

**Bastrop Rotary Club**

**Groundwater & Surface Water  
Issues in Central Texas**

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# Environmental Stewardship

A Texas nonprofit 501(c)(3) public charity

## Our purposes:

- ▲ **Protect & enhance natural resources to meet current and future needs of the environment and humans (Advocacy)**
- ▲ **Use scientific information to restore & sustain ecological systems (Science).**
- ▲ **Provide education & outreach to encourage good stewardship of natural resources (Outreach).**



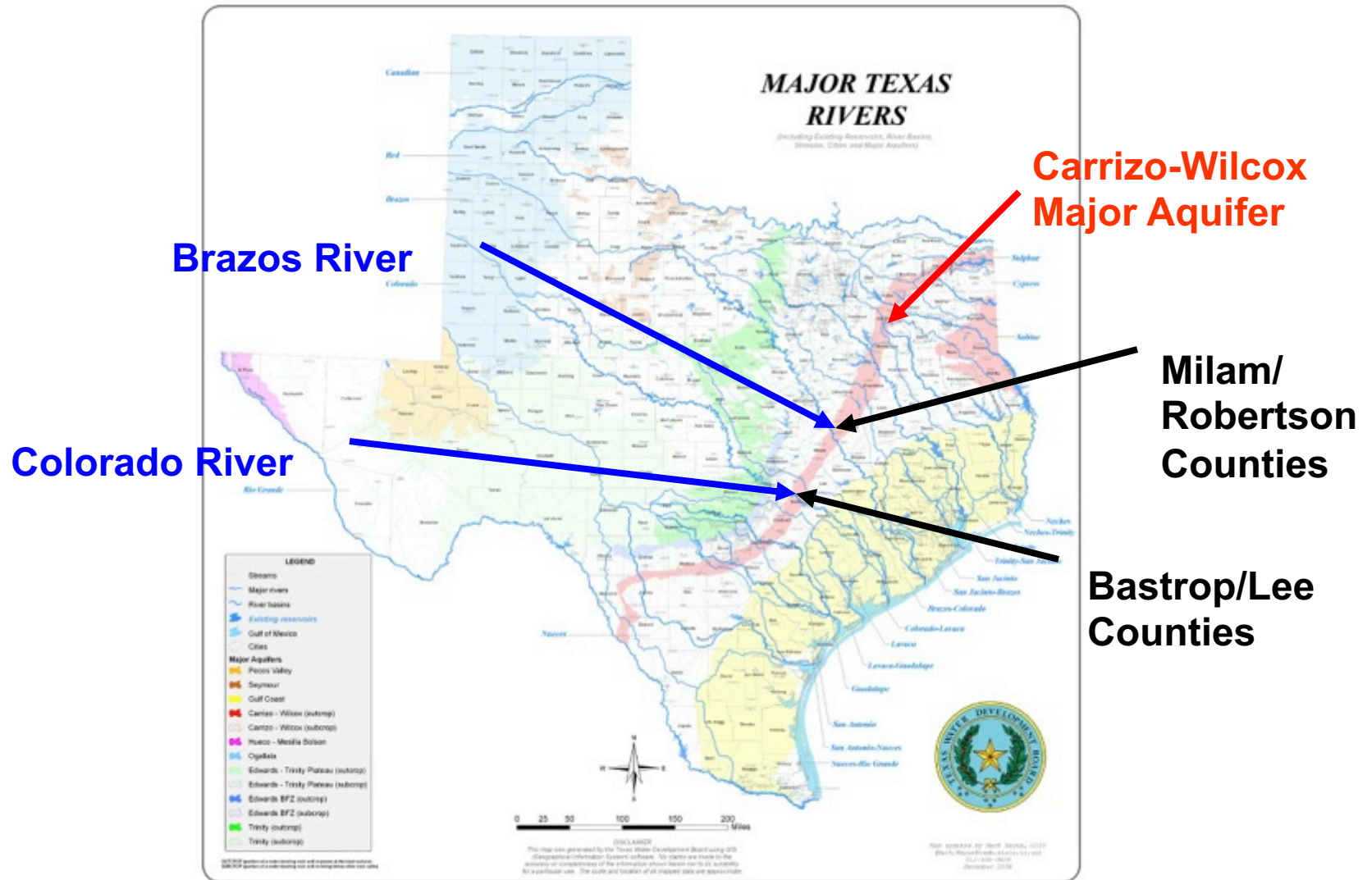
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# Vision for Water Future

**Manage groundwater & surface water resources in a way that balances human and environmental needs now and into the future.**

- ▲ Ensure a publicly informed process**
- ▲ Provide for the needs of local counties**
- ▲ Provide base-flows for the rivers, streams, & springs**
- ▲ Maximize recharge**
- ▲ Provide export to the extent possible**

# Important Natural Resources



# What We'll Cover

- Texas Water Laws
- Regional Planning
- Groundwater Planning/Management
- Surface Water Planning/Management
- Environmental Flows
- Current Projects
- What's Next

# Groundwater & Surface Water Law in Texas

- **SURFACE WATER**

- Owned by the State (Based on Spanish Law)
- Regulated by Texas Commission on Environmental Quality (TCEQ)
- Water Rights (Senior/Junior based on priority date)


- **GROUNDWATER**

- Owned by Landowner (Based on English Common Law)
- Regulated by Groundwater Conservation Districts (GCD)
- Assistance & Guidance from Texas Water Development Board (TWDB)
- Well Permits and Desired Future Conditions

- **The State of Texas does not formally, in law, recognize that Groundwater and Surface Water Interact**

