

Flooding In Texas

Moving Toward a Safer Future

OKLAHOMA GOVERNOR'S WATER CONFERENCE

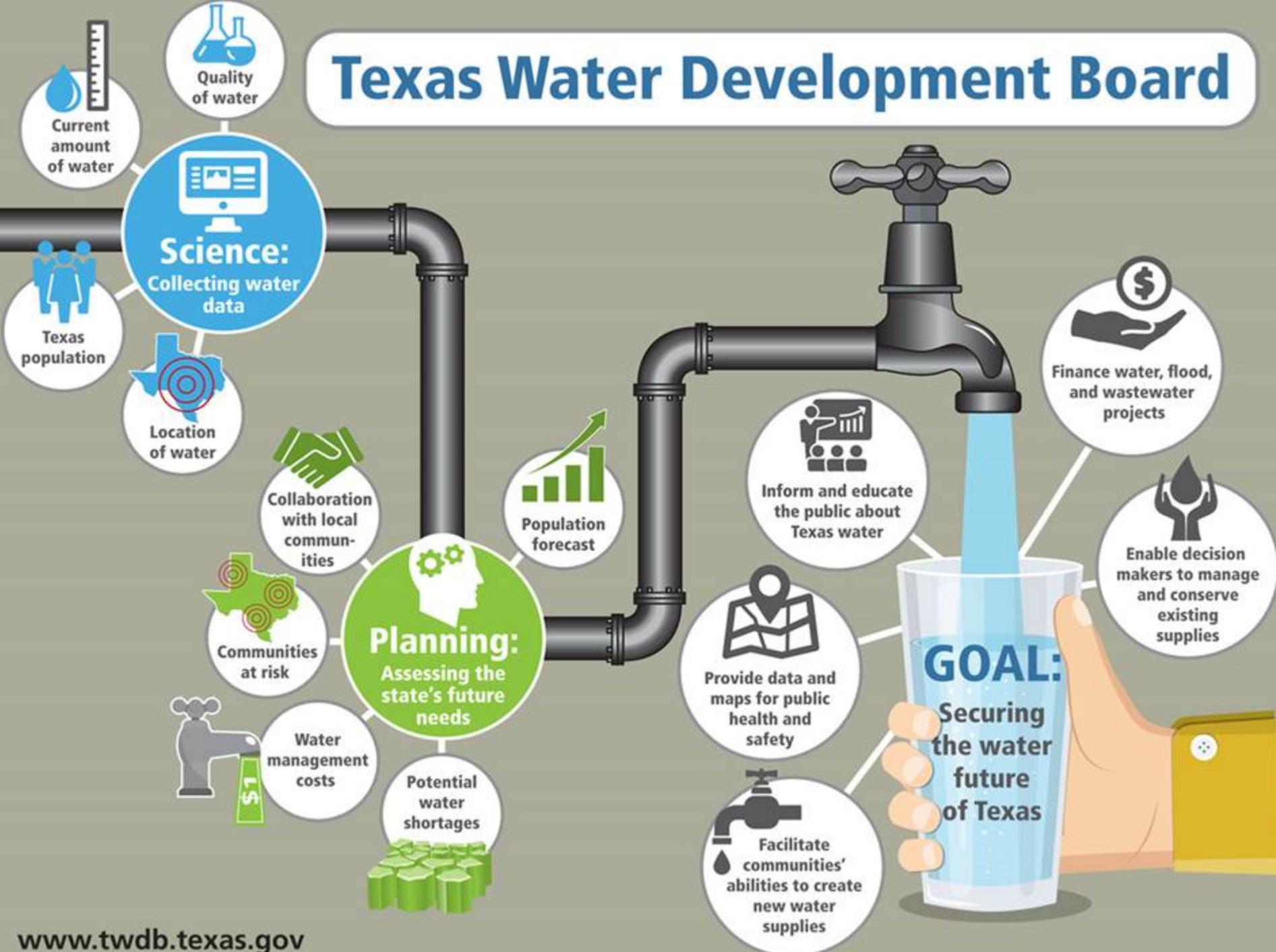
Sam Marie Hermitte

Assistant Deputy Executive Administrator

Water Science & Conservation

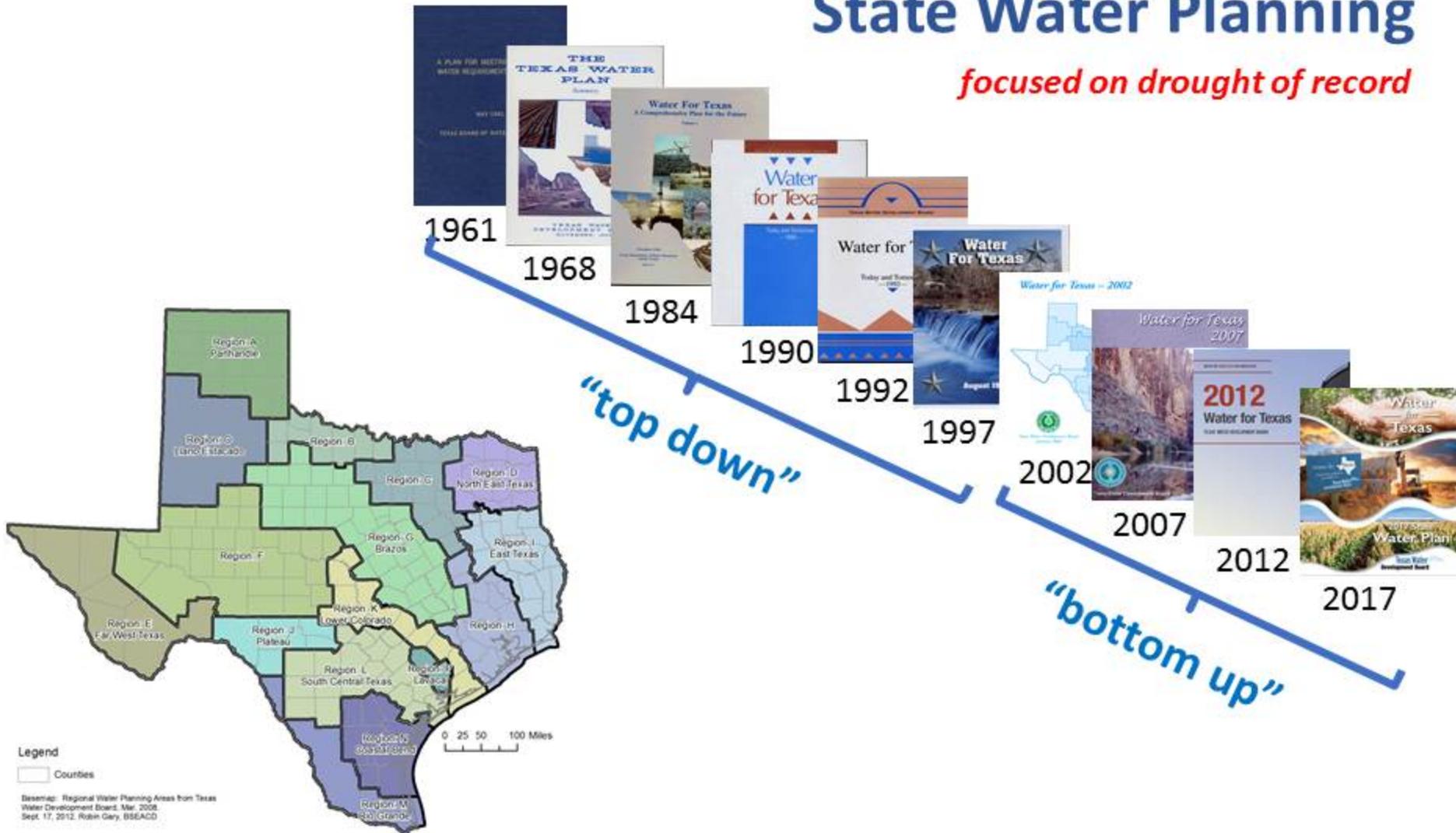
December 5, 2019

Texas Water Development Board



State Water Planning

focused on drought of record



TWDB Flood Responsibilities

- Prior to 2015:
 - Funded **state grants** for flood protection planning to conduct feasibility studies for an entire watershed to evaluate both structural and nonstructural solutions
 - Administered **federal Flood Mitigation Assistance Grant Program**
 - Served as **state coordinator** for:
 - National Flood Insurance Program
 - Cooperating Technical Partner Program



