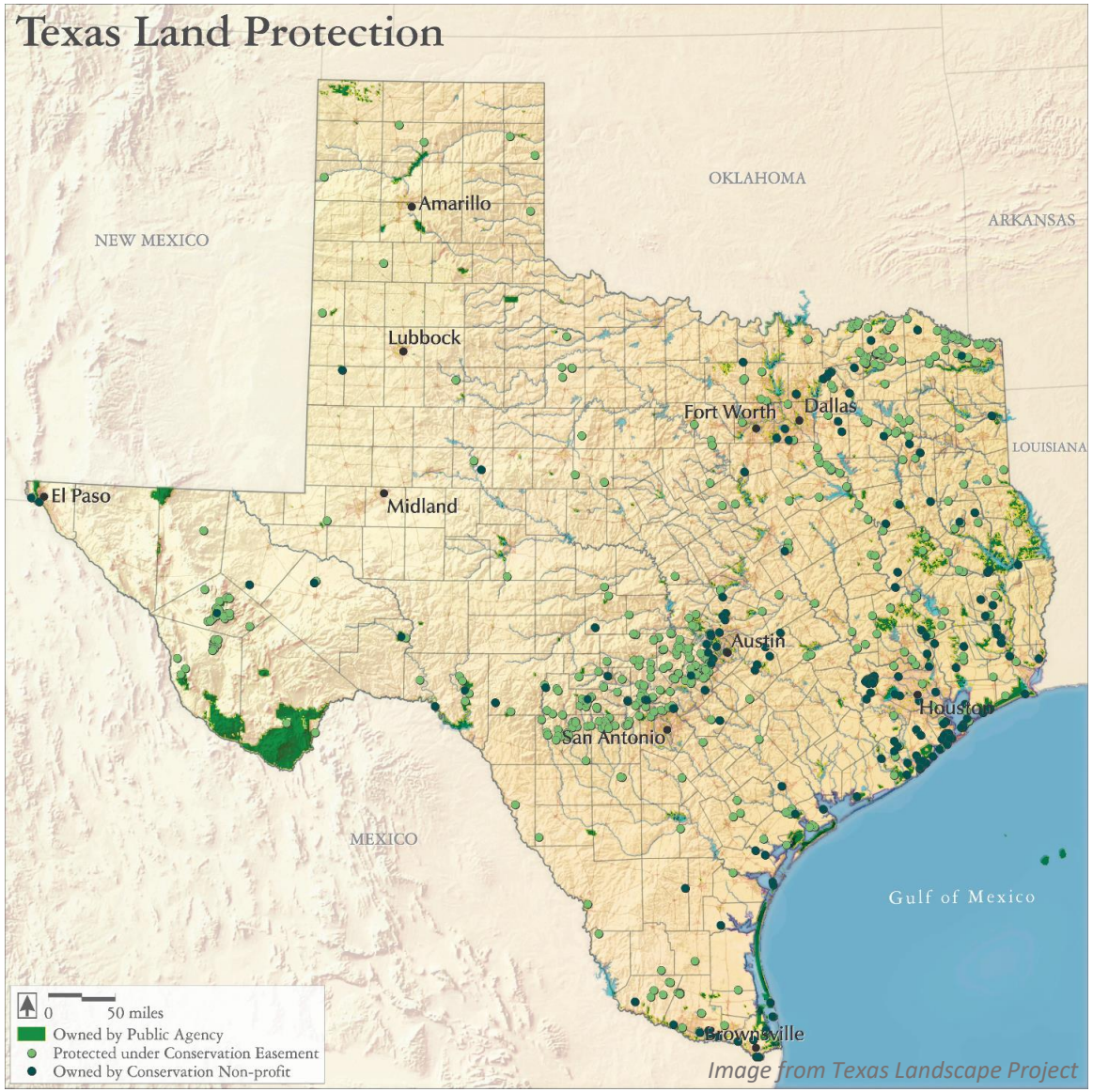
The Guadalupe River Basin
Strategic Conservation Prioritization

