



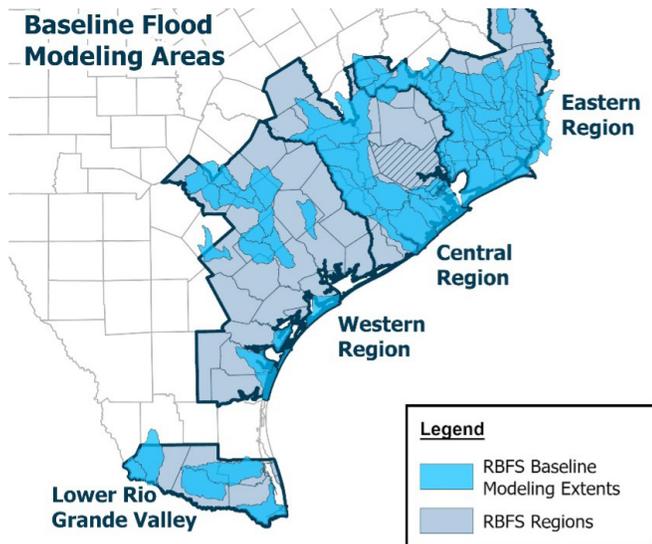
Texas General Land Office

River Basin Flood Studies (RBFS)

Baseline Flood Modeling Project

A Coordinated Approach to Flood Risk Management

As part of the Texas General Land Office's (GLO) River Basin Flood Study (RBFS), baseline flood modeling was performed in the highest-risk watersheds without existing modeling commensurate with flood risk. Using the best available data, these models apply hydrologic and hydraulic methods to simulate how water runs off the land, flows through rivers and channels, and interacts with coastal conditions. The results help map flood risk, identify vulnerable areas, improve emergency planning, and guide future flood mitigation strategies.



Why It Matters

- Data-Driven:** Uses rainfall, river flow, terrain, land use information, and more to create realistic simulations.
- Decision Support:** Helps communities and agencies plan projects, prioritize investments, and prepare for disasters by providing validated modeling data.
- Foundation for Next Steps:** Sets the stage for exploring mitigation solutions and evaluating potential projects.

How Communities Can Leverage Modeling Efforts

- Integrate the modeling into the risk assessment of your Local Hazard Mitigation Plan
- Represent existing flood risk in upcoming 2028 Regional Flood Plans (funded and managed by TWDB)
- Update to assess impact of anticipated changes for future conditions (such as future development)
- Analyze flood mitigation solutions and use as support for funding applications
- Inform boundary conditions used in local drainage studies
- Adopt as best-available data to communicate riverine and coastal flood risk and manage development around floodplains
- Inform Capital Improvement Program (CIP) and prioritization

64

baseline modeling packages

22,000

square miles of modeling

51

counties with modeling

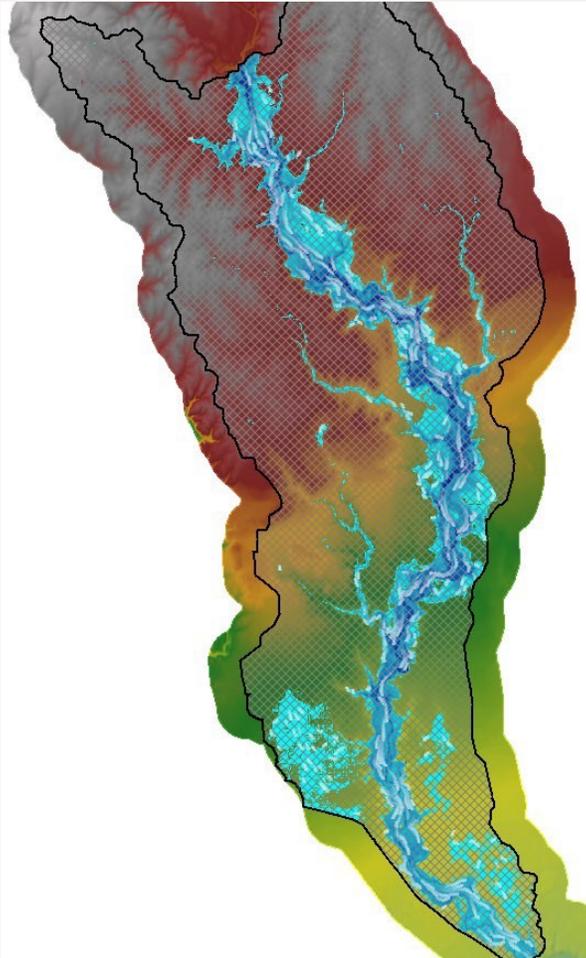


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Modeling At-A-Glance



HEC-RAS model results showing water moving through the Ragsdale Creek watershed during a 100-year storm event.

- **Rainfall & Hydrology**

United States Geological Survey (USGS) high water marks and gage records, as well as Texas Department of Transportation road closures from past flood events, used to verify modeling results.

- **Hydraulic Modeling**

The Hydrologic Engineering Center's River Analysis System (HEC-RAS) was used to build 2D models of rivers, channels, and watersheds to represent flow dynamics. Terrain (lidar), bathymetric, land use, and hydraulic crossing structure data used to inform and add detail to the model domain. Sensitivity and uncertainty analyses performed to optimize model parameters and ensure model accuracy.

- **Coastal Modeling**

Where applicable, incorporated surge and tidal boundary conditions for coastal areas. U.S. Army Corps of Engineers (USACE) Coastal Texas Study and NOAA tidal gages used to inform coastal analyses.

- **Calibration & Validation**

Compare both hydrologic and hydraulic model output to observed data to confirm accuracy where data was available. United States Geological Survey (USGS) high water marks and gage records, as well as Texas Department of Transportation road closures from past flood events, used to verify modeling results.

- **Quality Assurance**

- Modeling approaches reviewed by USACE. Modeling packages independently reviewed by GLO's Technical Flood Model Reviewer.

Accessing Baseline Models

Baseline modeling packages can be downloaded from the Texas Disaster Information System (TDIS) Data Modeling and Query Tool (DMQT): dmqt.cloud.tdis.io. Files available for download include hydrologic & hydraulic models, the associated report, modeling results, supporting data, and geospatial files.

Questions?



recovery.texas.gov/rbfs

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