**Blanco River
Wimberley, Texas
(2015)**

TWDB Flood Responsibilities

	DATA	SCIENCE	COMMUNICATION	FUNDING
NEW EFFORTS				
EXPANDED EFFORTS				

2015 MOU \$ 6.8 million
85th Legislature \$7.8 million

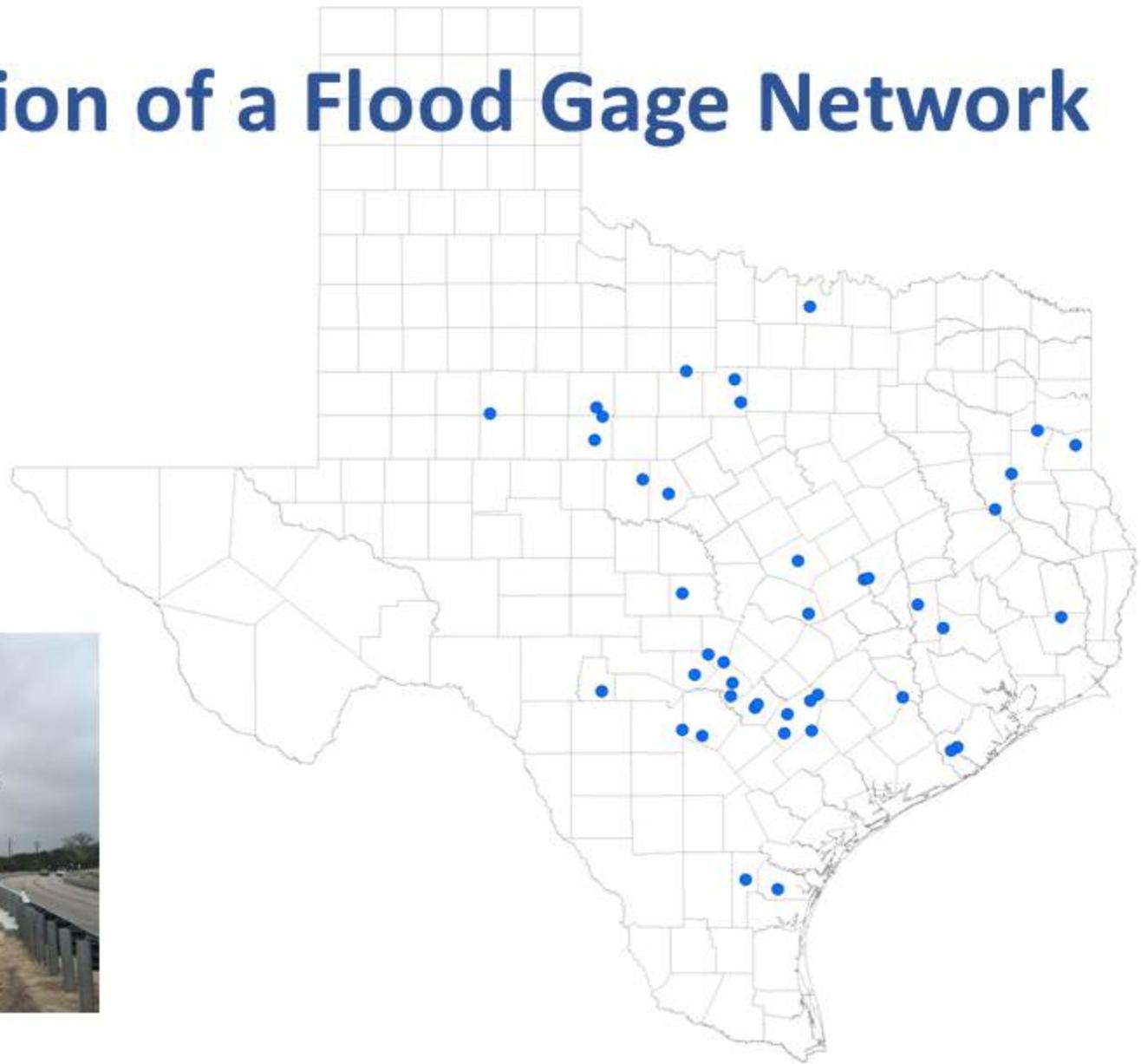
New and Expanded Responsibilities

	DATA	SCIENCE	COMMUNICATION	FUNDING
NEW EFFORTS	Flood Gages	River Forecast Model Calibration	TexasFlood.org	
	TexMesonet		TexMesonet.org	
			State Flood Assessment	
EXPANDED EFFORTS	Lidar Data	Flood Mapping	Community Outreach	Flood Protection Grants