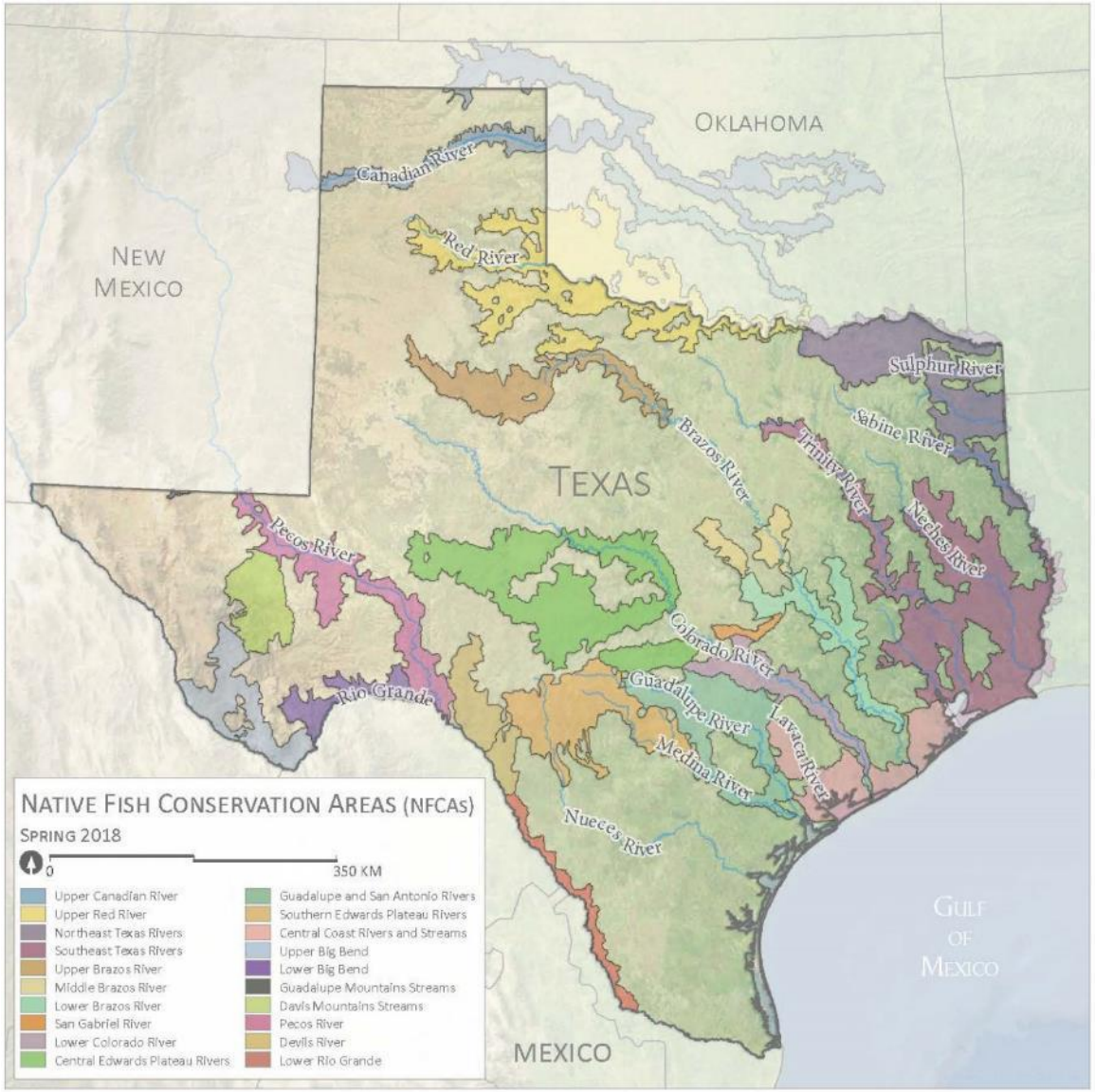
Identifying Prime Conservation Lands Using Geographic Information Systems

October 16, 2019

SIGLO GROUP

Native Fish Conservation Areas & Conservation in Texas





Gaps in conservation

PLANNING GAP

Where to effectively/efficiently implement action considering:

- Evaluation of multiple landscape resources
- Inter/intra-jurisdictional decision making
- Evaluating both the conservation resource and the land use trends impacting the resource.

