)) and other efforts initiated in the wake of Hurricane Harvey, the 86th Texas Legislature developed a visionary new framework to fight future floods. The TWDB was tasked with overseeing and coordinating this new effort in conjunction with fellow state and federal agencies. In accordance with the guiding legislation, the TWDB is using a familiar framework based on key functional areas: science, planning, and financing. In the case

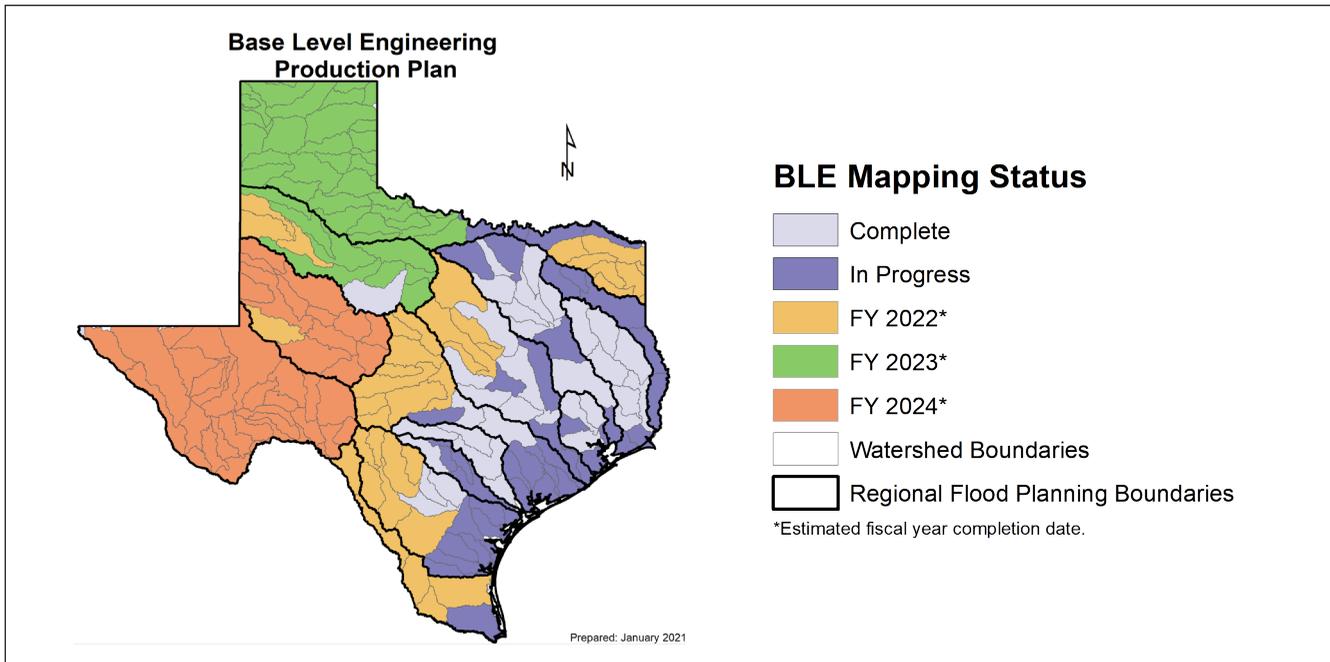


Figure 2. Base Level Engineering map schedule.

of floods, that framework transforms into mapping, planning, and mitigation—the three pillars of fighting floods in Texas:

1. **Mapping:** Updating and modernizing floodplain maps across the state and other flood science efforts
2. **Planning:** Coordinating flood mitigation efforts across watersheds and river basins in the form of a state flood plan
3. **Mitigation:** Financing studies and projects to mitigate the impacts of floods

Importantly, these three pillars of fighting floods—mapping, planning, and mitigation—are integrated in Texas’ new flood program. To access mitigation financial assistance (Pillar 3), project sponsors must utilize the best and most recently available floodplain maps (Pillar 1) and have coordinated with other stakeholders within the impacted watershed (Pillar 2). Once the first state flood plan is established in 2024, project sponsors must not only participate in the regional flood planning process but also have that specific project approved as part of the state flood plan in order to access mitigation financial assistance. This integration ensures that flood mitigation projects are based on the best science available and are designed in coordination with other regional stakeholders across the watershed.