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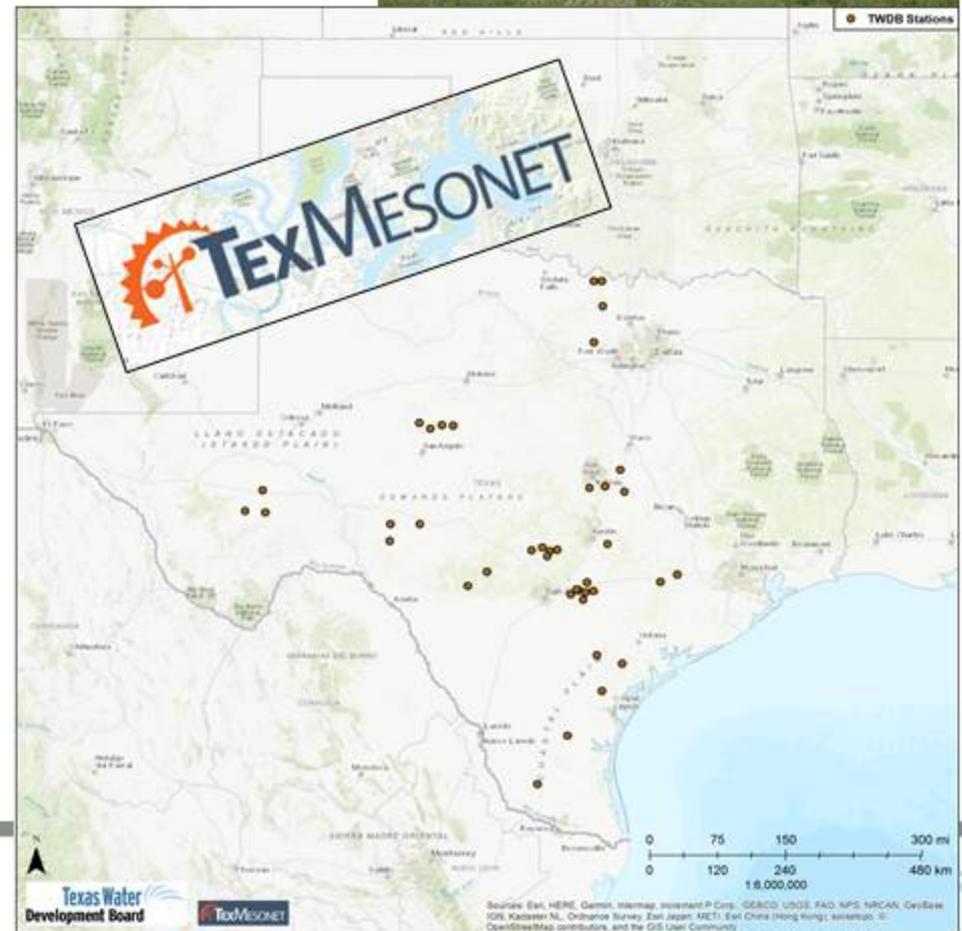
Creation of a Flood Gage Network



Creation of TexMesonet

statewide earth observation network

- Collects:
precipitation, wind direction/speed, air temp., relative humidity, soil moisture/temp.
- Supports flood & drought monitoring and forecasting



Hurricane Harvey (2017)

