

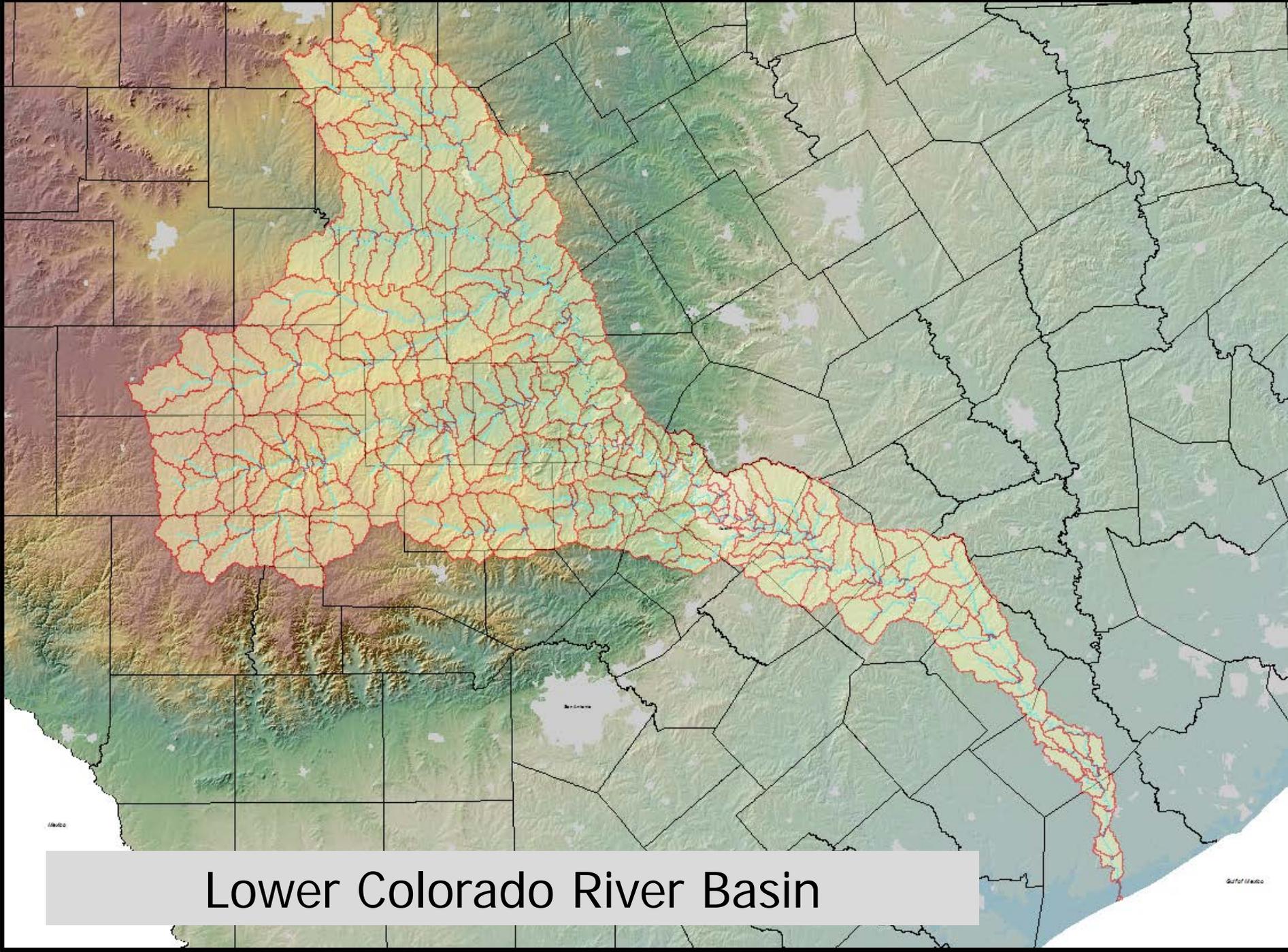
LCRA HYDROMET AND FLOOD OPERATIONS

Presented to Texas Water Development Board

by

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Lower Colorado River Basin

Six Dams and Reservoirs

Buchanan

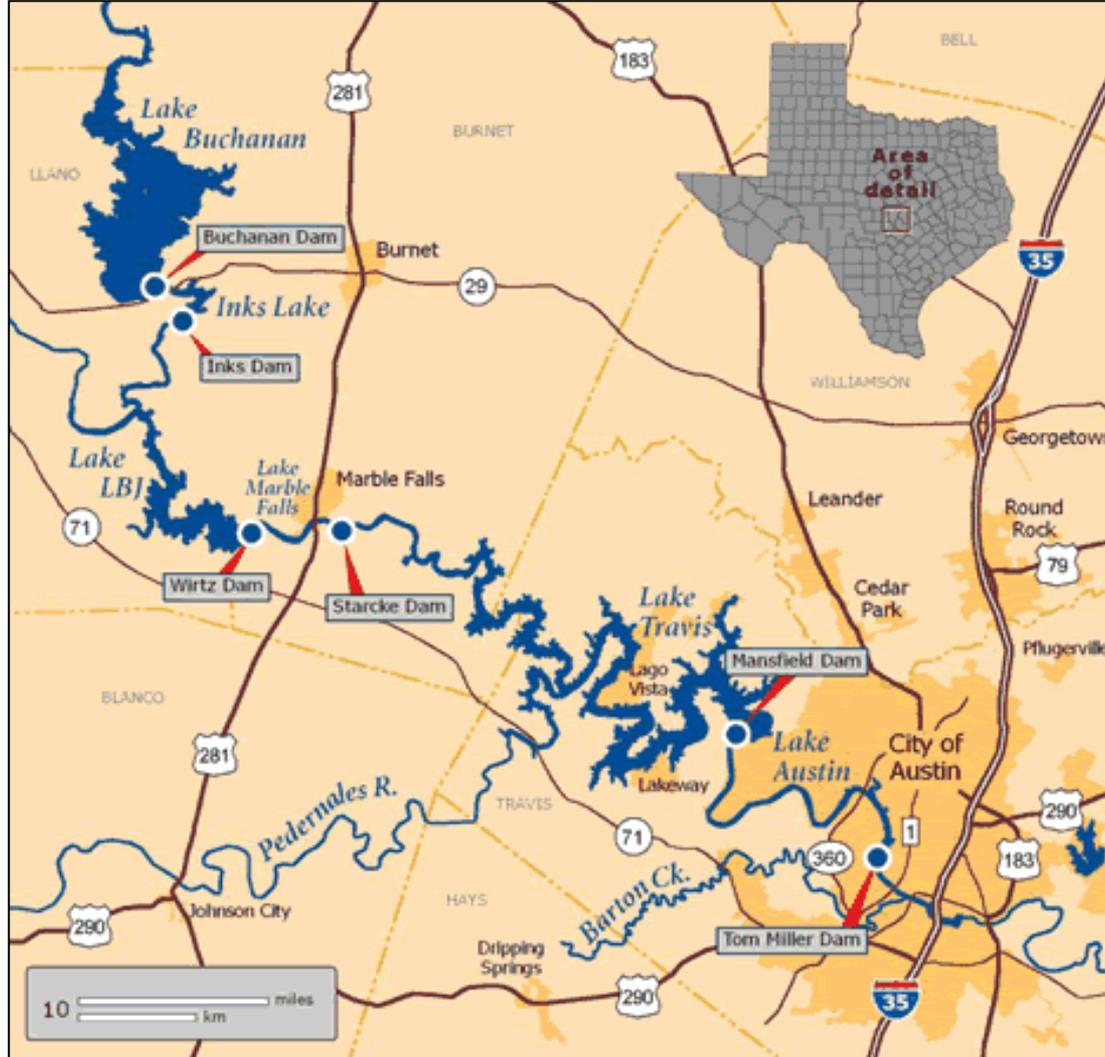
Inks

LBJ

Marble Falls

Travis

Austin



Diverse Needs

- Flood Control
 - Reduce flood damages
 - Replenish water supplies

- Water Supply
 - Cities
 - Power Plants/Industries
 - Agriculture
 - Environment/Fisheries

Flood Ops - Basic Concepts

Pass floods as safely as possible through Buchanan, Inks, Wirtz and Starcke dams to Lake Travis.