Pillar 1: Mapping

The first pillar, mapping, is the foundation for planning and mitigation. Accurate floodplain maps are critical for fighting floods, but much of Texas lacks modern and up-to-date flood-

plain maps. The scope of the problem is clear—approximately half of the counties in Texas have no Flood Insurance Rate Maps (FIRMs), and most of the remaining counties have not updated their FIRMs within the last five years. As of 2018, the average age of Texas floodplain maps was 13 years old. For reference, this means a staggering portion of Texas floodplain maps predate the existence of the iPhone, which was released in January of 2007. No community in Texas should have to rely on decades old information to fight floods.

Base Level Engineering

The TWDB’s mapping efforts are currently focusing on Base Level Engineering (BLE) studies, which include LiDAR (light detection and ranging) mapping, hydrology, and hydraulics. In this way, the TWDB can provide updated flood hazard information that is immediately usable by a community to improve flood risk awareness, communication, and mitigation in a cost-efficient and timely manner. BLE studies can support the development of more detailed maps, local floodplain management, local hazard mitigation planning efforts, grant applications, flood insurance ratings, and disaster response and recovery activities. As a result, BLE studies will support the local decision-making process regarding flood mitigation and will be a key resource for broader regional planning that will occur as part of developing the state flood plan.

The TWDB will be generating BLE studies for the entire state and intends to update each part of the state approximately every five years (Figure 2). This biennium the TWDB is great-

ly expanding efforts to provide BLE mapping and data products statewide. Of the 208 Hydrologic Unit Code–8 (HUC-8) watersheds in Texas, 17 are currently under contract to be mapped using state funds, and an additional 25 are slated to go under contract in fiscal year 2021. In total, 30 HUC-8 watersheds have been mapped to date through combined TWDB and FEMA efforts. Mapping of the full state through this partnership is expected to be completed by 2024. The data and maps created by BLE studies are available online to view or download.

The data and analysis in the BLE studies will be important inputs for predictive flood modeling performed by TWDB partners at the United States Geological Survey (USGS) and the National Weather Service (NWS).

The BLE mapping efforts will not be creating FIRMs—generating an official FIRM requires a multi-year process that is very involved and costly. Only FEMA can officially approve and publish a FIRM. Official FIRMs generated by FEMA follow a rigid process involving four phases:

- **Phase 0:** Base Level Engineering—General mapping of the watershed
- **Phase 1:** Discovery—Outreach for public feedback on areas of interest/critical areas
- **Phase 2:** Flood Risk Study—Approximate and detailed mapping and modeling of areas of concern; initial demarcation of 1% and 0.2% probability areas
- **Phase 3:** Public Outreach and FIRM Production—FEMA invites public comment and makes final adjustments to the FIRM

An official FIRM is published after the completion of Phase 3. While generating official FIRMs is not the TWDB's current focus, the agency will be working closely with communities to ensure that their BLE studies will be compatible with the FEMA process and can be used to complete the remaining phases for any new FEMA FIRMs. As a result of the TWDB's efforts, countless Texas communities will be able to petition FEMA to complete the remaining phases and publish updated FIRMs much more efficiently than before.

As previously mentioned, there are three key components of BLE studies: LiDAR mapping, hydrology, and hydraulics. These three elements are important because they help define all elements of a flood. Put simply, a watershed or basin during a flood event is like an elongated bowl with an uneven bottom filling with water. LiDAR defines the shape of the bowl, hydrology defines how much water goes into the bowl, and hydraulics define where the water is going once it is in the bowl.

LiDAR generates high-resolution topographic data of the Earth's surface. In flood mitigation, LiDAR is a key factor because the land contours displayed in the output are the foundation on which accurate flood hazard modeling and map-

ping are built (i.e., the shape of the bowl). The Texas Natural Resources Information System (TNRIS), part of the TWDB, acquires LiDAR data through partnerships with other federal and state agencies. As of October 2020, all areas of the state now have updated LiDAR, which is available on the [TNRIS website](#).

