

ID	Recommendation	Discussion	Reference
L-1	Provide recurring biennial appropriations to the Flood Infrastructure Fund (FIF) for study, strategy, and project implementation.	Passed by the Legislature and approved by Texas voters through a constitutional amendment, the FIF program provides financial assistance in the form of loans and grants for flood control, flood mitigation, and drainage projects. The program provided an infusion of funding when passed into law in 2019, with additional funds allocated in 2023, but future allocations are not guaranteed for subsequent legislative sessions. Setting a regular appropriation of funds is necessary to help communities to better plan for future applications and to encourage them to develop projects and mitigation measures for consideration.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
L-2	Provide state incentives for establishment of dedicated drainage funding.	State law provides municipalities with the authority to establish local drainage utilities. Having a stable and predictable source of funding is conducive to both long-range planning and the timely development and implementation of flood risk reduction projects. Absent the creation of a drainage utility, local governments typically rely on federal partners to fund floodplain management and regulatory programs or utilize general tax revenues and/or municipal bonds secured and serviced with local tax revenues. The state should incentivize local communities to invest and plan for participation in, and funding of, dedicated drainage projects rather than rely solely on federal funding.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
L-3	Provide counties with legislative authority to establish drainage utilities and assess drainage fees.	State law provides municipalities in Texas the authority to implement governing ordinances within their jurisdictions including the establishment of drainage utilities or the assessment of drainage fees. This same authority is not currently granted to unincorporated areas of counties. These funds create a direct and reliable source of revenue to assist in the implementation and long-term maintenance and repair of drainage and flood risk reduction projects. Without the establishment of a utility or fee, governing entities must typically rely on federal partner funding, tapping into general funds, and/or issuing bonds. Any new drainage authority granted to unincorporated counties should not conflict with Municipal Utility Districts’ (MUDs) authority. The goals of the State Flood Plan would be fostered if counties with governance over unincorporated areas were granted the authority to establish drainage utilities or drainage fees for those unincorporated areas.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
L-4	Adopt or encourage more current statewide building standards, including recent International Building Code and International Residential Code editions and appropriate freeboard or higher flood standards.	Without a mandatory state building code, local entities in Texas do not score competitively for some federal funding programs, such as FEMA’s Building Resilient Infrastructure and Communities (BRIC) Grant. Updating building codes is also one of the most cost efficient and effective long-term mitigation measures that can be implemented.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
L-5	Establish and fund a levee safety program similar to the Texas Commission on Environmental Quality (TCEQ) dam safety program.	The TCEQ currently has in place a program that monitors and regulates certain dams across the state. The program calls for periodic inspections of dams that fall under its jurisdiction and pose a high or significant hazard. Recommendations are made to dam owners to help them maintain safe facilities. Levees, on the other hand, are not subject to a similar safety program despite posing a similar risk during flooding events.	First cycle R6 recommendation remains applicable. Recategorized as Legislative per State Flood Plan.
L-6	Continue and expand state funding for RFPG and TWDB flood planning activities, including interim-cycle support.	Continue the TWDB funding and support to perform FMEs and expand state funding for RFPG and TWDB flood planning activities, including interim-cycle support. RFPGs could continue outreach, project development, plan amendments, and coordination between planning cycles if funding were available.	New recommendation based on comments from the RFPG. Similar recommendation by multiple regions first cycle.
L-7	Clarify and expand county regulatory authority for floodplain management, land-use planning, waterway setbacks, permitting, and management of new development in unincorporated areas.	Uneven interpretation of county authority and limited ability to manage future flood risk from development outside city limits can limit effective implementation. Guidance or legislation should balance private property rights with public flood safety and no-adverse-impact principles.	New recommendation based on State Flood Plan. Similar recommendation by multiple regions first cycle.
L-8	Develop and fund programs to assist public and private dam owners, including NRCS dam owners, with evaluation, repair, maintenance, upgrades, and decommissioning studies where appropriate.	Aging dams can present increased downstream risk, especially where development has occurred since construction. Private owners and small public entities may lack resources for major repairs.	New recommendation based on State Flood Plan. Similar recommendation by multiple regions first cycle.
L-9	Leverage the recent Senate Bill 3 (SB3) establishment of a grant program for outdoor warning systems and sirens, and continue to expand funding for flood early warning systems, stream gages, low-water crossing safety improvements, flood hazard signage, gates, and roadway warning systems.	Benefits of SB3 for outdoor warning sirens is an example of how early warning and low-water crossing improvements directly support public safety, especially in regions with chronic flood risks.	New recommendation based on SB3.
L-10	Provide funding and incentives for conservation easements, land conservation, restoration, riparian protection, wetland protection, and landowner stewardship practices in flood-prone areas.	Build on Nature-Based Solutions Guidance and provide funding and incentives for conservation easements, land conservation, restoration, riparian protection, wetland protection, and landowner stewardship practices in flood-prone areas.	New recommendation based on Nature-Based Solutions Guidance.