Image: NASA Earth Observatory

An extraordinary event

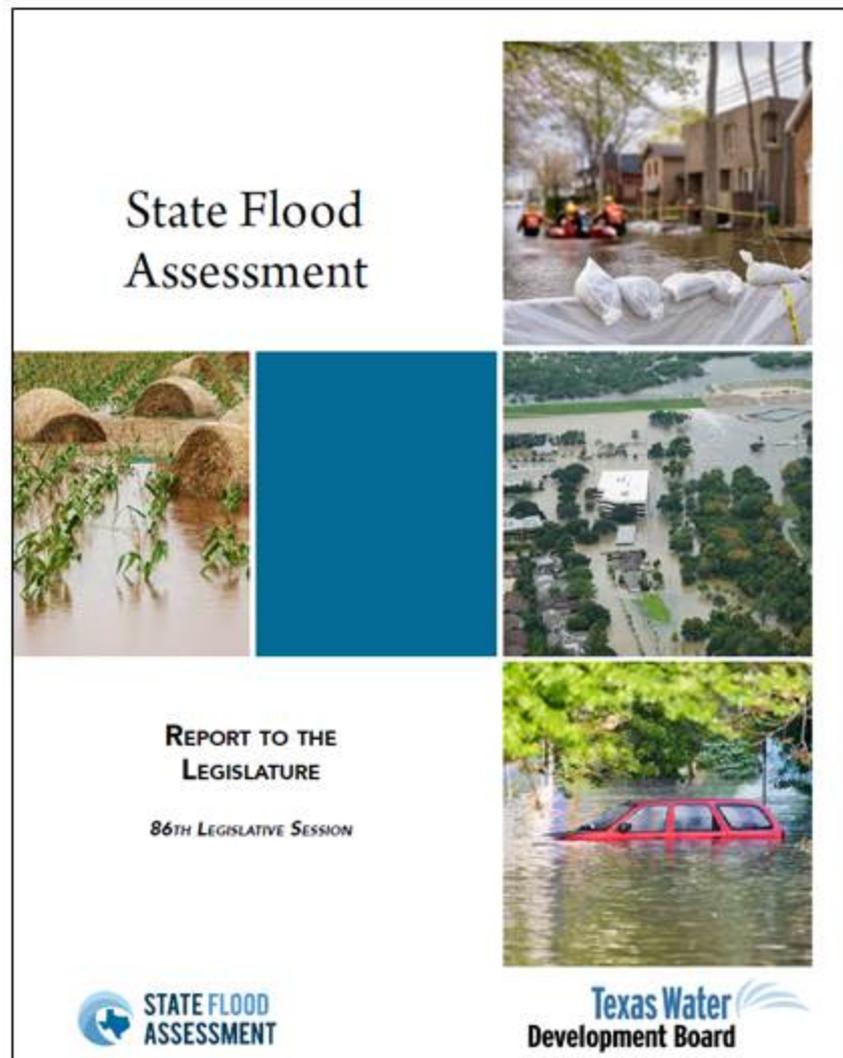
Flows to the Coast

- Coastal inflow averages **41 million acre-feet** per year.
- Total flows to the coast for 2017 were **57.8 million acre-feet**.
- Hurricane Harvey delivered **29 million acre-feet**, equating to **51%** of the annual inflow for 2017.