The second component of BLE studies is hydrology—measuring how much water goes into the bowl. The TWDB utilizes several tools to develop this information, but the primary source is gages of some variety. The vast majority of these are stream and flood gages, which measure water levels at specific locations across the state. Knowing how high the water is and how fast it is moving before and during a flood event is critical information that plays a vital role in determining the frequency of flooding and alerting local citizens of imminent danger. This information is also key in flood prediction models used to alert downstream communities and inform rescue and recovery operations. Another important tool is [TexMesonet](#), which is a network of weather stations that measure rainfall, humidity, soil moisture, and temperature, among other data. Like stream gages and flood gages, TexMesonet stations help inform the vitally important flood prediction models. The TWDB, United States Army Corps of Engineers (USACE), NWS, and USGS are continually working together to link gages and weather stations and upgrade technology to provide as near real-time data updates as possible (approximately five minutes).

The final component of BLE studies is the hydraulic element—determining where the water is going. This exercise is largely captured in the flood prediction models developed by the USACE, and the TWDB works closely with the USACE in operating these models and producing approximate flood risk mapping data. In addition, the TWDB utilizes its expertise to analyze coastal bathymetry (analysis of coastal water depths and the terrain under the water) to help inform how riverine flows articulated in the flood prediction models will interact with ocean water at the coast.

Integrating and sharing the data and analysis

Once BLE data for a watershed is created, the results are incorporated into the USGS's [Base Flood Elevation Viewer](#) and other tools that allow the public to better understand flood risk at a particular geographic location. This online tool is part of a broader initiative called [Interagency Flood Risk Management](#) (InFRM). Products from the InFRM partnership allow the public access to a wide range of flood-related data and tools, including updated Atlas 14 rainfall data and watershed hydrology assessments that better estimate the potential magnitude of river flows, especially those controlled by large reservoirs. This collaborative effort is led by the NWS, FEMA, USGS, and USACE, but this partnership also includes close collaboration with the TWDB, among other agencies.

The Flood Decision Support Toolbox is one of InFRM’s most powerful tools: it provides visualization of current flood-related weather conditions and integrated flood prediction modeling data. This information can be used by private citizens and community leaders alike to pre-plan for evacuation routes ahead of flood events and to coordinate rescue efforts during and after flood events. This unprecedented aggregation of flood-related data and analysis is granular enough to be utilized at the neighborhood level and will be a vital tool in mitigating flood impacts in Texas. Completed in January 2021, the first phase of a TWDB/USGS partnership to enhance the [Flood Decision Support Toolbox](#) will allow users to save maps they generate, view building footprints, and produce a summary of potential flood damage reports. The second phase, which is scheduled to be completed by September 2021, includes the creation of a dashboard to display damage data depending on various potential flood depth scenarios.

Another important tool is the TWDB’s [Texas Flood Viewer](#). This website provides near real-time stream gage information from a network of gages across the state. Individuals can also sign up for alerts from specific stream gages in their area; these alerts will send a message to the individual’s mobile phone when the designated stream gage is entering a flood stage or is anticipated to enter into a flood stage.

Pillar 2: Planning

Of the three pillars used to fight floods, planning is the linchpin. Attempting to mitigate flood impacts without coordinated planning is, at best, an inefficient use of resources and, at worst, so counterproductive that it intensifies damage from flooding. What happens upstream impacts what happens downstream, and vice versa. For example, an upstream community that is proactively draining floodwaters at the same time a downstream community is retaining floodwaters does more harm than good. Under the TWDB’s new framework, flood planning will be coordinated at the regional level in regional flood planning groups (RFPGs) based on watersheds. The results of these planning efforts will be compiled into individual regional flood plans and then the first-ever state flood plan. The three goals of this state flood plan are to 1) provide orderly preparation for and in response to flood conditions and to protect people and property; 2) serve as a guide to state and local flood control policy; and 3) contribute to water development where possible.