- Conflicts in law
- Waters Not Conjunctively Managed

# Regional Water Planning

- Senate Bill 1 75<sup>th</sup> Legislature, 1997
- Managed by Texas Water Development Board (TWDB)
- Central  Local Planning (bottom up)
- Drought of Record (1950' s/ 2010-2015)
- Stakeholder Groups
- Plan Supply & Demand (groundwater & surface water)
- Do Not Implement
  - counties, cities, water suppliers, private
- Strategies must be “recommended” in plan to access State funds
- Strategies must be prioritized (recent, Prop 6)
- Results in State Water Plan



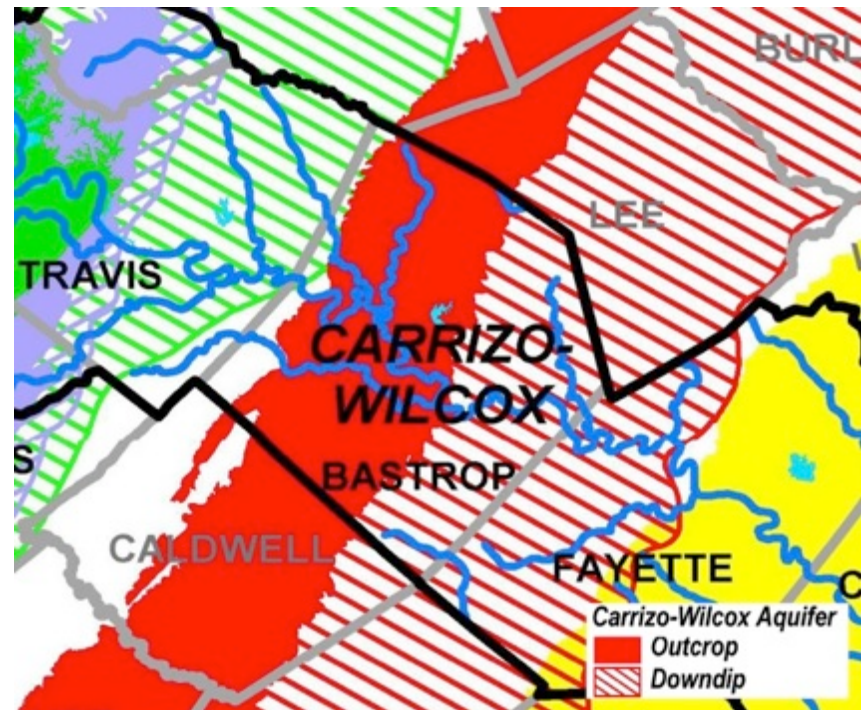


# Groundwater Management Areas

- Multiple Conservation Districts
- Plan “Desired Future Conditions” - DFC
  - Physically Possible
    - Individually and collectively across Districts
  - Compatible
    - Between Districts (spring flow vs. de-watering)
- Modeled Available Groundwater – MAG
  - GCDs provide MAG to Regional Planning Group
- Petitions Challenging
  - TWDB: Challenging reasonableness of DFC
  - TCEQ: Challenging adequacy of GCD Rules

# Lost Pines Groundwater Conservation District

- **Lost Pines GCD**
  - Bastrop & Lee counties
  - Carrizo-Wilcox
  - Queen City/Sparta
  - Colorado Alluvium
  - Member of GMA-12
  - Region K RWPG (Bastrop Co)
  - Region G RWPG (Lee Co)
  - Target of Water Marketers
    - End-OP (Recharge Water), Forestar, LCRA & Others
    - Blue Water/Vista Ridge (Post Oak Savannah GCD, Burleson Co.)



# Surface Water

- **Regulated by TCEQ**
  - Grants water rights (priority date)
  - Approves LCRA Water Management Plan
    - Approves emergency orders
  - Managed Environmental Flow Allocation Process
  - Approves Environmental Flow Standards
- **Lower Colorado River Authority**
  - Administers in Lower Colorado River Basin
    - Highland Lakes and lower basin
    - Water Management Plan
    - Owns majority of water rights in basin
    - Serves on Region K Water Planning Group
- **Upper Colorado River Authority**
  - Administers in Upper basin to New Mexico

# Surface Water Environmental Flows

- **Senate Bill 3 80<sup>th</sup> Legislature, 2007**
  - Managed by Texas Commission on Environmental Quality (TCEQ)
  - Colorado & Lavaca Rivers and Matagorda & Lavaca Bays Area Stakeholder Committee (CL BBASC)
  - Stakeholder Interests groups
    - River Authorities
    - Public Interest Groups
    - Recreational Water Users
    - Refining
    - Municipalities
    - Agricultural Irrigation
    - **Free-Range Livestock**
    - Commercial Fishermen
    - **Recreational Water Users**
    - Groundwater Conservation Districts
    - Chemical Manufacturing
    - Electricity Generation
    - Regional Water Planning Groups
    - **Environmental**
    - Soil and Water Conservation Districts
  - Bay & Basin Expert Science Team (CL BBEST)
  - Adopted by TCEQ; effective August 30, 2012

# Environmental Flow Objectives of Texas Legislature - Senate Bill 3

▲ Maintaining the *biological soundness of the state's rivers, lakes, bays, and estuaries* is of great importance to the public's economic health and general well-being.

