Colorado River Land Analysis

Austin WATER

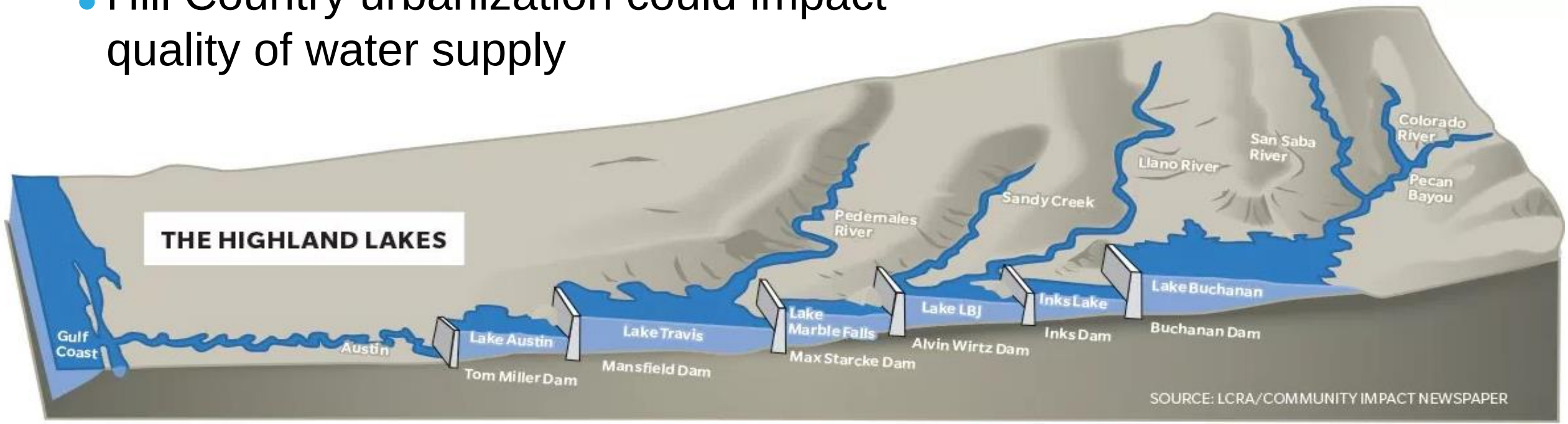
5/9/2023

Presentation Overview

- The Highland Lakes: Austin’s water supply
- Potential Challenges: Urbanization, Environmental
- Colorado River Land Analysis Scope
- Identifying Priority Conservation Areas
- Next Steps

The Highland Lakes

- Near 100% of Austin's current water supply
- Historically clean and clear water
- Relatively low cost to treat to potable
- Hill Country urbanization could impact quality of water supply



Lake Travis at Mansfield Dam (LCRA photo)

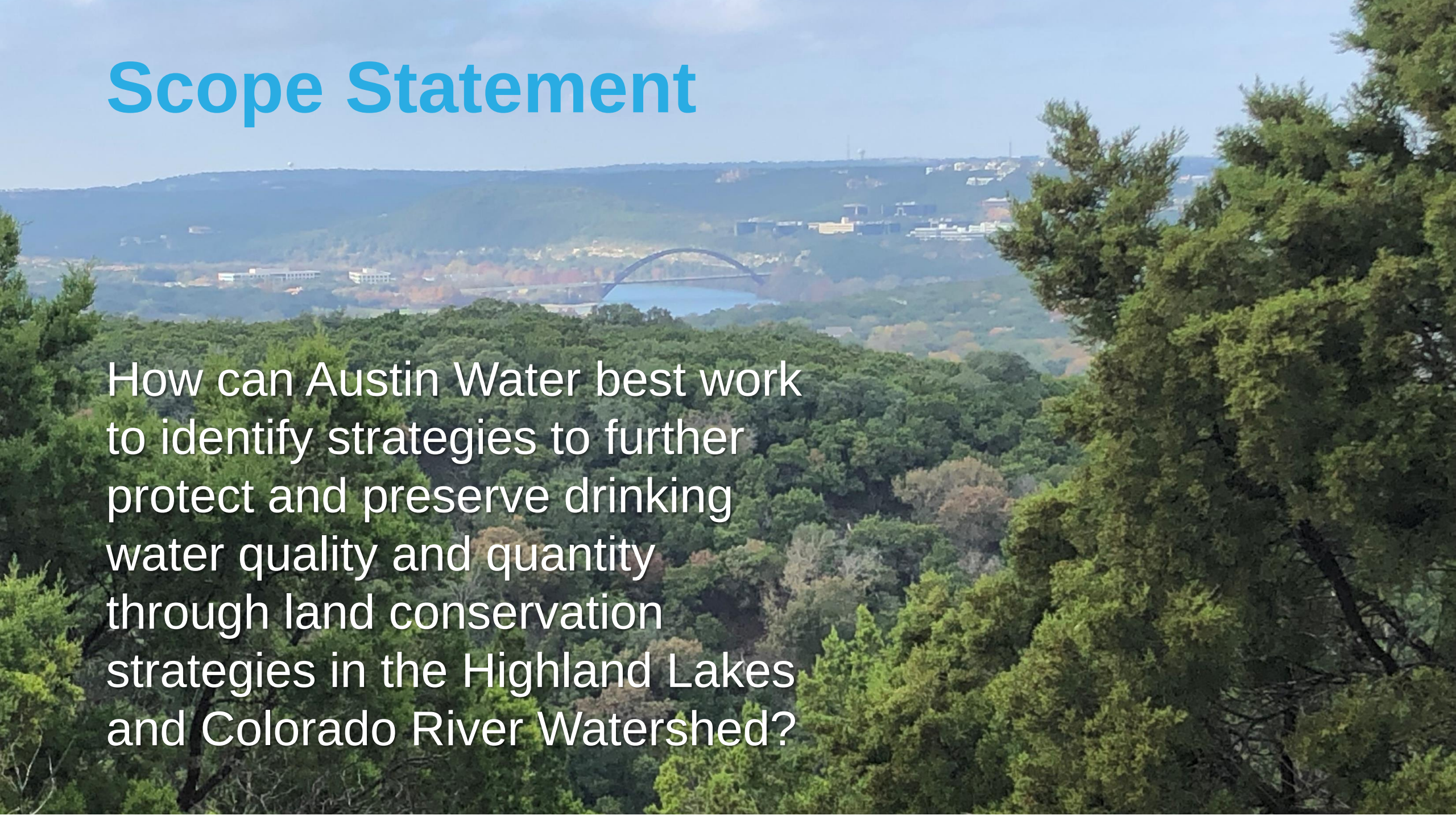
Potential Challenges: Urbanization

- Rapidly growing population and urbanization
  - Less vegetative cover and water/soil filtration
  - More pavement, runoff, and pollutants
  - Other related water quality threats, e.g., sand and gravel mining
- Current protections
  - State regulations prohibit direct wastewater discharge
  - LCRA's Highland Lakes Watershed Ordinance
  - Sustained commitment to continuation of current protections is essential