Ingredients of the state flood plan

To best position Texas for future flood events, the state flood plan will examine past, present, and future efforts to fight floods. Many local and regional leaders around the state have been actively working to mitigate flood risk but have yet to

coordinate in such a comprehensive manner as this scale. This effort will include the following:

- A complete evaluation of existing flood infrastructure
- An analysis of completed, ongoing, and proposed flood control projects
- A list of projects that have received funding to date
- Identification of common standards and metrics for measuring floods and flood mitigation
- An analysis of development in the 100-year floodplain areas (as defined by FEMA)
- Recommendations for legislative policy changes needed to facilitate planning and project implementation in the future

Importantly, the members of the RFPGs—not the TWDB—are responsible for conducting this analysis and for designating the flood mitigation projects to be included in the state flood plan. The future of fighting floods in Texas will be built from the ground up by the people who are most directly impacted by floods in their unique corner of the state.

Regional flood planning groups

In April 2020, the TWDB designated 15 flood planning region boundaries (Figure 3), largely demarcated by major river basin boundaries. This designation was based on agency analysis and extensive stakeholder feedback. Due to the potential to be influenced by inter-basin flooding, ongoing coastal management efforts, and stream contribution to bays, coastal basins were combined with adjacent major river basins. In addition, smaller river basins were combined with larger basins due to similarity in types of flooding, relatively small populations, and administrative constraints limiting the number of regions that can be adequately supported by the TWDB. Of course, Texas has several large river basins as well. Some of these basins were split into two RFPGs to accommodate diverse geographies, topography, rainfall amounts, and land use patterns. Dividing select basins also eases the burden of RFPG logistics across such vast areas. In addition, RFPGs can divide themselves into smaller subgroups if they so desire (although the subgroups will still report up to the primary RFPG). Any such subgroups can be designated based on geography, land use characteristics, or other categories desired by the RFPG.

The most important element of the RFPGs is their members. They will identify current flood mitigation strategies, evaluate local and regional flood control policies, and designate future flood mitigation projects. These members, rather than the TWDB, will be deciding what is included in the state flood plan. The TWDB will provide administrative support and ensure quality control, but decisions about projects and infrastructure to fight floods in a particular region will be made