● A “Sound Ecological Environment”

▲ Provide for the *freshwater flows necessary to maintain the viability of the state's streams, rivers, bay and estuary systems.*

Signed into Law June 16, 2007

# Environmental Flow

## Critical Flow - life support during drought

### Instream Flows for the Rivers

#### – Bastrop Gage

- Minimum flow - Subsistence: 123-180 cfs
- Low Flow Sept 14, 2013: 128 cfs
- Groundwater contribution: ~36 cfs (30% of min.)
- Highland Lakes contribution: ~47 cfs (39% of min.)
- Return flows: ?

### Freshwater Inflows for the Bays

- Matagorda Bay 14,500 acre-feet/month

# Colorado River

## ◆ Environmental Flows

### ➤ LCRA Water Management Plan

- Highland Lakes vs. Rice Farmer
- River Flow – cut off in 2011 drought
- Matagorda Bay - cut off in 2011 drought

## ◆ Groundwater-Surface Water Relationship

### ➤ Colorado is a “gaining” river, but predicted to become a “losing” river in future decades

- River Flow vs. Groundwater Over-pumping
- River Flow vs. Surface water Over-allocation
- River Flow vs. Reuse

# Groundwater Base-Flows

Original drawdown in outcrop area = 50 ft.

New drawdown = 237 ft.

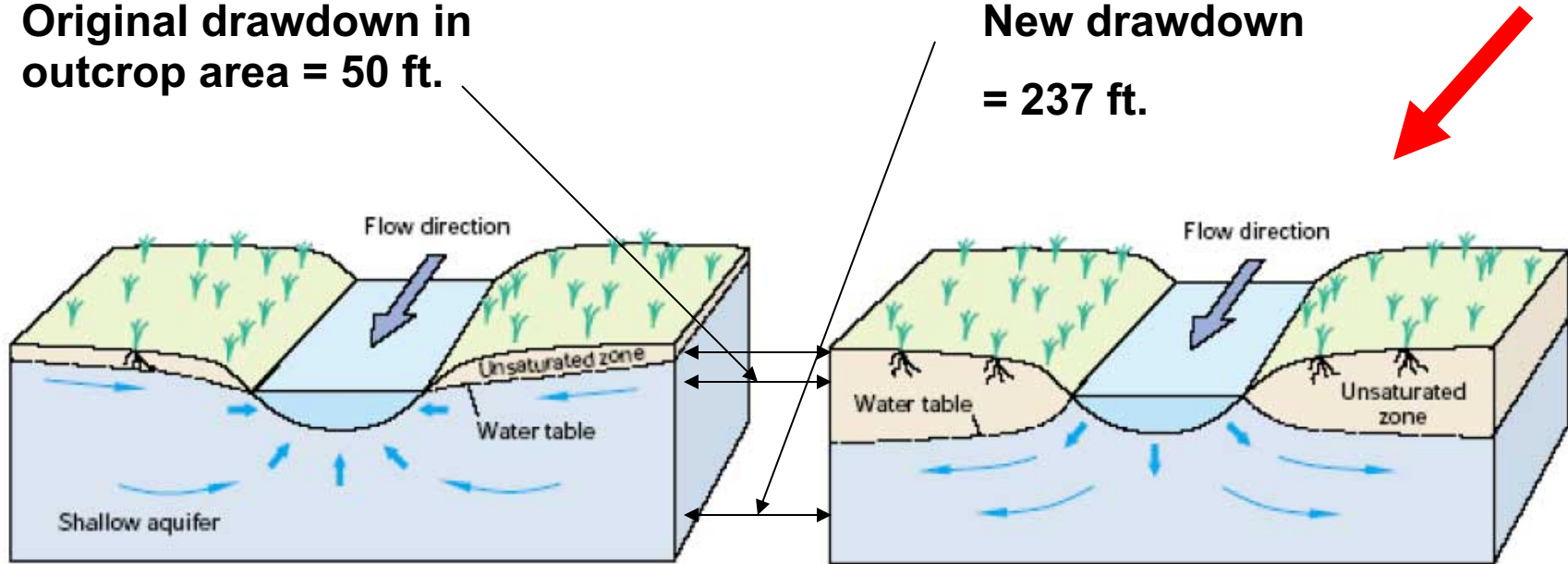


Figure B-2: Gaining (Left) and Losing (Right) Streams and Associated Groundwater Flow Direction

Lost Pines GCD originally set “sustainable” drawdown levels at 50 ft for the outcrop region of the Simsboro formation.

At March 2009 Board meeting the drawdown was increased to 150 ft for the outcrop region of the Simsboro formation.

Current drawdown in August 2010 adopted GMA-12 DFC is 237 ft for the Simsboro Aquifer in LPGCD.

# COMPARISON OF IMPACT OF GROUNDWATER PUMPING ON OUTFLOWS TO MAIN STEM COLORADO RIVER

- Adopted 2017 DFCs (New 2018 GAM):