L-11	Expand or create grant programs for ongoing operations and maintenance of existing flood mitigation, drainage, culvert, and natural infrastructure assets.	Many funding programs prioritize new assets, while existing infrastructure needs maintenance to remain effective.	New recommendation based on State Flood Plan. Similar recommendation by multiple regions first cycle.
L-12	Enable or support regional flood authorities, river authority programs, drainage districts, or watershed-based district boundaries where regional support is needed.	Flooding follows watersheds, not political boundaries. Regional authorities and watershed-based boundaries can improve implementation and administrative support.	New recommendation based on State Flood Plan. Similar recommendation by multiple regions first cycle.

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A-1	Continue efforts to clarify the process, investment requirements, and responsible agencies for converting Base Level Engineering (BLE) data into regulatory information or detailed Flood Insurance Rate Map studies.	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. Currently the state and FEMA are heavily investing in BLE across the state and there is a need to clearly communicate to local jurisdictions how to make this data regulatory or, if desired, improve upon it to make it eligible for incorporation into a detailed study on a FIRM. The steps for both paths remain unclear to many local jurisdictions and this large investment could be further leveraged.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
A-2	Develop model floodplain ordinances for General Law Cities (e.g., building codes, subdivision regulations).	General Law Cities are smaller cities, generally having populations under 5,000 people, which include a large number of the communities throughout Texas. They have limited regulatory powers based on what state statutes direct or permit them to do. Typical ordinance language used by larger Home Rule Cities may not always be applicable for use in General Law cities. Model ordinances should be developed by the TWDB that consider the specific limitations of General Law Cities.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
A-3	Continue to promote public education and outreach regarding flood awareness, preparedness, flood safety, flood-prone areas, and the importance of protecting floodplains. Partner with Texas Association of Counties to include dedicated outreach to Floodplain Administrators lacking technical flooding background (e.g., County Judges who serve as Floodplain Administrators may not have the necessary technical background).	The TWDB should partner with floodplain management organizations such as TFMA to develop and promote public flood risk education and outreach materials. Public outreach that provides opportunities for flood risk education and awareness helps to support public safety and flood mitigation measures in a variety of ways. A well-informed public can make better informed personal choices regarding issues that involve flood risk and also will be more likely to support public policies and mitigation measures to reduce that risk. These outreach materials and education can reach an even wider audience by partnering with organizations like Texas Association of Counties that have broader reaches to smaller communities and those that may not have dedicated Floodplain Administrators with technical backgrounds.	First cycle R6 recommendation remains applicable. State Flood Planning, Base Level Engineering, SB3 related to outdoor warning sirens in flash flood-prone areas, and Flood Analytics all offer knowledge of flood safety to the public. However, outreach understandable to local audiences and tailored to geography, flood type, and community context could be further enhanced.
A-4	Provide support for ongoing education/training regarding floodplain management in the form of no or low-cost online resources including training modules, webinars, and print resources. Target training for non-technical Floodplain Administrators (e.g., County Judges who serve as Floodplain Administrators may not have the necessary technical background).	Floodplain Administrators, especially in smaller Texas communities, are often responsible for a much wider field of responsibilities than just floodplain management as often is the case with County Judges. Also, these individuals may not have a technical background or be well versed in floodplain management practices. Providing support in the form of no or low-cost educational training including webinars and print resources tailored toward non-technical audiences would help to make effective floodplain management more prevalent across the state.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
A-5	Develop state incentives for local governments to participate in the FEMA National Flood Insurance Program (NFIP) and Community Rating System (CRS) program.	The NFIP is a vital tool that works with communities required to adopt and enforce floodplain management regulations that help mitigate flooding effects. The CRS is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the NFIP. These programs are essential to achieving the goals of the State Flood Plan and state led incentives that encourage and assist communities in participation are recommended.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
A-6	Develop a statewide database and tracking system to document flood-related fatalities that is publicly available. This could be an addition to the Flood Plan Data Hub to capture existing data from TxDOT, NOAA, or others.	Fatalities have historically occurred during extreme flood events throughout the state's and region's history. To limit these fatalities, a statewide database and tracking system with appropriate privacy restrictions could serve to aid in future project planning and regulatory decision making. Additionally, it could help with future outreach and education efforts that serve to break the cycle of actions taken during storm events that frequently lead to these outcomes. An example is the importance of not attempting to drive through flood waters. This effort could be an addition to the Flood Plan Data Hub to capture existing data from TxDOT, NOAA, or others.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