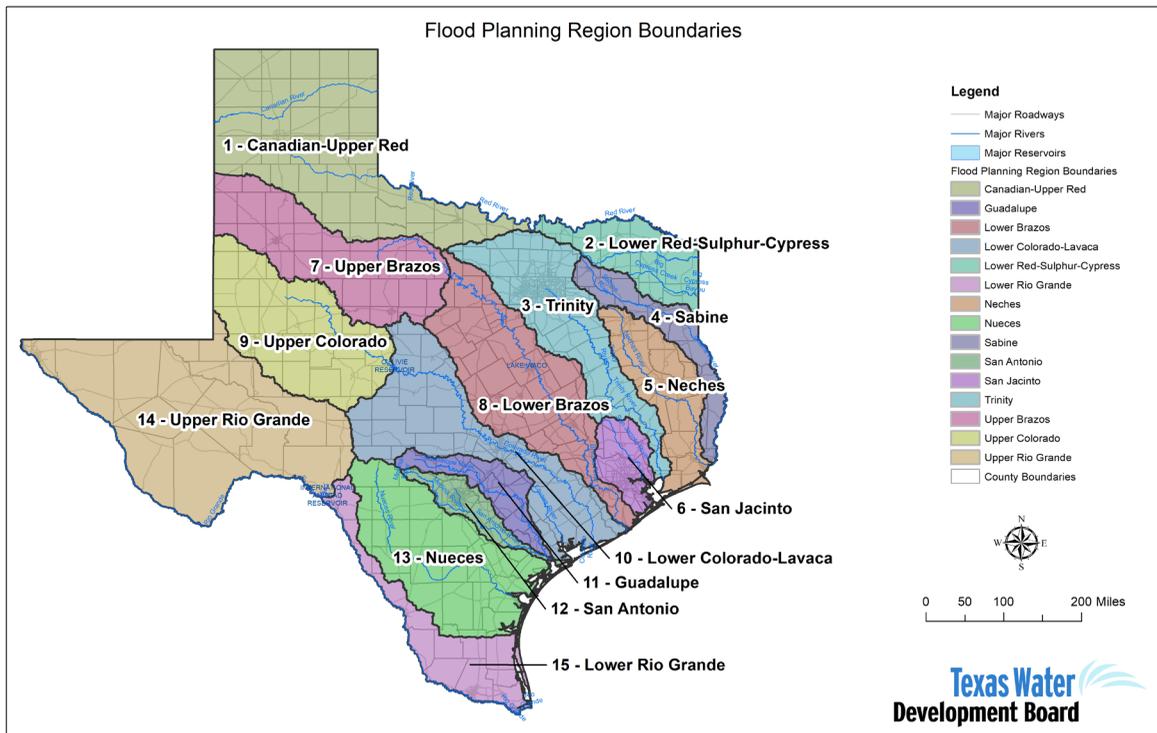


Figure 3. Regional flood planning boundaries.

by the members of that RFPG. Each group is required to have a member that represents one of each of the following interest groups:

- Agriculture
- Industry
- River authorities
- Counties
- Municipalities
- Water districts
- Electric generating utilities
- Public water utilities
- Environmental interests
- Small businesses

In order to fill the seats of RFPGs, the TWDB solicited applications from interested individuals across the state. Stakeholders around the state responded enthusiastically, submitting more than 600 applications for the 177 available seats. After a thorough evaluation, the TWDB appointed the RFPG members in October of 2020, and the first planning meetings occurred later that month.

Ultimately, the RFPGs must deliver their regional flood plans to the TWDB by January 2023. The mitigation projects included in those plans must be coordinated inside planning regions and across planning regions (if applicable), and most importantly, all projects must be approved by a vote of the RFPG members to be included in each regional flood plan.

The TWDB will then aggregate those plans into the first-ever Texas state flood plan and present it to the Legislature by September 2024.

Pillar 3: Mitigation

The final pillar in Texas’ new comprehensive flood program is mitigation—providing the financial resources to implement the projects needed to protect people and property from floods. To achieve this, the 86th Texas Legislature created the Flood Infrastructure Fund (FIF) and capitalized it with a one-time appropriation of \$793 million. Importantly, the Texas Legislature and voters enshrined the FIF in the Texas Constitution so it will exist in perpetuity, outside of normal budget cycles and fiscal year limitations. Funds in the FIF are being used to provide grants and zero-percent interest loans for structural and non-structural flood mitigation projects across the state, including but not limited to planning efforts, warning systems, public education, levee networks, drainage systems, and retention/detention infrastructure. To ensure FIF funds are used in the most productive and efficient manner possible, the TWDB established minimum standards required for a flood mitigation project to be eligible for FIF. These standards include the following:

- **Best and most recent data:** The project must utilize current science, especially regarding floodplain maps

Table 1. Prioritization criteria for the Flood Infrastructure Fund.

Criteria	Number of points
Priority projects: Flood protection planning for watersheds (Category 1 projects)	Projects where county has an annual median household income (AMHI) that is $\leq 85\%$ the statewide AMHI: 25
	All other projects: 22
Priority projects: Measures immediately effective in protecting life and property (Category 4 projects)	20
Rural applicant	Yes: 12
	No: 0
Emergency need due to recent or imminent failure or recent flood-related disaster declarations.	Recent failure: 10
	Recent flood-related disaster declaration for the proposed project area: 10
	Imminent failure: 5
	N/A: 0
Distributed benefits	Yes: 10
	No: 0
Estimated completion date	Within 18 months: 10
	Within 36 months: 5
	All others: 0
Additional criteria for planning, acquisition, design, and construction or construction projects only: water supply benefit	Yes: 10
	No: 0
Additional criteria for planning, acquisition, design, and construction or construction projects only: floodplain impacts (Scores are assigned relative to the responses for other proposed projects)	Top 25% of planning, acquisition, design, and construction or construction projects only: 12
	Top 50%: 9
	Top 75%: 6
	Bottom 25%: 3
Planning, acquisition, and design only (no construction/rehabilitation funds requested)	12
Non-structural flood mitigation elements constitute at least 20% of the total project costs	5
Tiebreaker: Social Vulnerability Index (SVI)	The tie is broken in favor of the project with the highest SVI