- FEMA

Flood Ops - Basic Concepts

Use the flood storage pool in Lake Travis to absorb floods.

- U.S. Army Corps of Engineers

Flood Ops - Basic Concepts

Control releases from Mansfield Dam to reduce downstream flooding and protect the dam.

- U.S. Army Corps of Engineers

“Operating” a River

- Colorado River is a natural system
 - complex processes
 - continual change
- Every flood is different and is influenced by:
 - antecedent conditions
 - intensity, timing and movement of storms
 - condition of river channels and land surface

Operating Plans and Decisions: Real Time – Real World

- Most information cannot be perfectly known
 - ease of use
 - cost to acquire
 - fitness for purpose
 - timeliness

Sound, timely decisions - best information available

Hydromet System

- Provides information vital for flood management
- Includes more than 270 gauges
- Transmits data every 15 minutes
- Uses LCRA's radio system
- Data is shared with partners and the public



Hydromet Milestones

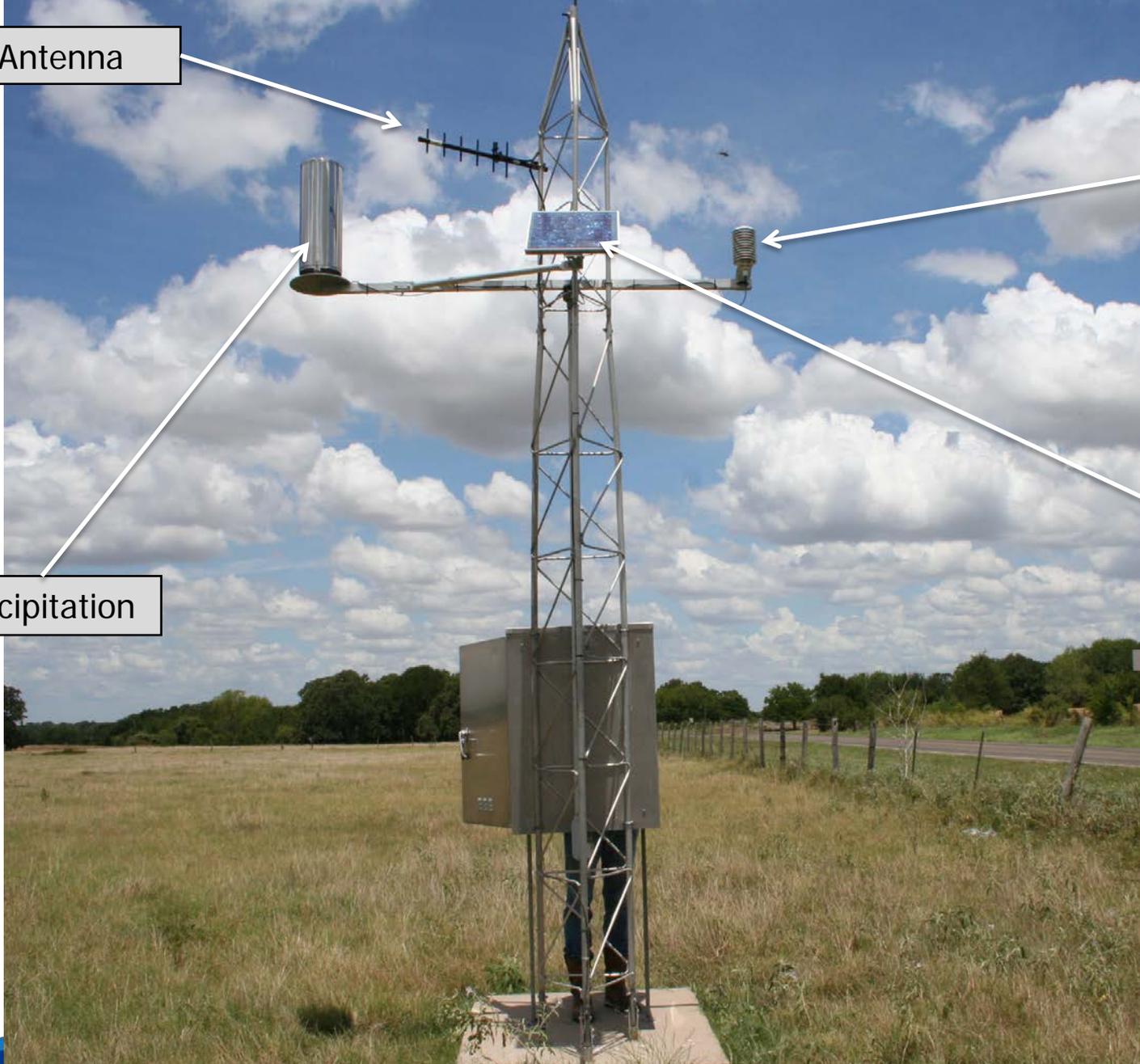
- 1982 – LCRA radios installed at USGS stream gauges
- 1987 – LCRA rain gauges installed around Highland Lakes
- 1993 – LCRA stream gauges installed on smaller tributaries
- 1998 - Major expansion and improvement project begins
- 2006 – Data is retrieved every 15 minutes
- 2014 – Telemetry is migrated to new radio system
- LCRA continues to improve and find new uses for Hydromet