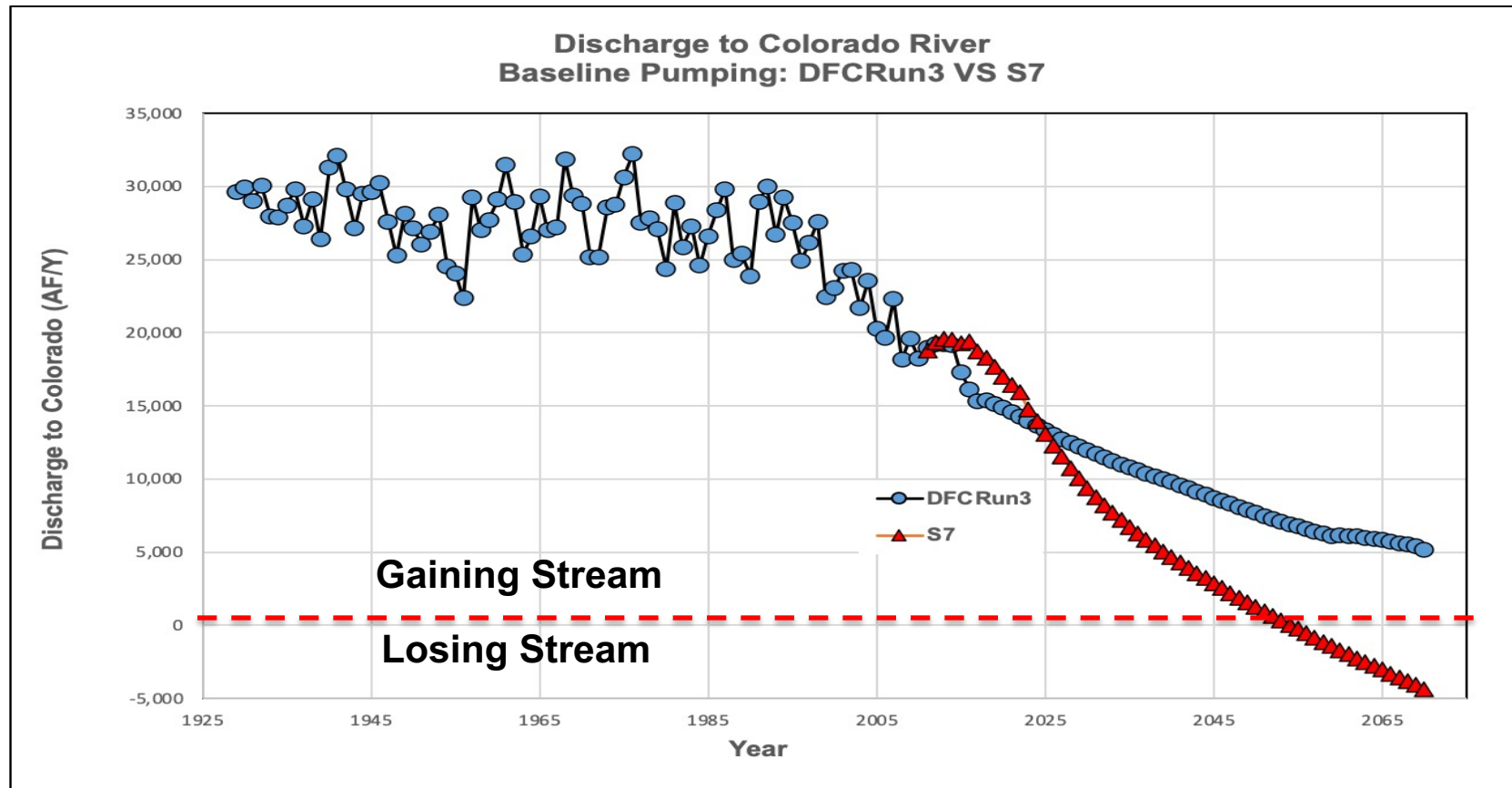


Figure 2. Predicted reduction of discharge of groundwater into the mainstream Colorado River due to DFC Run 3 and Scenario S-7 (New GAM).

# COMPARISON OF IMPACT OF GROUNDWATER PUMPING ON OUTFLOWS TO COLORADO RIVER TRIBUTARIES

New 2018 GAM combined discharge to the four tributaries (Big Sandy, Wilbarger, Piney and Cypress Creeks).