Potential Challenges: Environmental

- Climate change
  - Higher temperatures, lower soil moisture
  - Increased flood severity, potential sediment events
  - Stress to ecological systems, potential vegetative die off, soil loss
  - Could lead to reduction in water quality
- Ecological Shifts
  - Zebra Mussels
  - Harmful Algal Blooms
  - Disruptions to water quality and treatment
- Other unknowns

Scope Statement



How can Austin Water best work to identify strategies to further protect and preserve drinking water quality and quantity through land conservation strategies in the Highland Lakes and Colorado River Watershed?

Scope of Work

- Identify priority conservation areas
- Identify priority opportunities for protection
- Evaluate options for land conservation approaches
  - Direct land conservation and management, e.g., fee-simple land and conservation easement purchase by AW and/or other partners
  - Education and community partnerships
  - Relationships with conservation management groups
- Recommend options for consideration in Water Forward

Identifying Priority Conservation Areas

- Helps understand geography and scale of potential options
  - Lake Travis drainage area is 40x that of entire Austin corporate limits!
  - Want/need to focus on the highest priority areas
  - Some areas clearly more critical to conserve than others
- Rating system: consider multiple factors
  - Water supply: stream flows, recharge, springs, wells, AW intakes
  - Environmental: riparian/floodplains, impervious cover, protected lands, slopes, vegetation
- Combine via GIS to spatially show priority conservation areas

Central Texas counties and waterways of interest

Counties

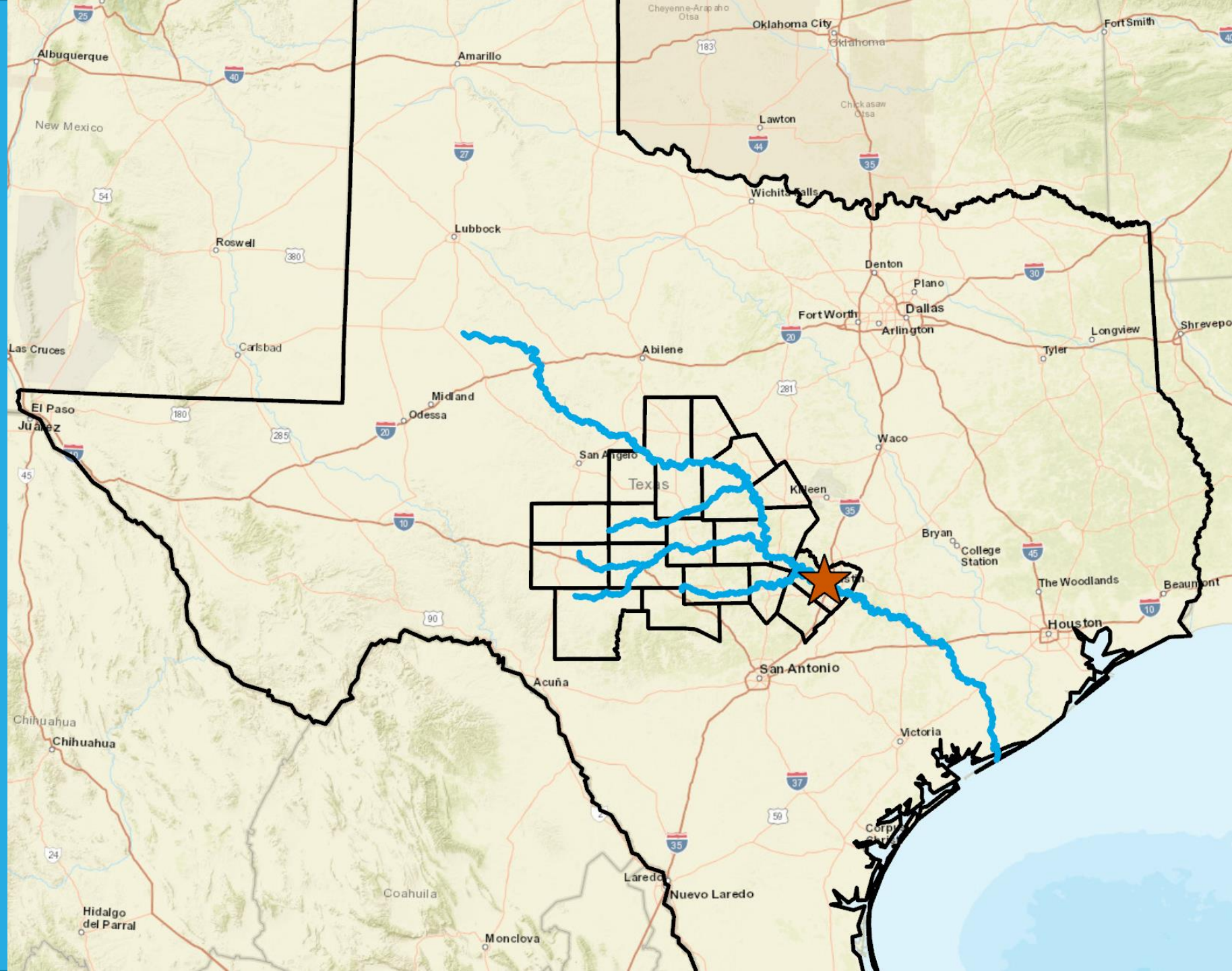
- Blanco, Brown, Burnet, Coleman, Concho, Edwards, Gillespie, Hays, Kerr, Kimble, Lampasas, Llano, Mason, McCulloch, Menard, Mills, San Saba, Schleicher, Sutton, Travis