Antenna

Temperature -
Humidity

Precipitation

Solar panel



Typical Hydromet Station



Pressure Transducer

Radio

RTU/logger

Battery

Air compressor

Dessicant

Hydromet Cabinet - Stream Gauge

How do we estimate stream flows?

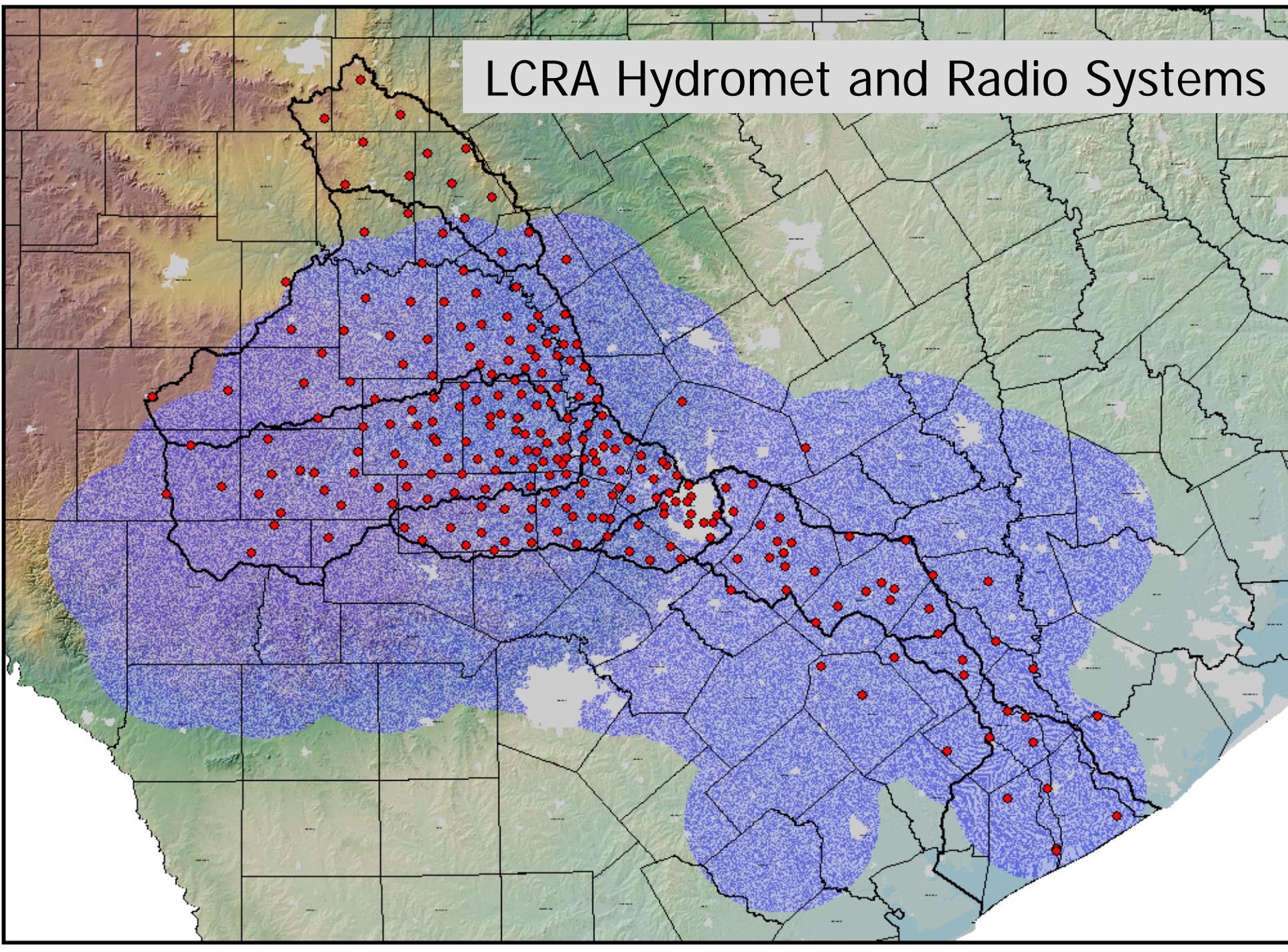
- Measure water levels (“Stage”) with Hydromet gauges
- Develop rating tables to relate Stage to Flow
- Apply Flow Ratings to estimate stream flow