A-7	Assist via funding smaller jurisdictions in preparing grant and loan applications or make the application process easier. Provide training for Councils of Governments (COGs) to assist with funding process.	Developing applications for project funding can be a difficult task, especially for smaller jurisdictions with limited experience and access to funding to obtain expert assistance. Simplifying applications and making funding available specifically for application development would serve to make the process more accessible across the state and help close knowledge gaps. Additionally, developing resources at the COG level that would provide training to smaller communities regarding how to fully develop funding applications would provide further benefits and help to ensure opportunity to pursue funding to all.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
A-8	Modify or develop a model-based future conditions flood hazard data layer using BLE, Risk MAP, land-use data, and future rainfall information for use in future flood planning cycles.	Although the TWDB has prepared the 2060 Floodplain Maps for Texas, standard BLE model-based statewide future conditions data would improve consistency and reduce the need to rely on less detailed data sources and/or extrapolate from inadequate local mapping. Information regarding future flood risk presented in the RFPs and will aid to provide more uniformity in data and mapping quality across the regions.	Revised first cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
A-9	Continue efforts to reduce or eliminate barriers that prevent jurisdictions from forming effective partnerships to provide regional flood mitigation solutions.	Flood risk does not recognize jurisdictional boundaries, yet many flood mitigation programs have requirements that can often prevent multiple jurisdictions from working together. For example, if a primary sponsor meets all administrative requirements but additional jurisdictions do not this could jeopardize state funding eligibility. The process should still allow regional flooding solutions in this situation to remain eligible for state funding either through a waiver process or an update to current policy. Flood mitigation studies and solutions at the scale of Regional Flood Planning are rarely inclusive of a single jurisdiction, therefore interjurisdictional collaboration should be encouraged, and policies updated to better allow for it.	Revised first cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.

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A-10	Leverage the NBS manual to promote, incentivize, and provide training and technical resources for nature-based solutions, green infrastructure, natural floodplain preservation, conservation, and hybrid structural/nature-based approaches.	Natural floodplains provide flood risk reduction benefits by slowing runoff and storing flood water. They also provide other benefits of considerable economic, social, and environmental value that are often overlooked when local land-use decisions are made. Training and education opportunities leveraging the NBS manual would help policy makers to better understand the benefits of natural floodplains and conservation when making decisions regarding land use or mitigation projects.	Revised first cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
A-11	Recommend a statewide building standard of a minimum finished floor elevation to be established at or waterproofed to the FEMA effective 0.2% annual chance flood elevation as shown on effective Flood Insurance Studies except in areas designated as coastal flood zones or at the 1.0% annual chance flood elevation where Atlas 14 has been adopted.	The TWDB should encourage and incentivize higher building standards than those minimally required by federal regulations. This is especially true on minimum base flood elevations (BFEs) where recent events of historic flooding and updated rainfall totals by the National Oceanic and Atmospheric Administration Atlas 14 have revealed how much BFEs can change over time. New studies occurring across the state now expect to see increases of BFEs once the new Atlas 14 data is incorporated into models and maps. Jurisdictions that have required a freeboard over the current BFE have mitigated the risk of these increasing BFEs.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
A-12	Incentivize voluntary buyout programs, turning repetitively flooded properties/neighborhoods into green space, parkland, or any other flood risk mitigation measure as a potential alternative to large-scale construction projects.	Buyout programs have the distinction of being one of the only flood mitigation programs that leave no residual risk for the households they serve. Buyouts can also serve adjacent populations further by reclaiming environmentally beneficial floodplain land or providing a location for other community needs such as parkland. Many communities however are not supportive of buyouts, typically due to loss of tax revenue and other unintended consequences. Incentives should be developed to encourage this type of permanent flood mitigation and offset some of these consequences, especially in areas where structural mitigation projects cannot meaningfully reduce flood risk.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
A-13	The Texas Department of Transportation (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% ACE water surface elevation if determined with Atlas 14 rainfall. The 0.2% ACE water surface elevation should be used to determine elevation if Atlas 14 has not yet been adopted. TxDOT should also consider future conditions, such as urbanization and climate variability, 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 1.0% annual chance storm event. However, as a matter of policy and practice, TxDOT should strive to meet this standard, especially for critical infrastructure such as evacuation and emergency routes. By not acting on this recommendation, newly built transportation infrastructure could be at risk of extreme event flooding.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
A-14	Leverage State Flood Plan results, Base Level Engineering work products, and Flood Analytics recommendations and continue to improve methods for measuring and documenting flood damages, including uninsured losses, actual flooded structures, financial damages, agricultural damages, and industrial losses.	Reliance on flood insurance claims can undercount damages, and other economic consequences, in lower-income communities and undermine funding eligibility.	New recommendation based on State Flood Plan. Similar recommendation by multiple regions first cycle.