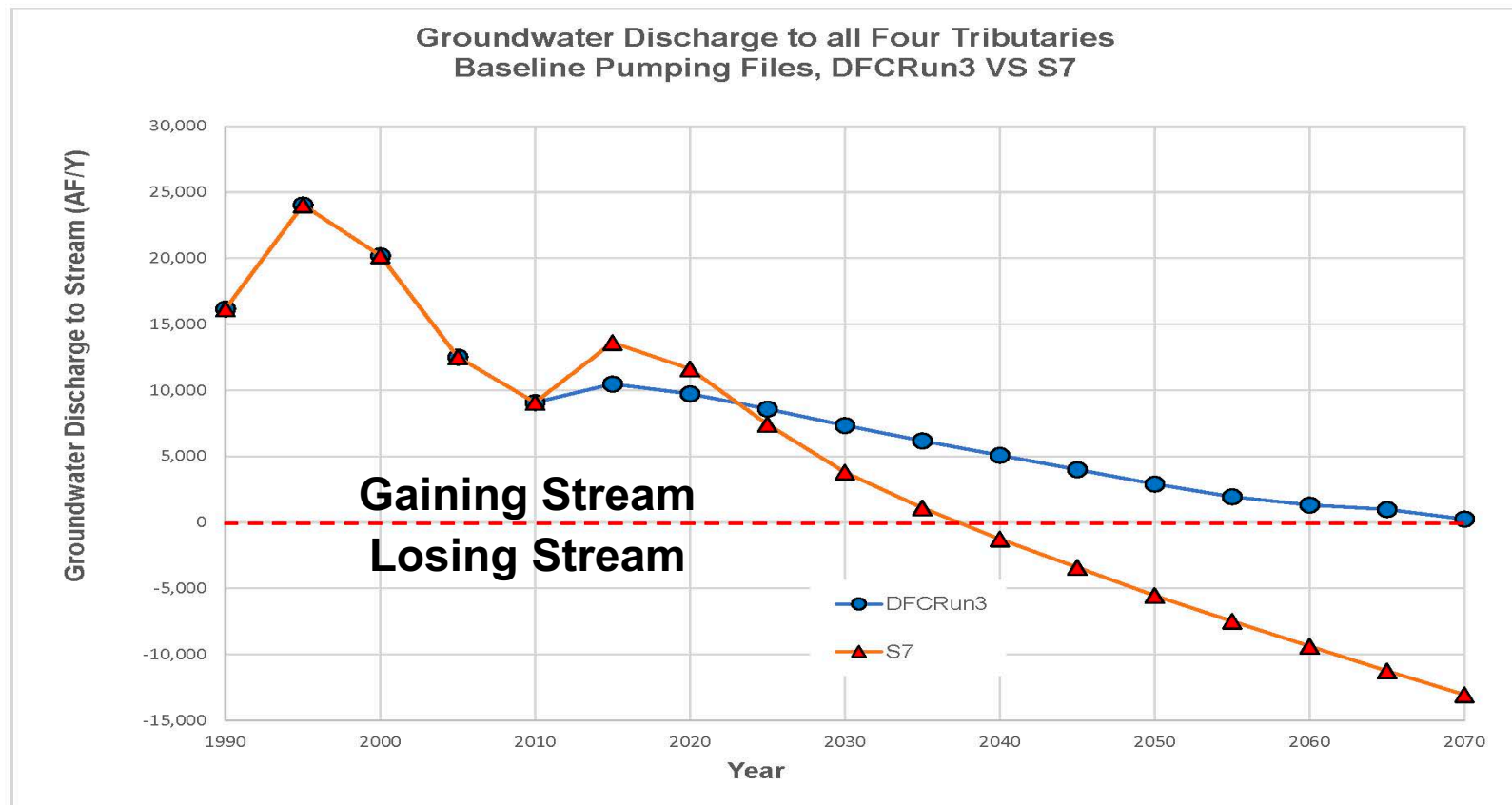


Figure 3: Groundwater Discharge to four tributaries of the Colorado River located primarily in Bastrop County, TX (New GAM).

# ES Requests of GMA-12

- Monitor impacts of groundwater pumping on the mainstem of the Colorado River and its tributaries.
- Perform certain hydrograph separation studies to evaluate groundwater flow contributions to the Colorado River under drought conditions and to inform development of a surface water DFC component.
- Establish a DFC component that is protective of surface water, including subsistence, base-dry and base-average flows, that will trigger corrective actions should the predictions of surface water impacts be validated and/or realized in fact.

# ES Requests of GMA-12

- Initiate the development of DFCs for the Colorado Alluvium Aquifer in anticipation of adopting such DFCs during the next planning cycle. Give consideration to the guiding principles provided in Section VII.
- Seek to establish criteria to qualitative and quantitative evaluate the impacts of reduced contributions of groundwater to baseflows into rivers and streams.
- Seek to establish criteria to determining when such impacts become unreasonable and thereby require remedial actions.