- Conduct field measurements to validate ratings

Hydromet Field Operations



LCRA Hydromet and Radio Systems



River Operations Center





LOWER COLORADO RIVER AUTHORITY Emergency Management Master Plan

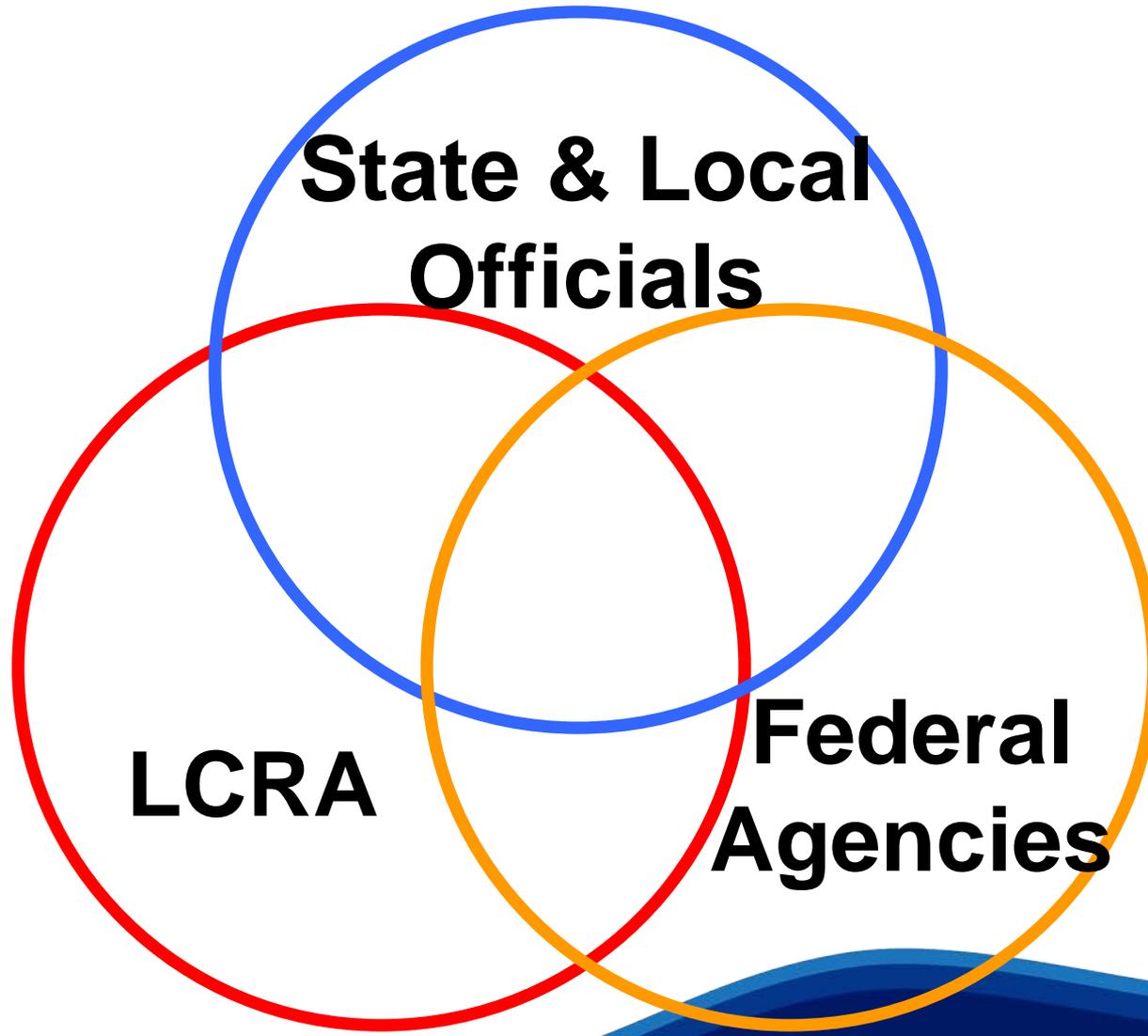
Revision 7.0
February 2012



This document should be treated as confidential and protected from disclosure under provisions of the Critical Infrastructure Information Act of 2002 and Chapter 421, Texas Government Code on Homeland Security



Flood Ops - Teamwork In Action



LCRA Flood Communications

Partners

- National Weather Service
- U.S. Army Corps of Engineers
- U.S. Geological Survey
- Emergency Management Officials
- State and Local Elected Officials

General Public

- LCRA Floodgate Operations Notification Service (FONS)
- Internet & Social Media
- NOAA All Hazard Radios
- LCRA Flood Hotline
- News Media

LCRA Hydrologic Data

Default Map Areas

Lower Colorado River Basin

Select Hydromet data to display

Rainfall - Past 48 Hours

Gauge Data List

View Rainfall data

Data retrieved at 11:51 pm

Disclaimer:
Sensor data displayed is automatically retrieved and is subject to revision.

Toggle map data below.