STATE FLOOD ASSESSMENT

1. Assess risk and roles
2. Estimate flood mitigation costs
3. Envision the future of flood planning in Texas

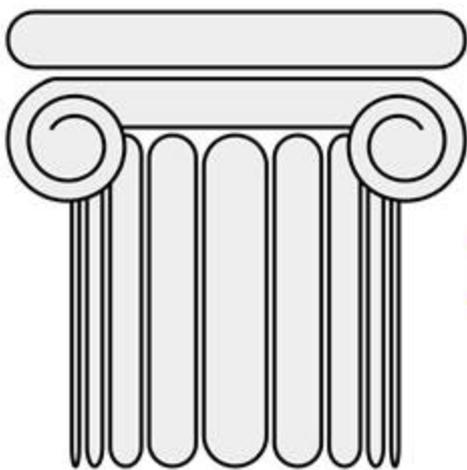


Flood-related Roles and Responsibilities

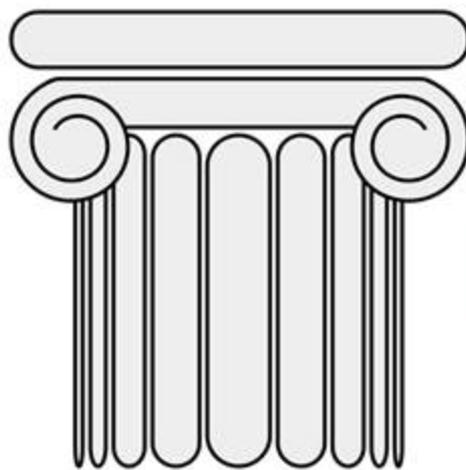


Three Pillars of Flood Risk Management

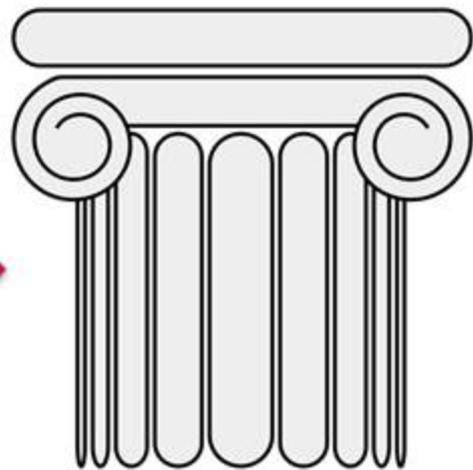
Mapping



Planning



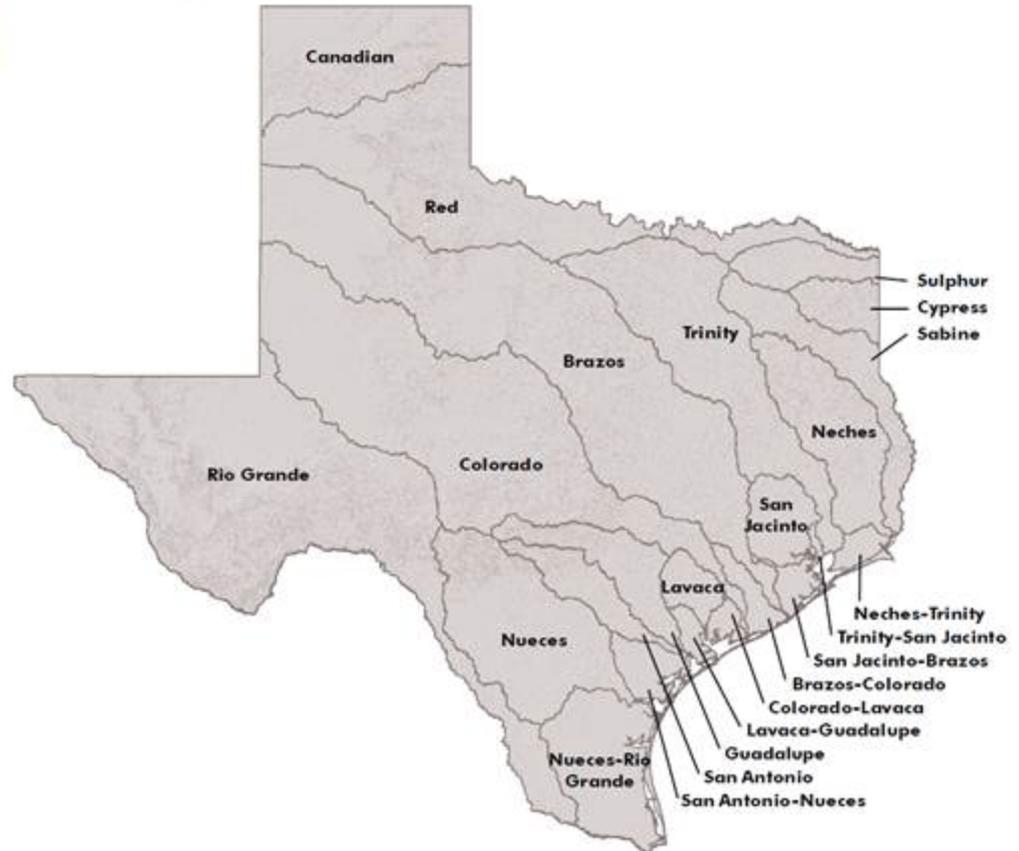
Mitigation



86th Legislative Session (2019)