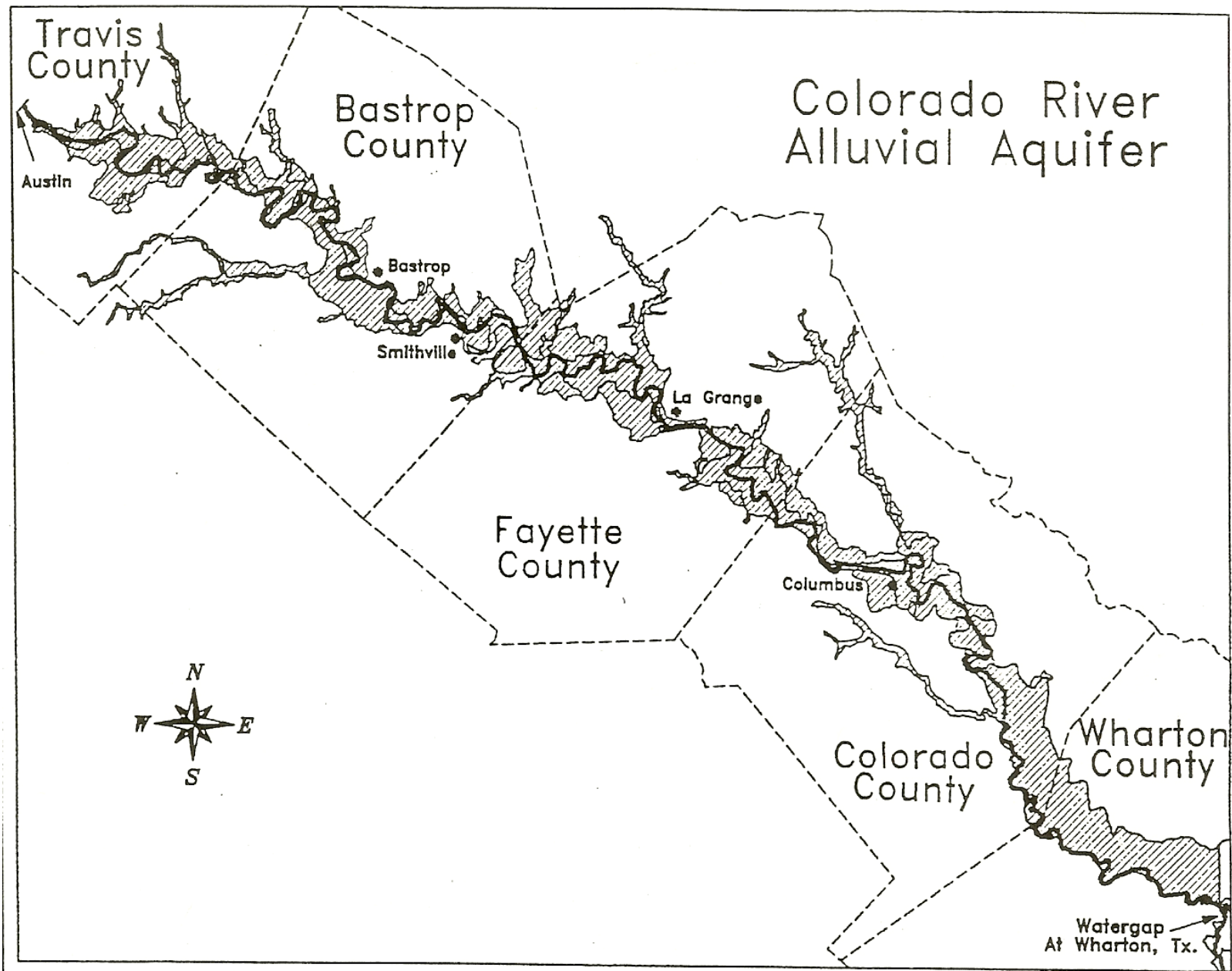
# ES Specific DFC Requests

- ES requests that the Districts re-adopt the current DFCs based on DFC Run 3 (New GAM) and include the following as a surface water component in the DFCs:
  - 1) subsistence flow in the Colorado River at the Bastrop Gage will be met 100% of the time.
  - 2) base-dry and base-average flow will be met during the spring (March - June) in order to protect the state-threatened Blue Sucker, and
  - 3) non-exempt pumping will be curtailed if subsistence flow drops below the month's standard expressed in cubic feet per second (cfs) for seven (7) cumulative days in any month.
- Apply the above to the following Aquifer Formations:
  - Carrizo
  - Calvert Bluff
  - Simsboro
  - Hooper

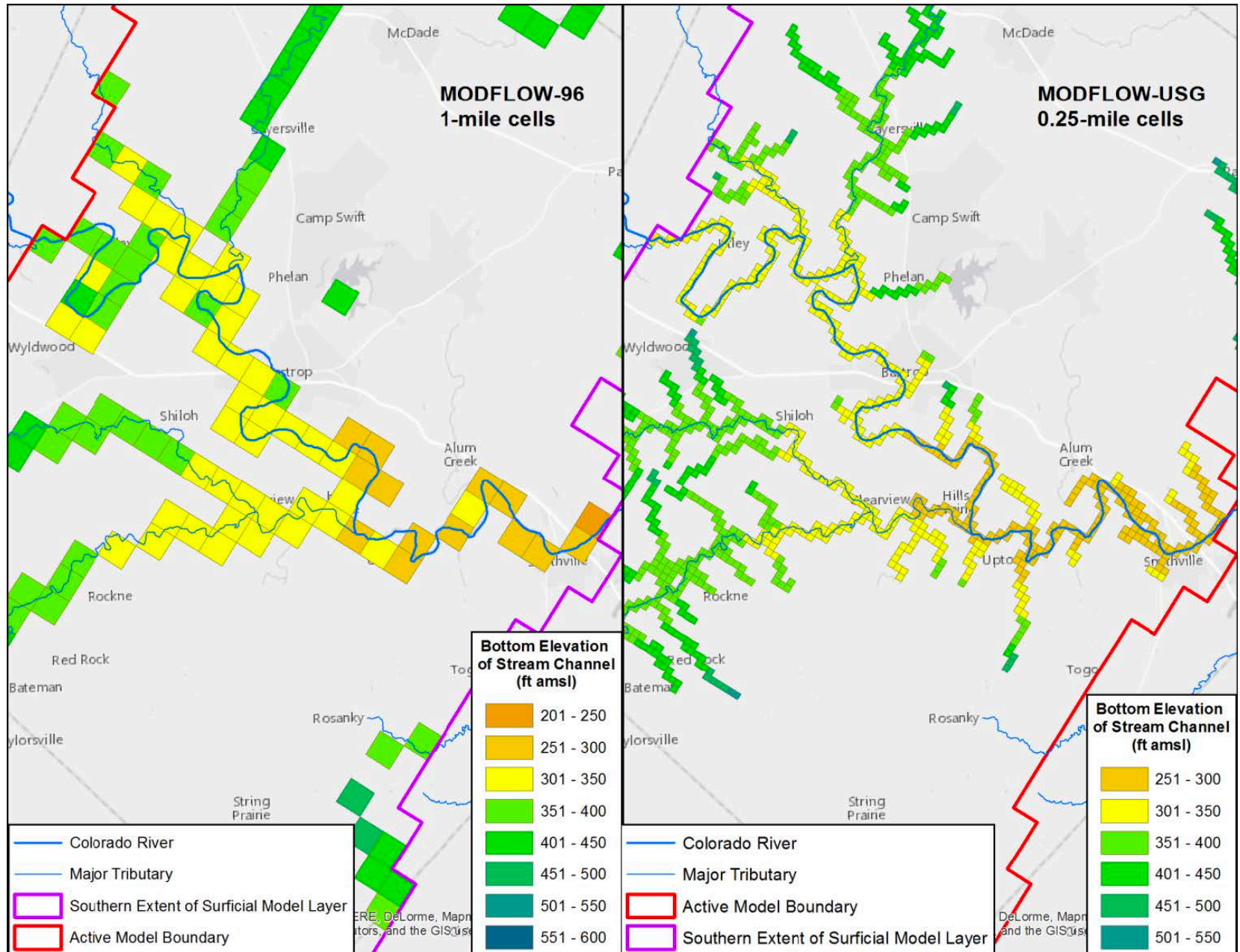
# ES Specific DFC Requests

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# Colorado River Alluvial Aquifer