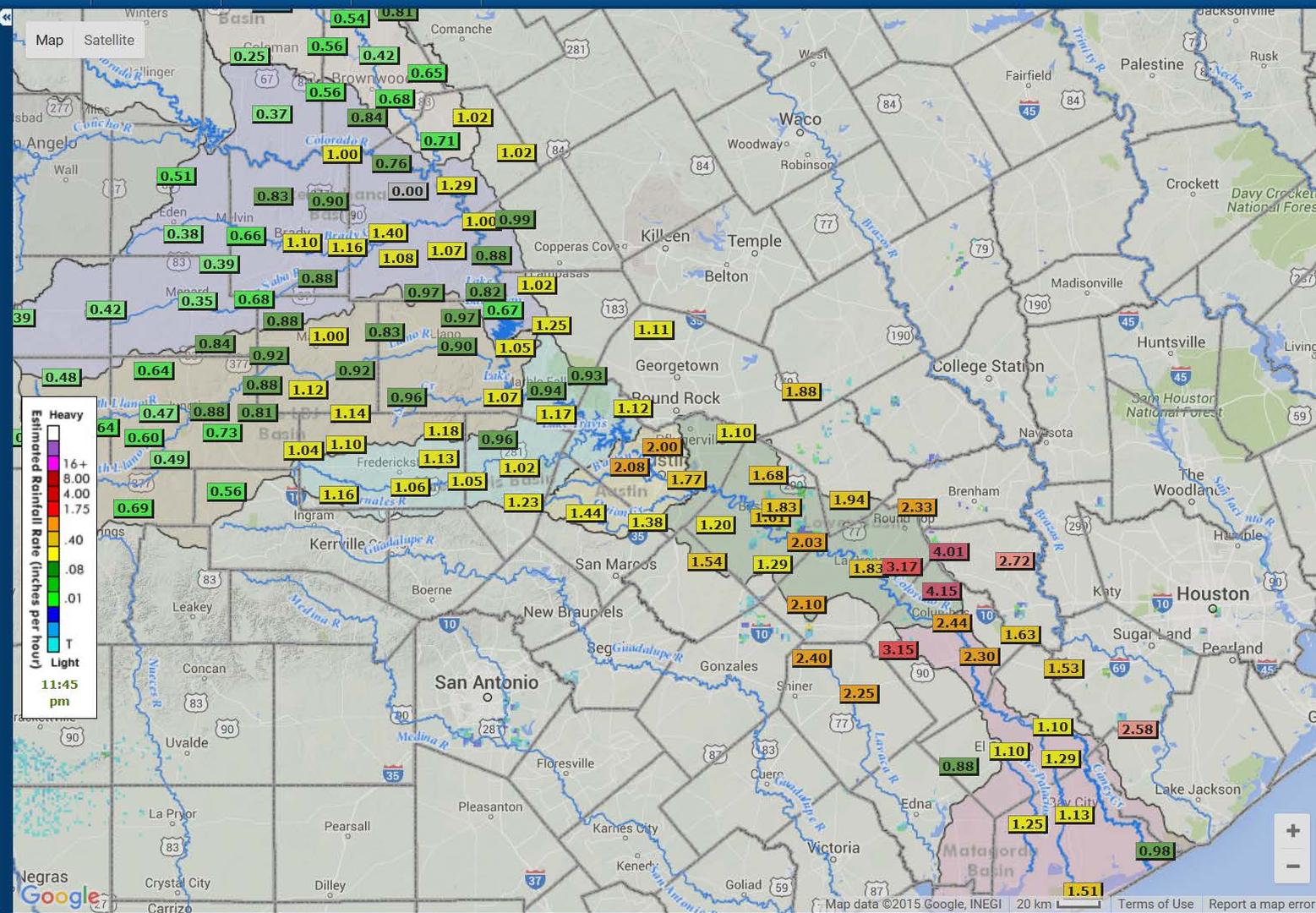
- County Boundaries
- Current Radar ▶ Start Loop
- Drought
- Stream Overlay
- Watersheds

Useful Links

- Charts
- Lake / River Data
- FAQ
- Rainfall Data
- Flood Summary
- River Report
- Forecast References
- Water Glossary
- Gauge Data Reports
- Water Quality Data
- Historical Data
- Weather Forecast
- Historical Lake Data

Rainfall - 2 Day Accumulation

- | | | |
|--|---|--|
| 8+ in | 2.5 in | 0.5 in |
| 8 in | 2 in | 0.25 in |
| 6 in | 1.5 in | 0.1 in |
| 5 in | 1 in | 0.01 in |
| 4 in | .75 in | None |
| 3 in | | |



(Mobile Site)

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<http://hydromet.lcra.org/full.aspx>

<http://floodstatus.lcra.org/>

Closing thoughts:

Flood recognition and response involve a range of activities that must be considered and addressed to achieve success.

Data collection and related systems require significant ongoing funding to assure reliable operation and maintenance.

There are many existing and potential partners with resources that can be leveraged through mutual assistance and cooperation.

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