- **Proof of coordination:** Written documentation confirming the project sponsor has coordinated with other stakeholders in the area to be impacted by the project
- **No redundant funding:** Funds cannot be used to solve a problem that another project or funding source is already solving
- **NFIP standards in place:** The political subdivision sponsoring the project must have flood ordinances in place that at least meet the standards of the federal NFIP
- **Benefit/cost ratio:** A preference for a ratio above 1.0 to justify investments in flood mitigation projects (but projects will not be prioritized based on higher or lower benefit/cost ratios)

Once the state flood plan is in place, only projects in the plan will be eligible for FIF funding.

Prioritization of projects

Unfortunately, the need for flood mitigation financing in Texas greatly exceeds current funding capacity. As such, the TWDB has worked diligently to develop a prioritization system by which to allocate funds in this first round of the FIF program (Table 1). This prioritization system is built on a number of factors, listed in order of impact on prioritization score:

- **Planning:** Studies that focus on flood protection planning across a watershed
- **Protecting life and property:** Projects that are immediately effective in preserving life and property, such as early warning systems and low water crossing barriers
- **Rural populations:** Projects in rural areas of Texas

- **Emergency need:** Projects that address a need arising from recent or imminent failure of existing flood infrastructure or recent flood-related disasters
- **Distributed benefits:** Projects that provide mitigation impacts to a broader range of stakeholders than just the project sponsor
- **Early completion date:** Projects that will be completed sooner rather than later
- **Water supply benefit:** Projects that will provide water supply in addition to mitigating the impact of floods, such as detention structures that also recharge groundwater supplies
- **Floodplain exposure reduction:** Projects that reduce large numbers of structures in a floodplain
- **Planning, acquisition, and design:** Projects that are not ready for construction funds but are actively being pursued and developed
- **Non-structural:** Projects that mitigate the impact of floods through means other than physical infrastructure
- **Social vulnerability index:** Projects impacting communities of need (this is a tiebreaker)

Given that many communities in Texas have limited or no flood protection plans in place, watershed-level planning was given significant priority. In addition, the TWDB factored in timing as it relates to shovel-ready projects compared to projects that need more extensive mapping, planning, or engineering before they are ready for implementation. Projects that are always effective, such as early warning systems, stream gages, and low water crossing barriers, were also given top priority in the ranking system. These types of projects can be implemented now and will immediately save lives during flood events.

Other projects are more structurally intensive, geographically expansive, and scientifically complex. Of these, some may have been based on sound science and planned in coordination with regional stakeholders; these projects are considered shovel ready. As long as they do not create upstream or downstream issues, these projects are also a focus of the TWDB's prioritization system. However, other projects may require more underlying science to be completed and additional studies to assess regional impact and may benefit from additional planning. The prioritization system emphasizes funding the initial studies and planning efforts related to these kinds of projects rather than immediately committing funds to eventual construction.

Allocating grants vs. loans

The FIF's enabling legislation allows the TWDB to use both loans and grants to finance flood mitigation projects. Grants minimize the cost of a project to the local project sponsor, but

funds used as grants can only be used once—they never return to the FIF. Alternatively, loans require local project sponsors to build the project now but repay the borrowed funds eventually. However, loans benefit the broader FIF program by ensuring funds are returned to the FIF so they can be used to finance other flood mitigation projects in future years. Additionally, loan dollars returned to the FIF means the same state dollar can be loaned for a “local match” to draw down federal dollars many times over. The TWDB carefully evaluated the best balance of loans and grants for the FIF and allocated \$231 million for grants (30% of the FIF) and \$539 million (70% of the FIF) in zero-percent interest loans.