IMPLEMENTATION GAP

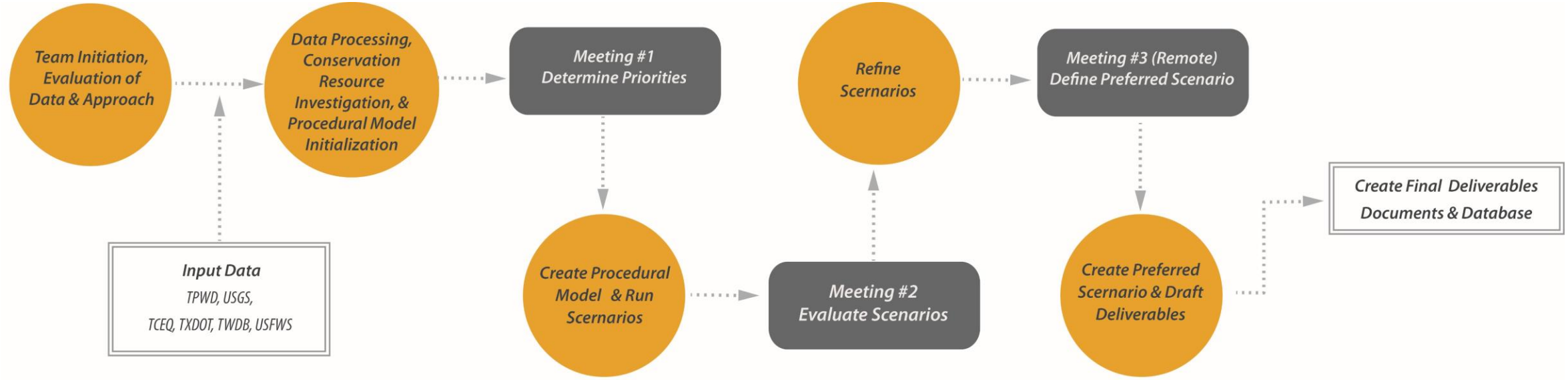
Knowing-Doing Gap: How do we ACT?

- Mechanisms?
- Partners?
- How to facilitate?

Purpose of Conservation Prioritization

Goals

- Provide an overview of the site, relevant history, land use changes, and significant natural resources.
- Utilize advanced data analysis methods to identify areas of highest conservation value.
- Recommend paths forward that support the protection and efficient use of water, cultural, and ecological resources.
- Provide information that facilitates implementation, fundraising, and education, as well as on the ground conservation and restoration activities that are the outcome of the next phase of the project.