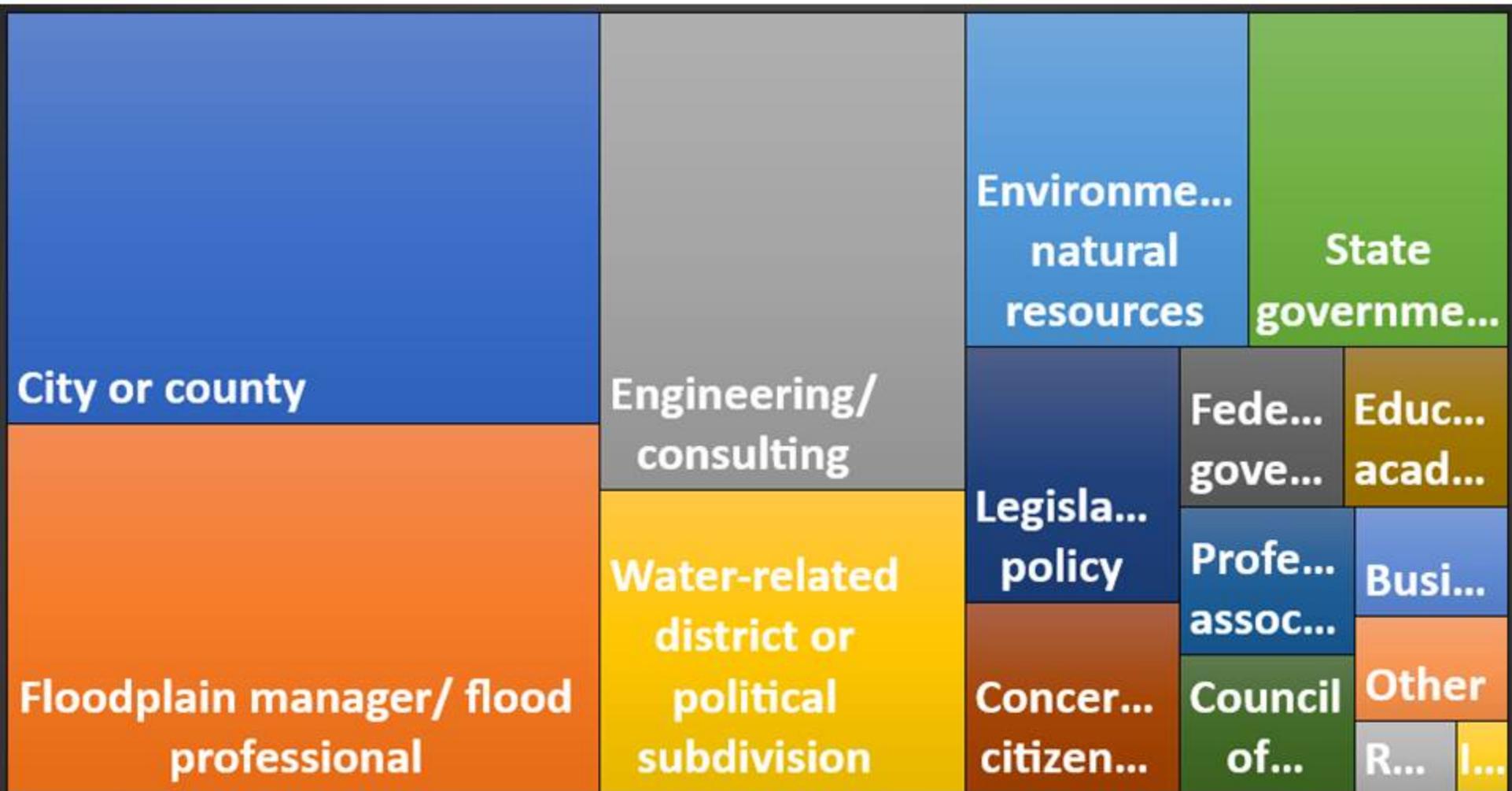
Senate Bills 7 & 8

- Watershed-based flood mitigation planning
- Data/science-driven
- Water supply planning model (bottom up)
- 5-year cycle
- Implement mitigation projects \$



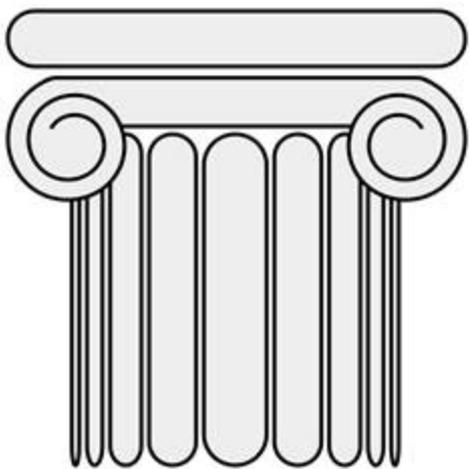


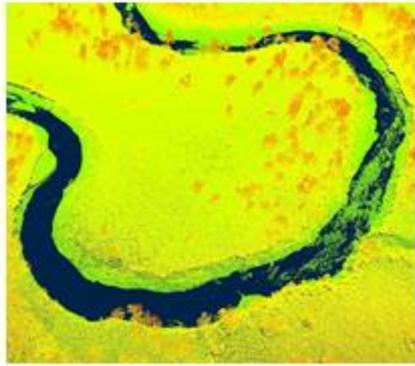
Attendees represented...