In determining which project sponsors would be eligible for grants, the TWDB focused on the economic need of each sponsor. While loan versus grant ratios vary by project type, in general the agency focused grant funds on project sponsors with the following characteristics:

- Low average median household income
- Rural and/or outside of a metropolitan statistical area
- High unemployment
- Declining population
- Nature-based projects

Floods impact all areas of the state, and flood waters do not stop at city limits or county lines. The TWDB is committed to financing effective flood mitigation projects to protect people and property across Texas in a manner that is both capital efficient and inclusive of as many viable projects as funding allows.

Implementation

The TWDB opened the first round of applications for the FIF in the spring of 2020 for the \$770 million allocated by the TWDB for grants and loans. The \$2.3 billion of requests for funding the agency received (corresponding to \$3.4 billion of total project costs) indicates both the need for flood mitigation in Texas and also the statewide enthusiasm for the program. Across the 285 applications received, the smallest project amount requested was \$35,000, and the largest project amount requested was \$182.7 million. TWDB staff carefully evaluated initial (abridged) applications and formally adopted the prioritized list of projects in a ranked list on September 17, 2020. High-ranking projects were then invited to submit more comprehensive applications (full applications) throughout the fall based on expected funds available in the FIF. On December 3, 2020, the TWDB made the first financial commitments from the FIF for a combined \$6.4 million that will be matched by an additional \$5.2 million from federal funds. The agency will continue to make financial commitments for FIF flood mitigation projects throughout early 2021.

Interagency coordination

Given the scale and complexity of various state and federal funding sources for flood mitigation projects, the TWDB, the Texas Division of Emergency Management, and the General Land Office are coordinating their efforts. This coordination will prevent duplication of efforts, synchronize scientific data collection and mapping, and maximize leveraging of state dollars for federal dollars. In addition, this joint effort by the primary state agencies responsible for flood mitigation will provide local leaders across Texas with clear information regarding the options available to them.

Flood Information Clearinghouse

The primary mechanism of coordination among agencies is the [Flood Information Clearinghouse website](#). This is a single stop resource for local leaders to enable them to access the resources they need in the most efficient and effective way possible. Launched in early 2020, the website includes an online “Request for Information” form that entities can utilize to get feedback on what state and federal financial assistance programs could best fit their unique flood mitigation needs. It also includes information on current funding opportunities, general project and entity eligibility by program, upcoming events related to flood mitigation financial assistance, and other resources. In the coming years, the TWDB will continue to work with state and federal partners to enhance the site and the process that entities use to seek financial assistance for flood mitigation projects.

Flood Information Clearinghouse Committee

The corresponding interagency Flood Information Clearinghouse Committee (FLICC) has been meeting regularly since May 2020 to review funding inquiries submitted to the Flood Information Clearinghouse website and to coordinate the use of state and federal funding for flood mitigation projects. After the FLICC reviews an entity’s “Project Information Form,” it notifies the entity of possible funding available for their project and the next steps needed to apply. The entity can then make the best decision for their community’s needs with the information and choices presented. The purpose of the FLICC is not to make choices for communities, but rather to provide them with information to enable their leadership to determine the best methods of mitigating floods in their area.

CONCLUSION

The landmark legislation from the 86th Legislature has ushered in a new era of fighting floods in Texas. Utilizing the TWDB’s history of water science, water planning, and water financing, the 86th Legislature’s Senate Bills 7 and 8 ([Senate Bill 7](#); [Senate Bill 8](#)) developed a comprehensive flood program integrating mapping, planning, and mitigation. Requiring project sponsors to utilize the best available data and information and participate in the state flood planning process will advance science-based solutions and drive regional cooperation in a way never seen before. Already, the interagency cooperation occurring across state and federal agencies is unprecedented in the history of flood mitigation in Texas. The extraordinary effort of updating complex floodplain maps, establishing a new statewide planning program, and building large infrastructure will not happen overnight. Despite the TWDB’s aggressive timeline in implementing this program, the full benefits will not be realized for years to come. But as we move forward—map by map, plan by plan, and project by project—Texas will be better able to protect people and property from the devastating impact of floods.

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