Rivers

- Colorado
- Llano
  - North Llano
  - South Llano
- Pedernales
- San Saba

Watersheds

- Middle Colorado, Brady, San Saba, Llano, North Llano, South Llano, Buchanan-LBJ Lakes, Pedernales, Lake Travis, Lake Austin



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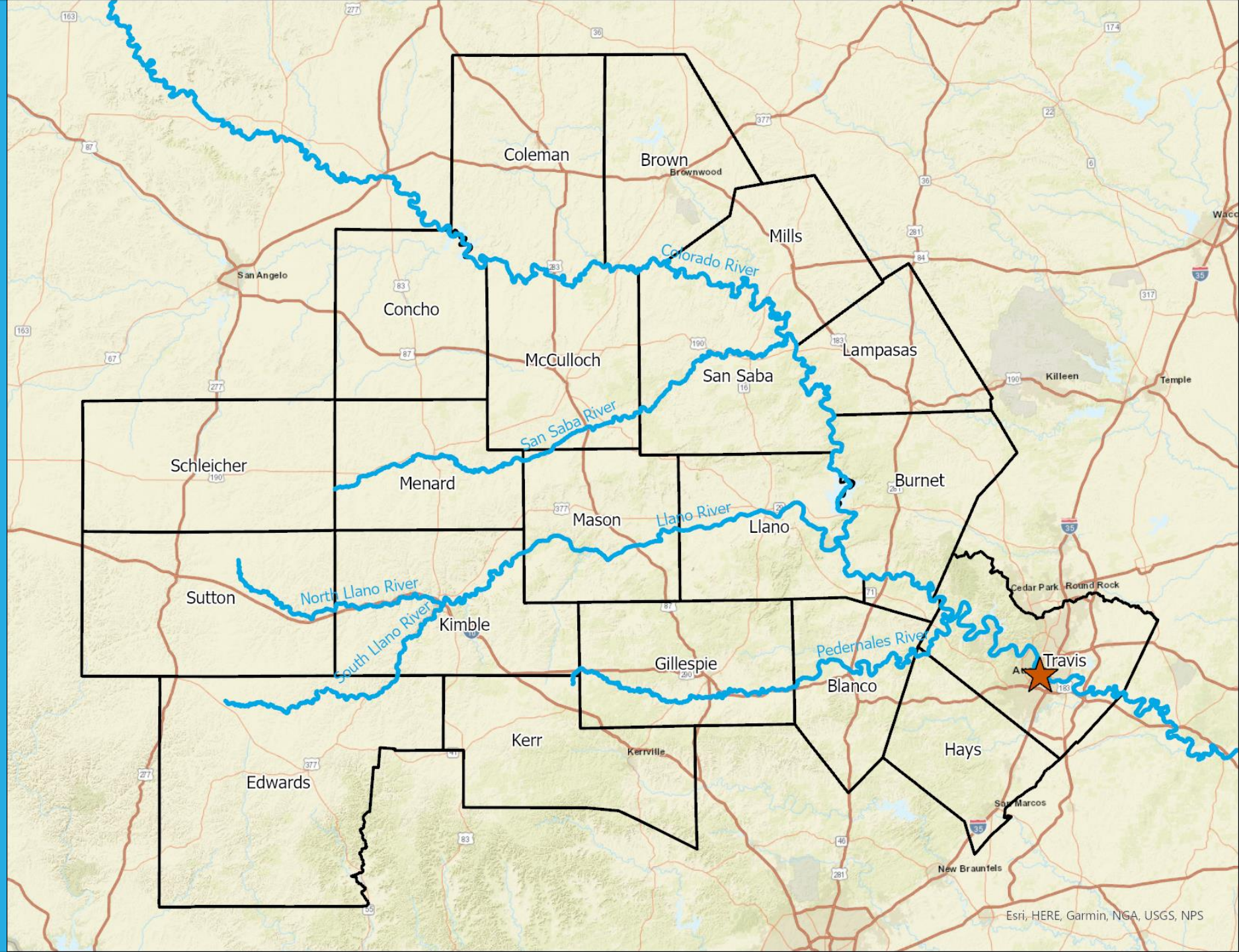

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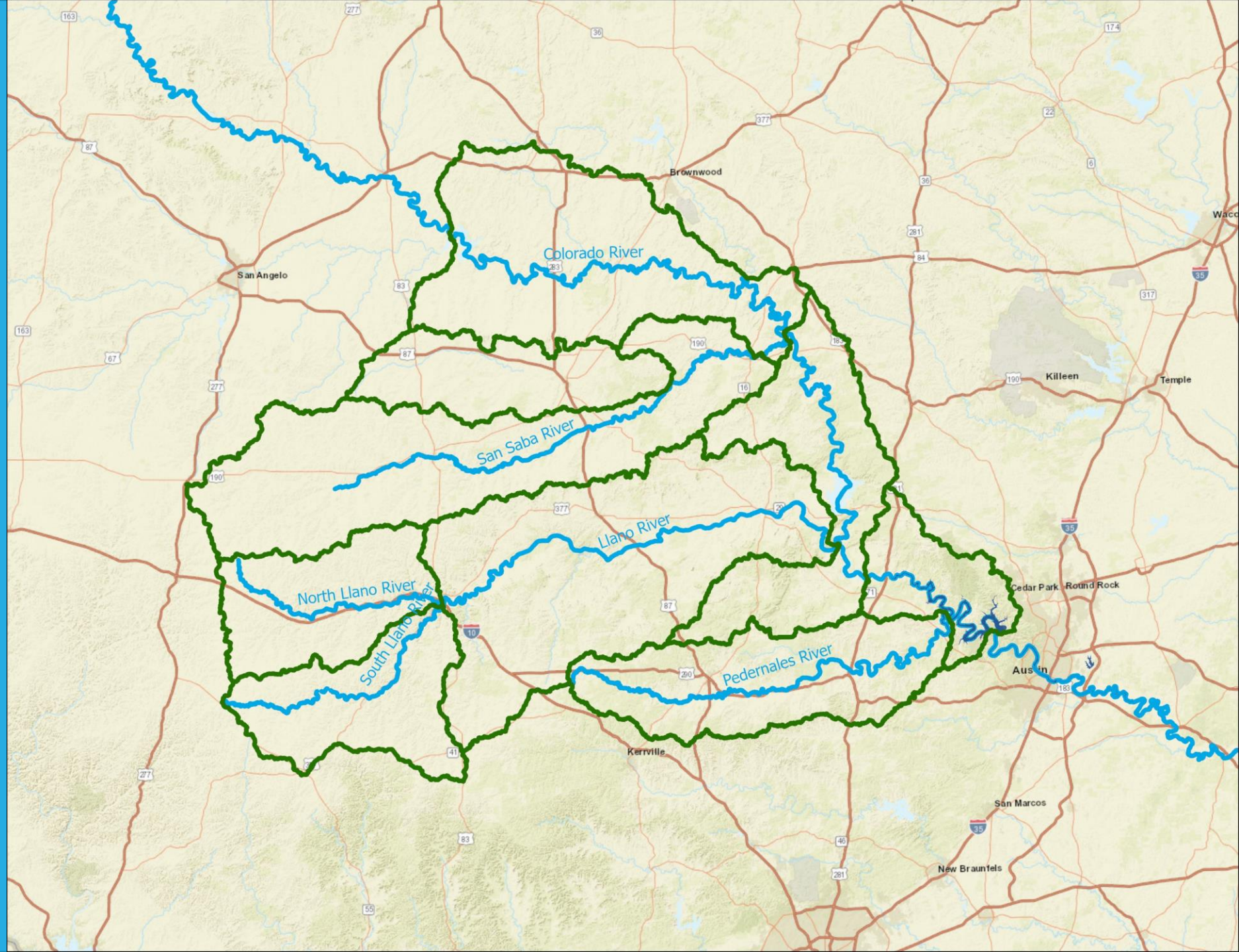