A-15	Provide funding and process support for multi-jurisdictional cooperation on FMEs, FMSs, and FMPs.	Regional solutions often require an initial sponsor and seed funding before affected jurisdictions can coordinate effectively.	New recommendation based on State Flood Plan and FIF IUP comments. Similar recommendation by multiple regions first cycle.
A-16	Clarify roles and responsibilities for floodplain management in extraterritorial jurisdiction (ETJ) areas.	Clear ETJ authority would reduce gaps or overlaps in responsibility for floodplain management, permitting, and drainage standards.	New recommendation based on State Flood Plan. Similar recommendation by multiple regions first cycle.

TABLE 3: FLOOD PLANNING RECOMMENDATIONS			
ID	Recommendation	Discussion	Notes
F-1	Regional flood plans are required to provide an indication of whether a flood control solution meets an emergency need. Guidance should be provided on what constitutes an emergency need.	Regional flood plans are required to provide an indication of whether a flood control solution meets an emergency need however no further guidance or definitions are provided by the TWDB. Uncertainty remains on if emergency need may refer to infrastructure facing imminent failure and/or flood risk that poses hazards to emergency services or otherwise. How individual Regional Flood Planning Groups determine if a project meets an emergency need is likely to vary greatly. To encourage consistency across all regional flood plans, further guidance, definition, and/or criteria should be provided on what constitutes an emergency need.	Completed since first cycle, to be removed.
F-2	Lessen requirements for a project to be considered a FMP.	The San Jacinto RFPG pulled together many planning level studies that are ready for design and construction. A majority of these projects were missing a benefit cost analysis (BCA) due to local preference to not disadvantage lower income communities. Even though models were available, and all other strict criteria was met such as meeting a no adverse impact requirement, these projects were all designated as FMEs due to the BCA requirements. It is also well understood that early in final design, many of these requirements can be fulfilled. Consideration should be given to well-developed projects that may be lacking single, non-critical items, that can easily be fulfilled early in the design process.	Completed since first cycle, to be removed.
F-3	Scoring criteria and methodology for projects that benefit agricultural activities should be updated to allow for these types of projects to compete with urban focused projects.	The scoring or award of funding for projects that benefit agricultural activities based on a traditional benefit-cost ratio will not feasibly allow for these projects to compete against more urban projects with higher value infrastructure or damage. Protection of agricultural land use can also help to maintain their use as beneficial floodplains. Guidance should be developed and provided on a TWDB-preferred methodology to account for benefits to agricultural areas and activities and include consideration of agricultural benefits when ranking projects in the State Flood Plan.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
F-4	Continue progress demonstrated in the most recent FIF IUP to meet the needs of lower population rural areas by enhancing the project scoring that is equitable to sponsors regardless of community size, population, land area, or urban/rural status.	Scoring and awarding of projects should not be affected by a community's overall population or size. Certain proposed scoring guidelines include metrics that would automatically give larger communities the lowest score possible since it would divide the benefits by total population. Scoring metrics should not be included that automatically disadvantage project sponsors because they are large in area or population.	Revised first cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
F-5	Apply the insights from the NBS guidance manual to help develop stand-alone scoring criteria for nature-based solutions so they can be competitive with non-nature-based projects.	The formula for scoring of nature-based solutions should not be based on nature-based project costs as a percentage of overall costs as nature-based projects are almost always more cost efficient than large, gray infrastructure projects. This disparity will also put them at a disadvantage. An alternative suggestion is to determine the overall value of the project and the way the project functions in terms of the nature-based aspects and their relationship to the value and function of the overall project. Specific examples could be helpful in describing the scoring (for instance, preservation of an existing natural stream and wetlands would score 10; a newly constructed retention pond with natural vegetation that functions like a natural area would score slightly less; etc.). Goal is to develop stand-alone metrics for nature-based projects.	Revised first cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
F-6	Expand consideration and priority for FMEs that establish initial FEMA effective floodplains.	Development of high-quality FEMA floodplain maps is a key component in a successful flood mitigation strategy. It provides many tools used to regulate flood risk and typically grants local authorities additional authorities. One key feature is the automatic establishment of Base Flood Elevations (BFEs) which, in addition to reducing future flood risk, would allow communities to better consider floodplain management practices and identify FMPs.	First cycle R6 recommendation remains applicable. Recommended by multiple regions first cycle.
F-7	Improve flood risk identification by incorporating first-floor elevations and better population-at-risk methods.	Structure footprints alone can overestimate risk where buildings are elevated above BFE.	New recommendation based on State Flood Plan. Similar recommendation by multiple regions first cycle.
F-8	Develop a simplified amendment process for regional flood plans, including advancement of recommended FMEs to FMPs based on FME results.	A more efficient amendment process would allow plans to incorporate newly developed projects between full planning cycles.	New recommendation based on State Flood Plan. Similar recommendation by multiple regions first cycle.