# River/Tributaries Model Grids



# LCRA's Groundwater Permit Application

- LCRA requesting permit to pump 25,000 acre-feet per year from Simsboro Formation of Carrizo-Wilcox Aquifer
- Opposed by Environmental Stewardship, 43 Landowners, Aqua Water, Recharge Water (End Op), City of Elgin and Lost Pines GCD General Manager.
  - Landowners granted "Party Status" based on ES/Landowners appeal of End Op permit application before State District Court in Bastrop
  - Judge Carson Campbell ruled in favor of ES and Landowners.
- Hearing held October 15-22, 2019 in Bastrop/Austin
  - State Office of Administrative Hearings (SOAH)
  - Administrative Law Judges Rebecca Smith and Ross Henderson
- Proposal For Decision (Date)
- Pending before Lost Pines GCD Board of Directors
  - COVID19 concerns have postponed final hearing
  - Board of Directors make final decision
- Decision likely to be annealed

# LCRA's Groundwater Permit Application

## Environmental Stewardship's Concern:

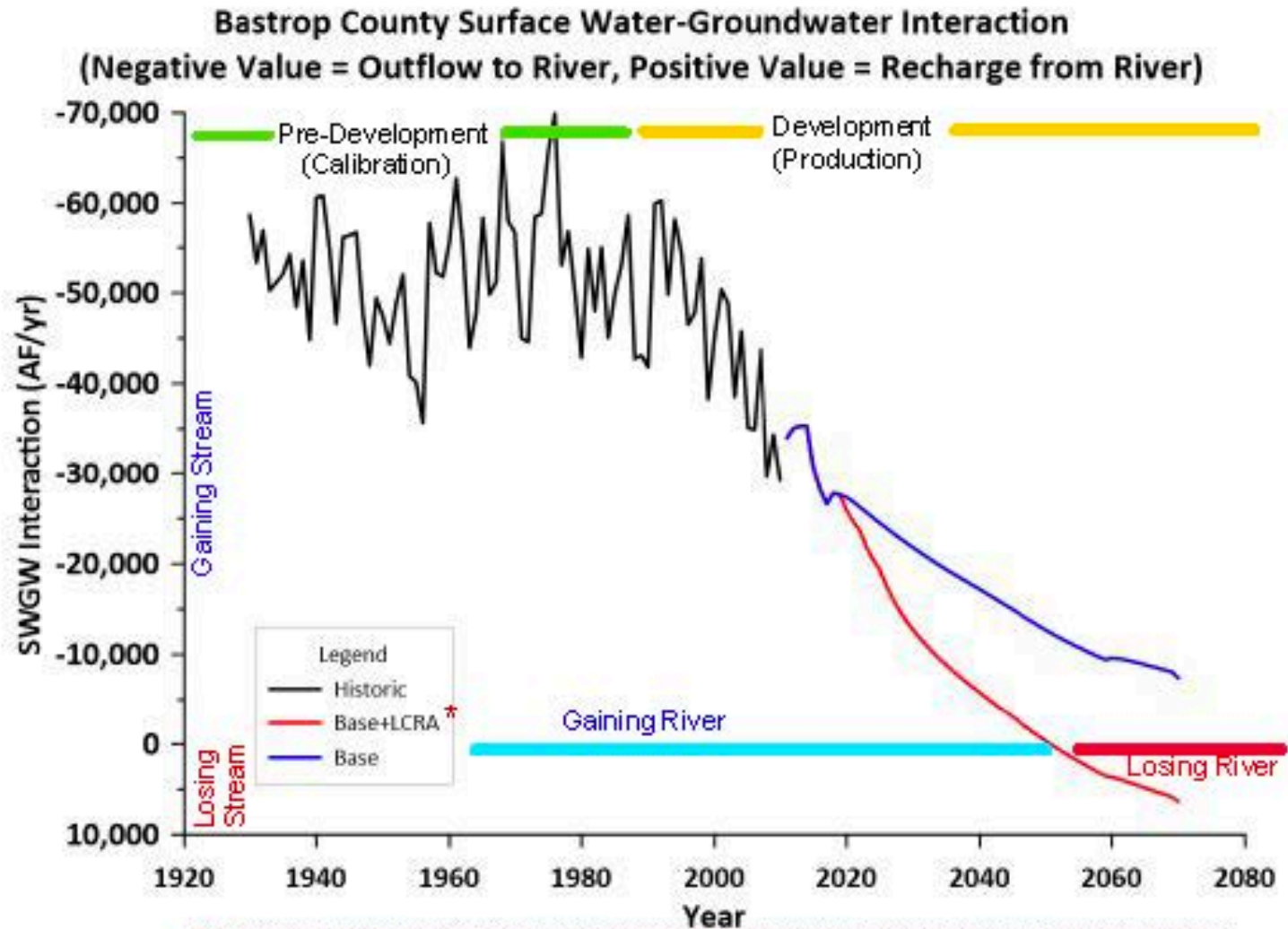


Figure 6. Bastrop County Surface Water-Groundwater Interaction

# COMPARISON OF IMPACT OF GROUNDWATER PUMPING ON OUTFLOWS TO MAIN STEM COLORADO RIVER

- Adopted 2017 DFCs (New 2018 GAM):