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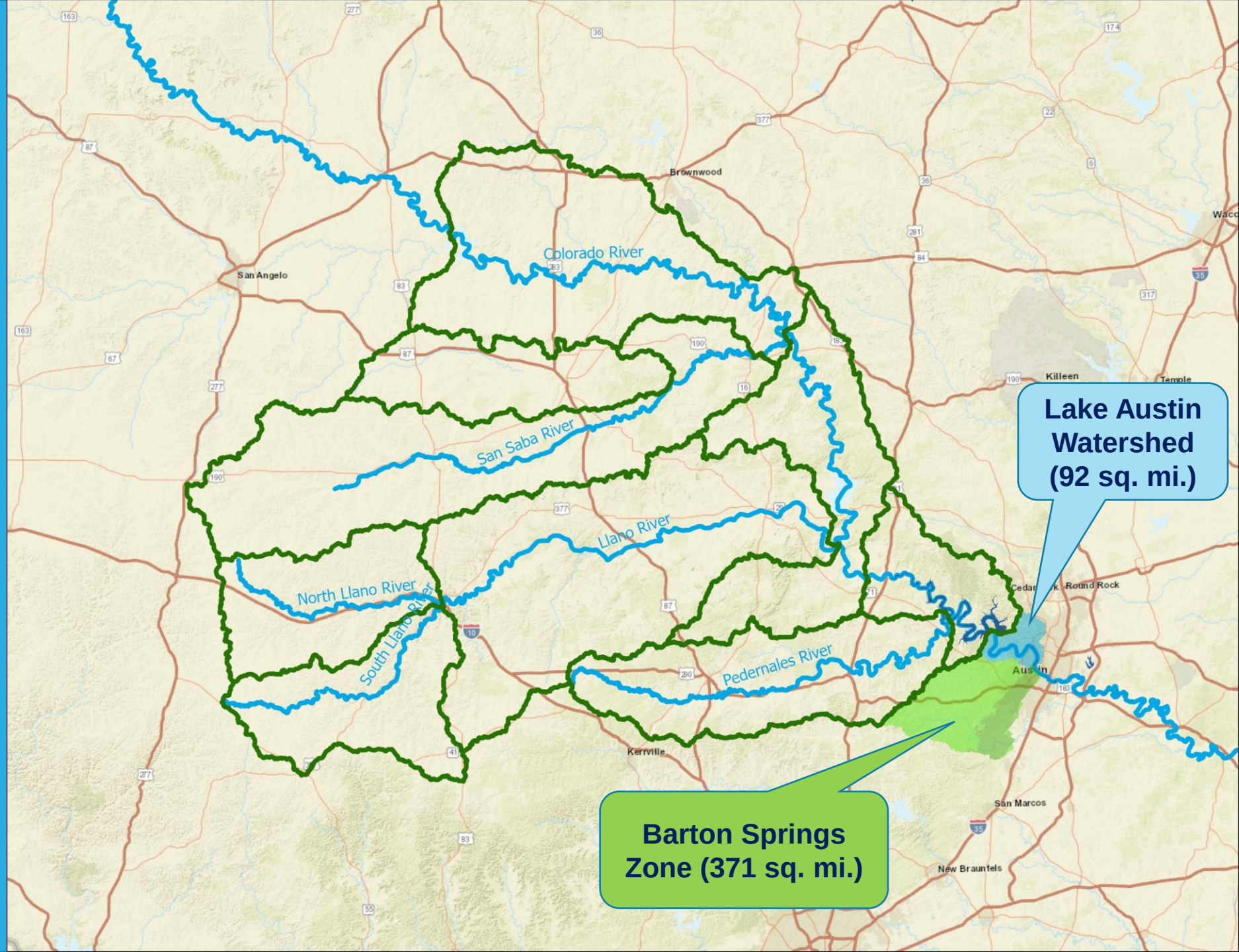