Stakeholders

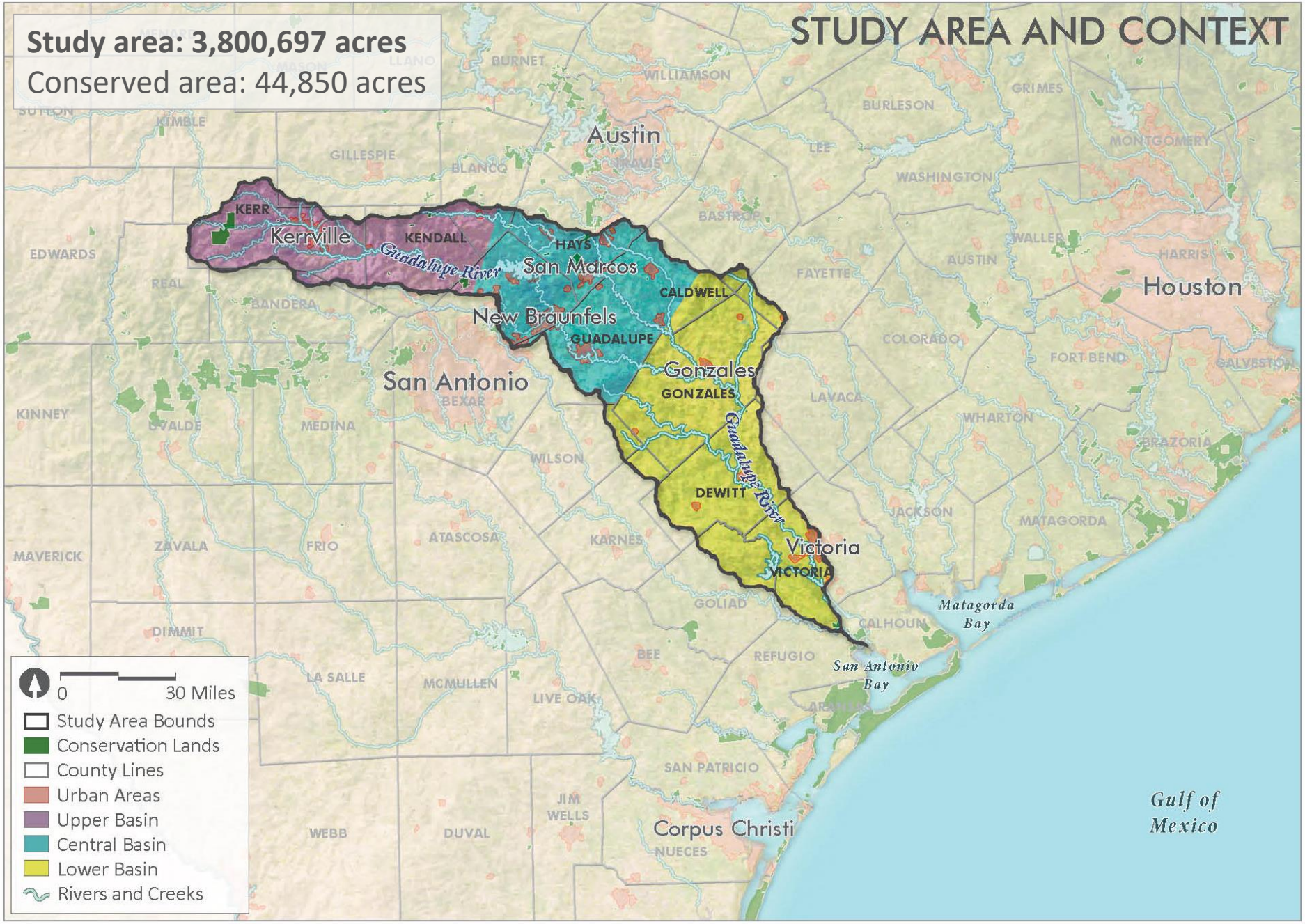
Key Questions for Stakeholders

- What conservation resources should be valued in the prioritization?
- How should they be valued?
- Do the results make sense?

Participating Organizations

- US Fish and Wildlife Service
- Texas Parks and Wildlife
- Landowners
- City of New Braunfels
- Southwest Research Institute
- Comal County Conservation Alliance
- Comal County
- Comal-Trinity Groundwater Conservation
- San Marcos River Foundation District
- Upper Guadalupe River Authority
- Green Spaces Alliance of South Texas
- Greater Edwards Aquifer Authority
- City of San Antonio

Study Area


Study area: 3,800,697 acres
Conserved area: 44,850 acres
STUDY AREA AND CONTEXT
Austin
Kerrville
KERR
KENDALL
HAYS
San Marcos
Guadalupe River
CALDWELL
New Braunfels
GUADALUPE
Gonzales
GONZALES
San Antonio
Houston
Victoria
VICTORIA
DEWITT
Guadalupe River
Matagorda Bay
San Antonio Bay
Corpus Christi
Gulf of Mexico
BURNET
WILLIAMSON
GRIMES
BURLESON
MONTGOMERY
WASHINGTON
KIMBLE
GILLESPIE
BLANCO
LEE
BASTROP
WALLER
HARRIS
AUSTIN
FAYETTE
EDWARDS
REAL
BANDERA
COLORADO
FORT BEND
GALVESTON
LAVACA
WHARTON
BRAZORIA
KINNEY
UVALDE
MEDINA
BEXAR
WILSON
JACKSON
MATAGORDA
MAVERICK
ZAVALA
FRIO
ATASCOSA
KARNES
GOLIAD
CALHOUN
DIMMIT
BEE
REFUGIO
LA SALLE
MCMULLEN
LIVE OAK
ARANSAS
SAN PATRICIO
JIM WELLS
WEBB
DUVAL
NUECES
0
30 Miles
Study Area Bounds
Conservation Lands
County Lines
Urban Areas
Upper Basin
Central Basin
Lower Basin
Rivers and Creeks