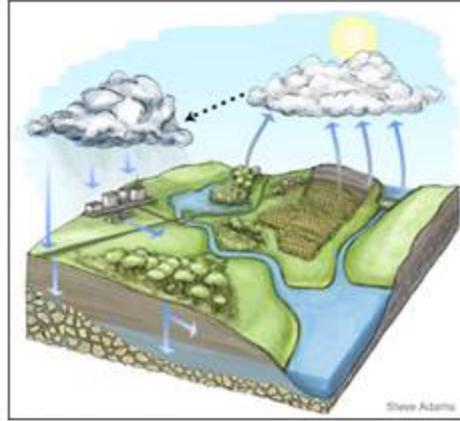
The Path Forward

Mapping

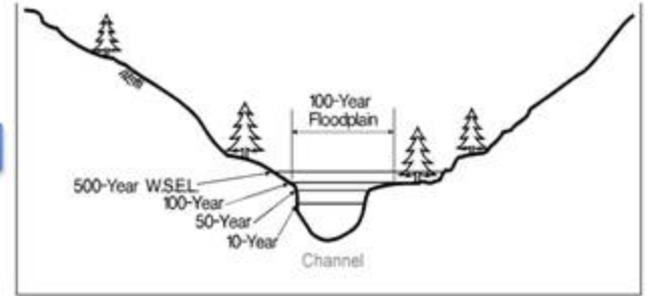




LiDAR



Hydrology



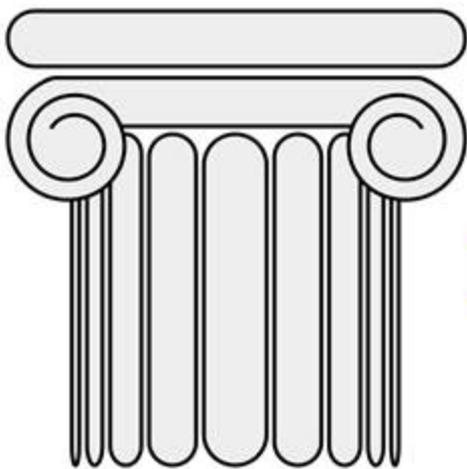
Hydraulics



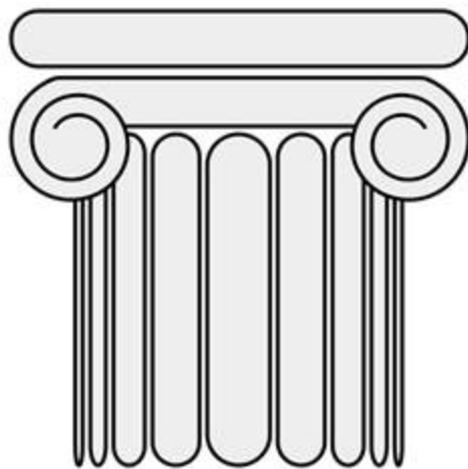
Base Level Engineering

The Path Forward

Mapping



Planning



Proposed Regional Flood Planning Boundaries

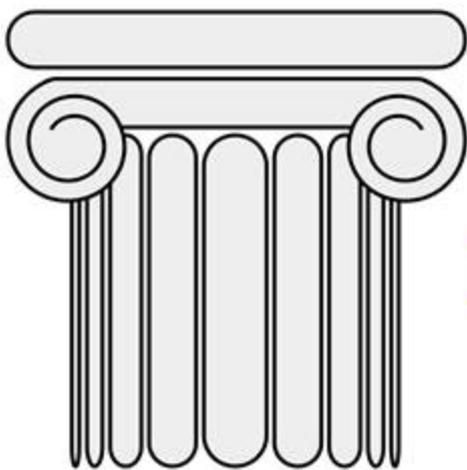


Flood Plan Highlights

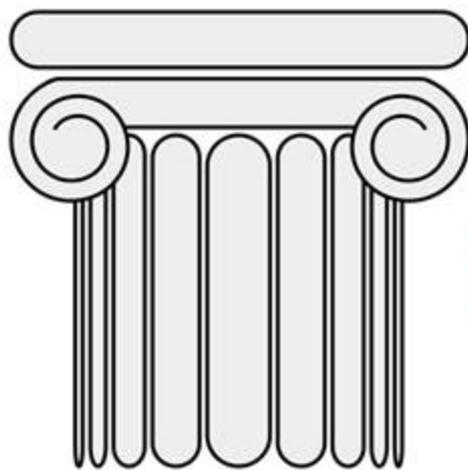
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- Use best available science
 - Evaluate floodplain management approaches
 - Identify specific and achievable goals
 - Include flood management strategies and projects
 - Evaluate development in the FEMA 100-year floodplain

The Path Forward

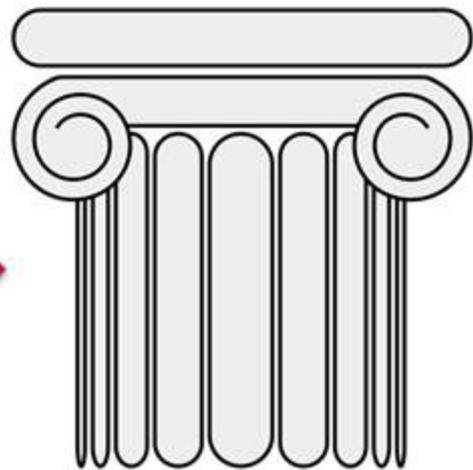
Mapping



Planning



Mitigation



Flood Financing

Prior to adoption of state flood plan in 2024, the Flood Infrastructure Fund can fund projects that have been developed through cooperative planning efforts:

- Drainage
- Flood mitigation
- Flood control

After adoption of state flood plan in 2024, the Flood Infrastructure Fund:

- Can fund projects in state flood plan

Flood Financing

- Low interest loans
- Grants:
 - Lack of ability to repay a loan
 - Outside of metropolitan statistical area
- Can fund both structural and non-structural mitigation activities

Flood Mitigation Activities

Structural			Non-structural		
Local drainage	Bridges, culverts, pipes		NFIP	Development ordinances	
Local detention / retention	Regional detention / retention	Channel conveyance	Elevation, flood-proofing	Training & education	Buyouts or relocati...
		Infrastructure		Warning system	

Implementation Process Timeline

August 2019:

- Informal, pre-rulemaking request for feedback

Fall 2019/Early 2020:

- Formal rulemaking activities, including public comment

Early 2020:

- Flood funding applications solicited

Mid 2020:

- Regional flood planning groups formed

Sam Marie Hermitte

(512) 463-5617

sam.hermitte@twdb.texas.gov

www.twdb.texas.gov



New Directions - Future Flood Science at TWDB

DATA	SCIENCE	COMMUNICATION	FUNDING
Flood Gages	River Forecast Model Calibration	Community Outreach	Flood Protection Grants
TexMesonet	River Modeling	TexasFlood.org	SB7 - FIF/TIRF
Lidar Data	Coastal Modeling	TexMesonet.org	
Reservoir Flood Pools	Flood Mapping	Data Hub/ Dashboard	
	Priority Research		