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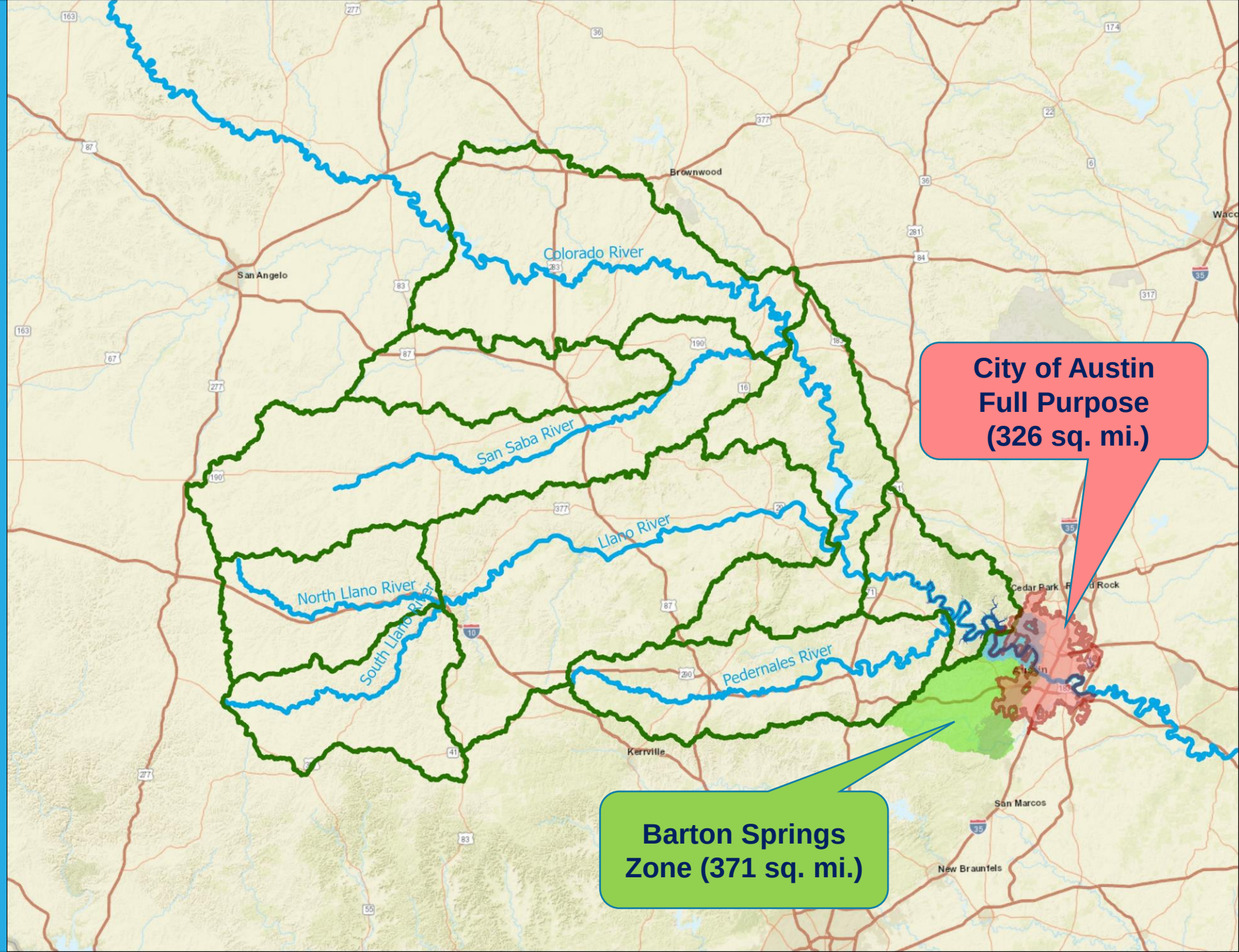
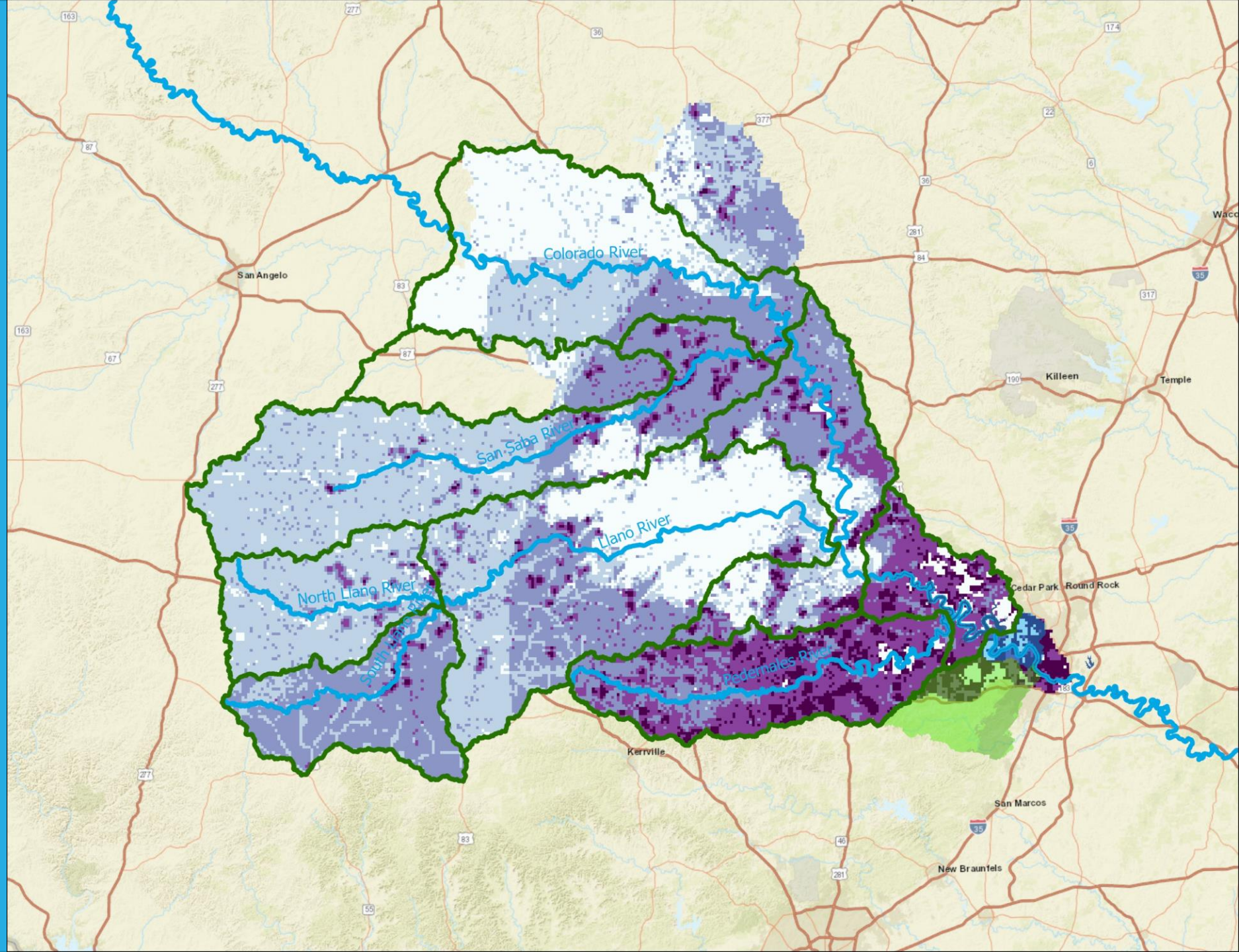