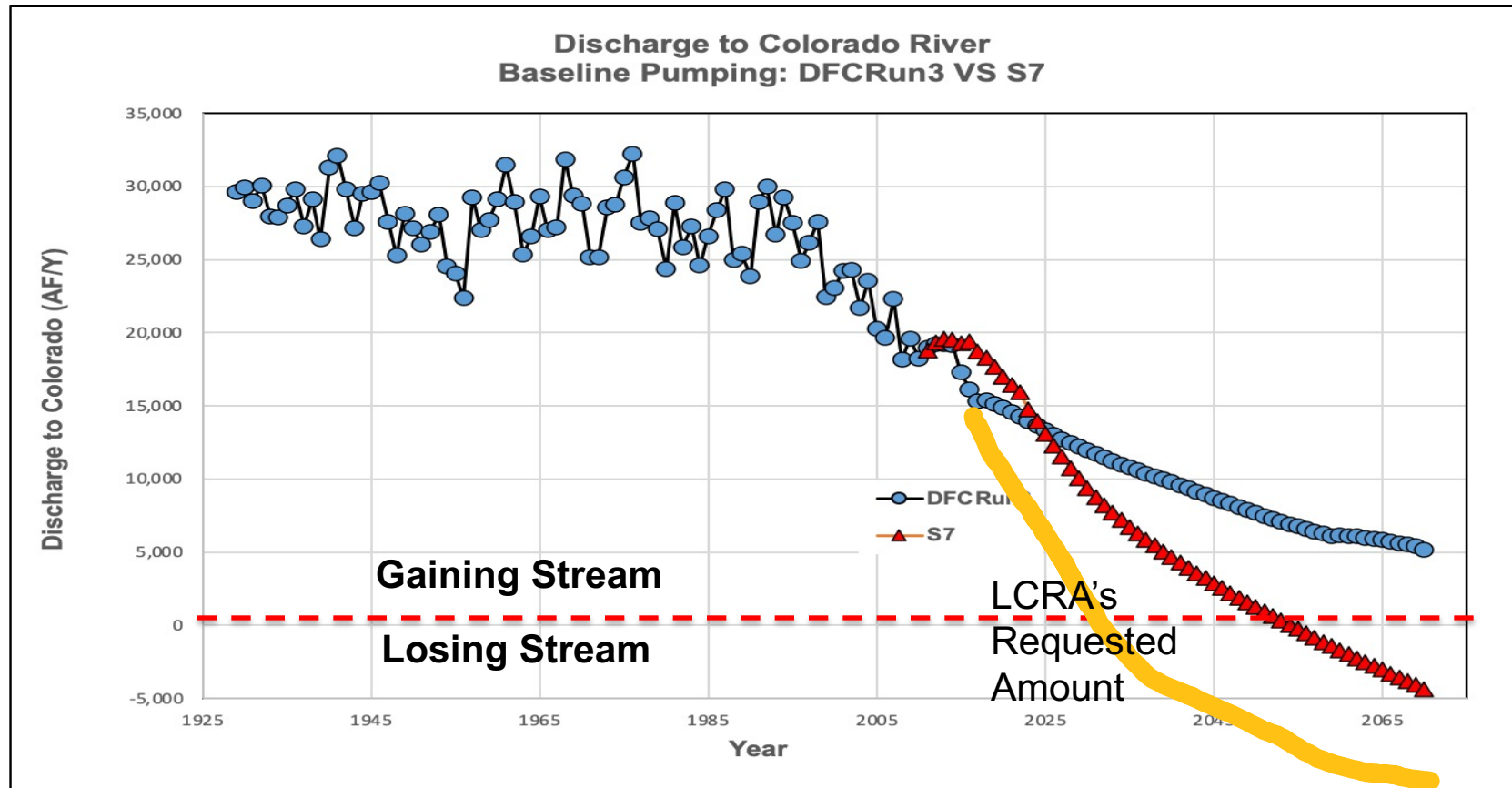


Figure 2. Predicted reduction of discharge of groundwater into the mainstream Colorado River due to DFC Run 3 and Scenario S-7 (New GAM).

# LCRA's Groundwater Permit Application

## Judges' Key Environmental Findings:

- LCRA's groundwater pumping permit should require the state agency to monitor surface water.
- Surface waterways, including the Colorado River, could be significantly lowered. Flow of the river could drop below levels necessary to maintain minimal ecological functions (subsistence flows) and its tributaries could actually go dry sooner during drought conditions.
- Lost Pines District should rule that the LCRA must monitor surface water impacts.
- District's approach is not adequate to prevent unreasonable impacts on surface waters. To manage that impact in the future the District should include a surface water monitoring requirement in their management plan so that the District has the discretionary power to curtail all users, if necessary.
- Proposed permit should include the right of well owners who participated in the hearing to also participate in the LCRA permit renewal process, including whether monitoring data requires any permit amendments

# What is Next?

- **Permit Actions on Lost Pines GCD December 16 Agenda**
  - Recharge Water (End Op) requesting amendment to extend permit to March 9, 2023 (Set to expire in January, 2020)
  - Forestar Permit being transferred to GateHouse Water, LLC
    - Requesting Renewal of Permits
  - Establishing a Well Monitoring Committee to study impacts of Vista Ridge pumping on domestic well owners in Lee County
  - Consider date for Final Hearing on LCRA permit application
- **GMA-12 to proposed Desired Future Conditions**
  - Propose by May 1, 2021
  - 90-day comment period begins
  - Adoption of DFC by end of 2021 and send to TWDB for approval
- **Texas Legislative Session: January – May 2021**

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