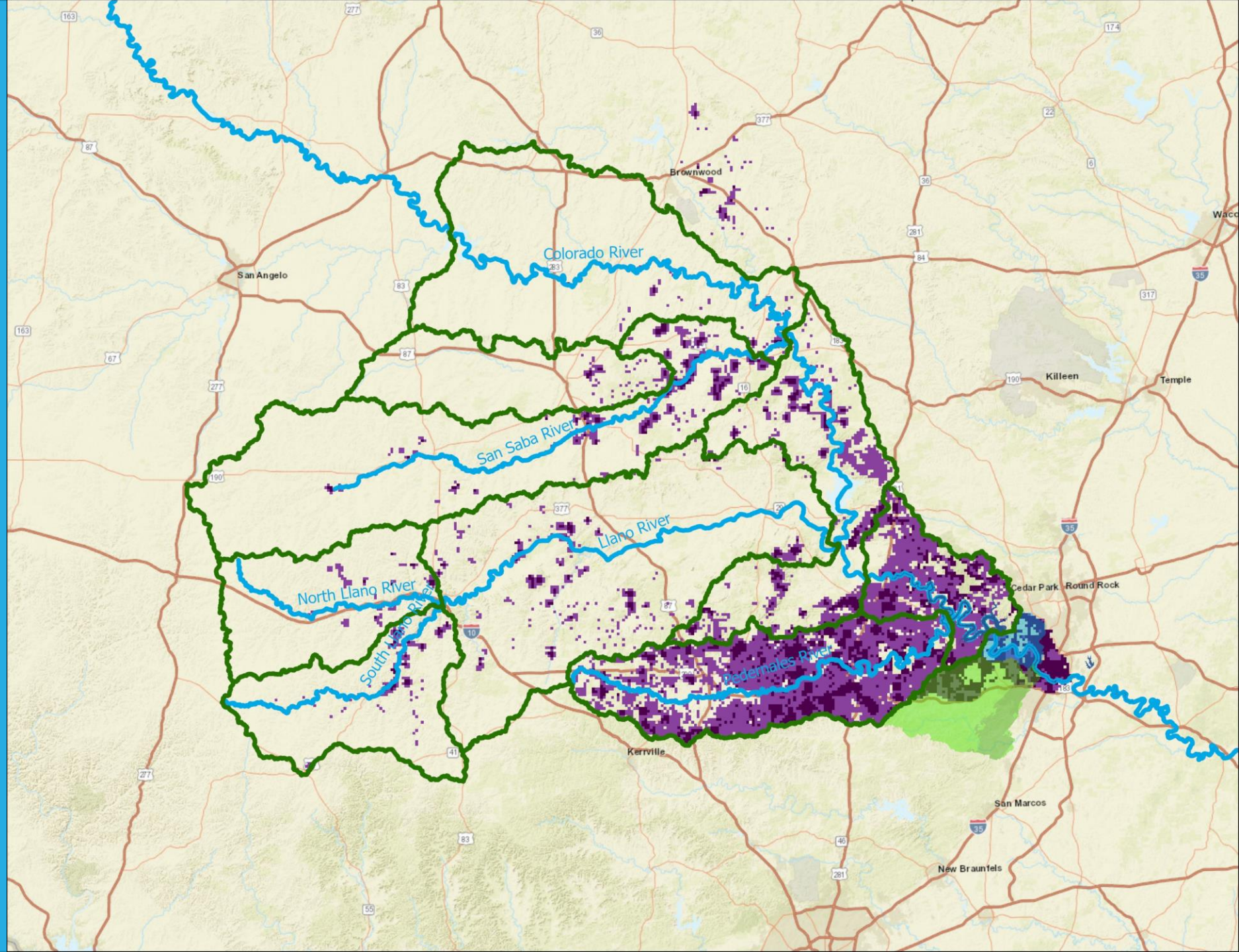
GIS analysis factors: scales and weights

	Water Factors					Environmental Factors					
	Watershed Segments	Aquifers	Springs (buffers)	Intakes (buffers)	Wells (buffers)	Riparian and Floodplain Vegetation	Pavement (buffers)	Slopes Slopes	Protected Lands (buffers)	Vegetation Vegetation	
	High	High	High	Moderate	Low	High	High	Moderate	Moderate	Low	
8	Highest flow	First tier aquifers	within 1/2 mile			Floodplain (main stem)					8
7											7
6											6
5											5
4		Second tier aquifers	within 1 mile	within 50 mile		Riparian (tributary)		> 55%	within 1/2 mile		4
3											3
2				within 100 mile				15% - 55%	1/2 mile - 1 mile	All other aka Veg.	2
1	Lowest flow									Bare / Cultivated	1
0		No aquifer	outside 1 mile	outside 100 mile	outside 1 mile	neither	outside 1 mile	< 15%	outside 1 mile	neither	0
-1					within 1 mile						-1
-2					within 1/2 mile		within 1/2 mile				-2
-3											-3
-4							within 1/4 mile				-4
-5											-5
-6											-6
-7											-7
-8											-8
-50									inside protected land		-50

Priority Conservation Areas



High Priority Conservation Areas



High Priority Conservation Areas

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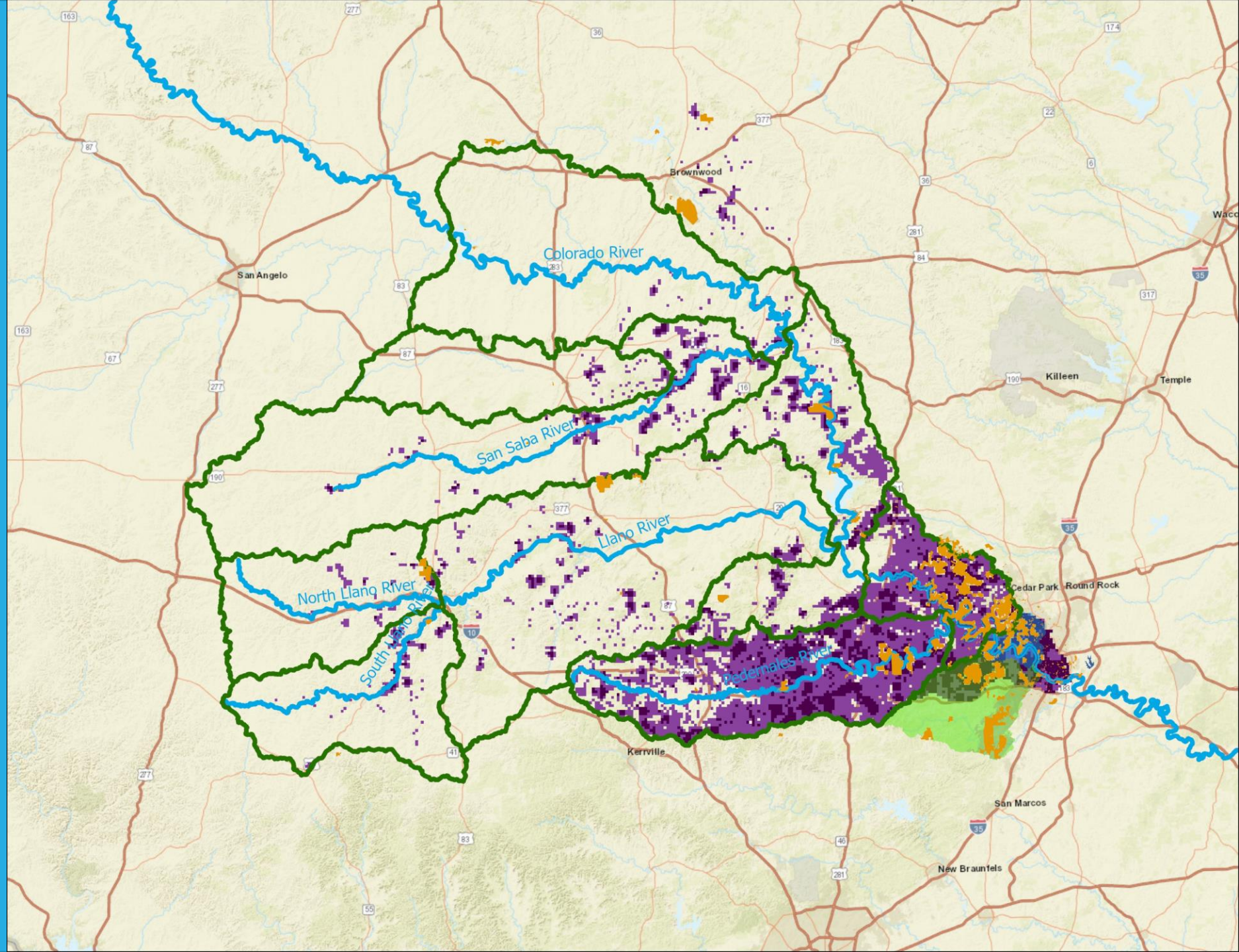
Permanently Protected Open Space



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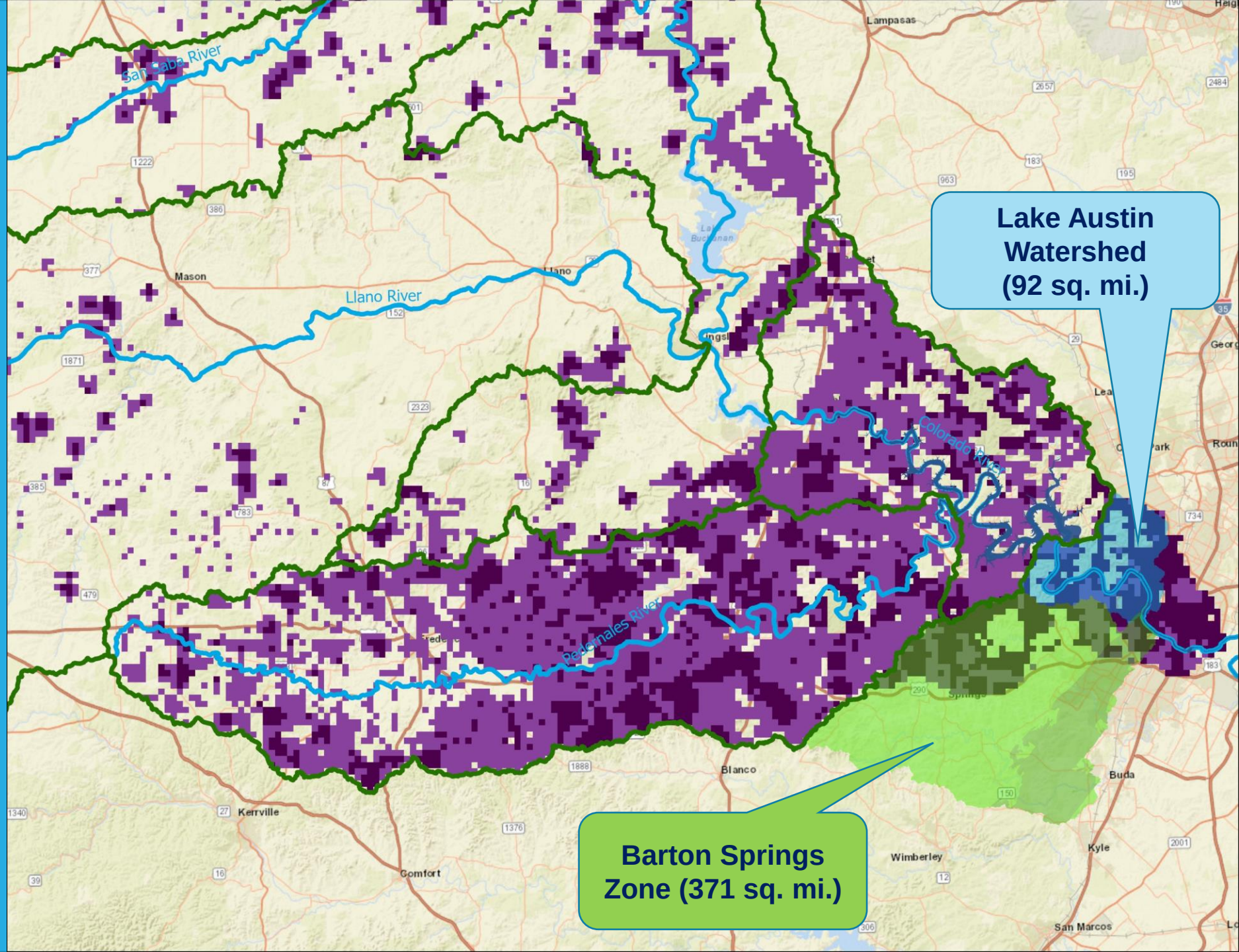

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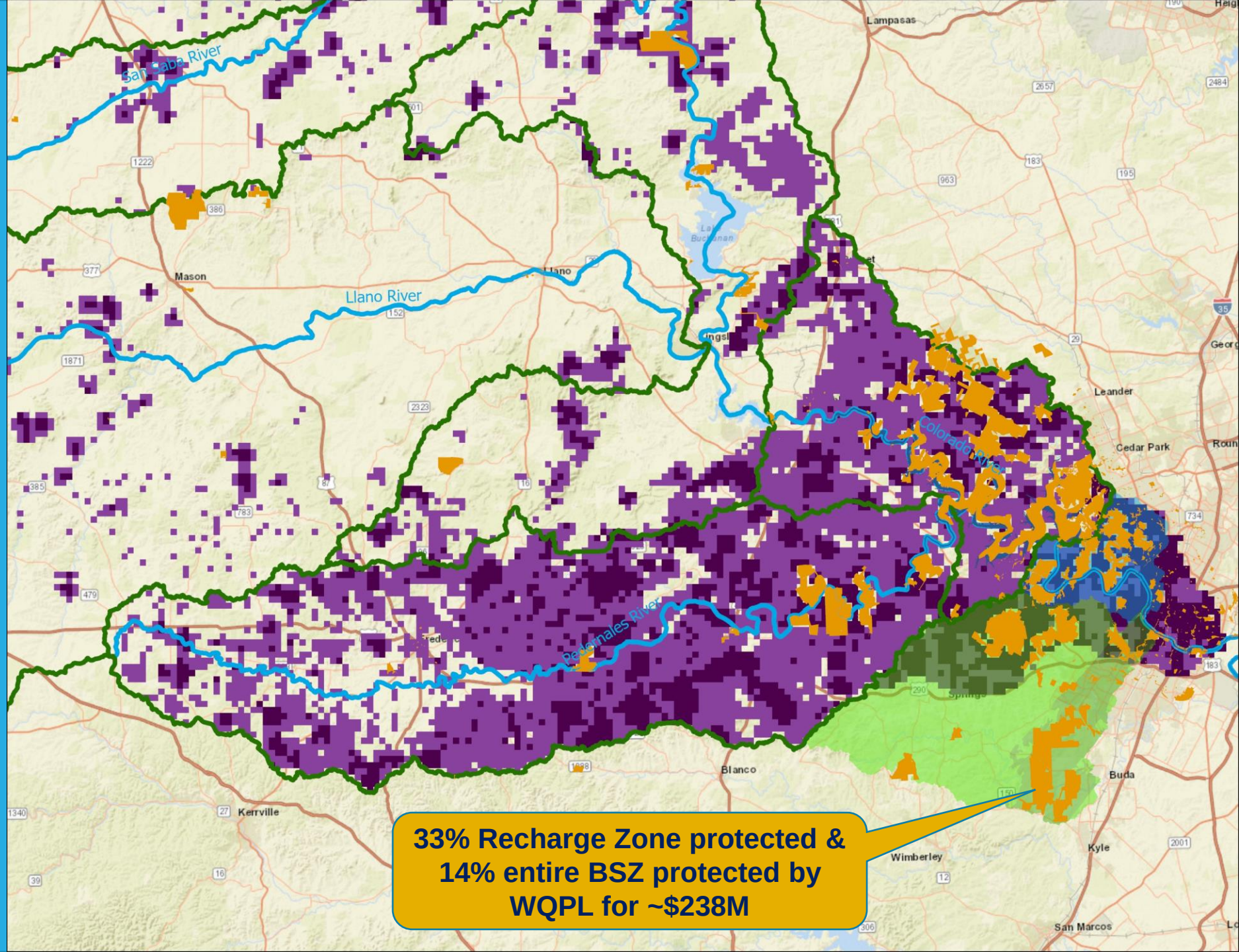

Further Modeling and Analysis

- LCRA's Colorado River Environmental Model (CREMs)
  - Develop inputs (e.g., land cover data in GIS)
  - Evaluate scenarios, including do-nothing option
  - Analyze results to understand magnitude of impact, priorities
  - Caveat: modeling strengths and weaknesses
- Water Treatment Impact Evaluation (impacts of pollutants)
- Potential Partners
  - LCRA
  - COA WPD
  - Water and Groundwater Conservation Districts

Modeling Scenarios for Evaluation

- Increased urbanization (multiple scenarios, timelines)
  - Includes the “Business as usual/do nothing scenario”
- Wastewater discharges/ban (multiple scenarios)
- Highland Lakes Watershed Ordinance (with/without)
- Increased pollutant loadings upstream of Lake Travis
- Impacts (benefits) of ecological land preservation
- Combination scenarios

Next Steps

- Identify priority opportunities for protection
  - Work with modeling partners to develop scenarios, data inputs
  - Benchmark other community source water protection strategies
  - Set narrative goals, conduct internal qualitative evaluation of strategy impact/benefit and cost
- Evaluate options for land conservation approaches
  - Recommend options for consideration in Water Forward
  - Conduct funding analysis
- Continue preparations for communications and partner support


Questions?
loadings