Final Conservation Scenario

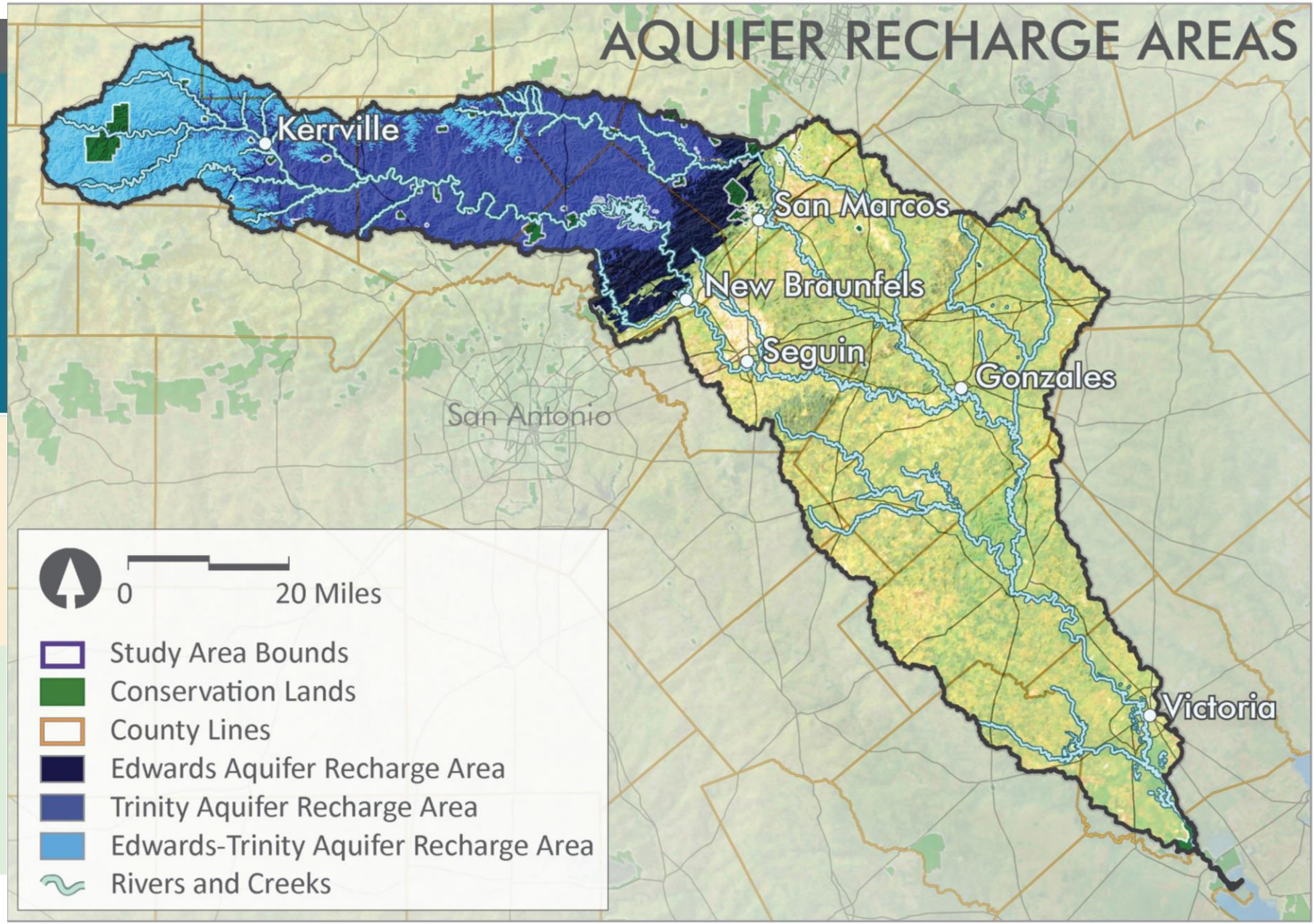
	Conservation Resources	Weighting
Water	Major Spring Buffers	High
	Aquifer Recharge Areas Scaled	High
	Karst Areas	Moderate
	Public Water Supply Surface Intakes	Moderate
	Riparian Corridor	High
	303D Impaired Waterway Buffers	Low
Cultural	Parcel Size	High
	Proximity to Conserved Land	Moderate
	Development Corridors	Moderate
	Prime Farmland Soils	Moderate
Ecological	Native Fish Conservation Areas	High
	Guadalupe Bass Fish Priority Areas	High
	Mussel Priority Areas	Moderate
	Terrestrial Fauna Ecological Index	High

Example Conservation Resources

Water

Cultural

Ecological



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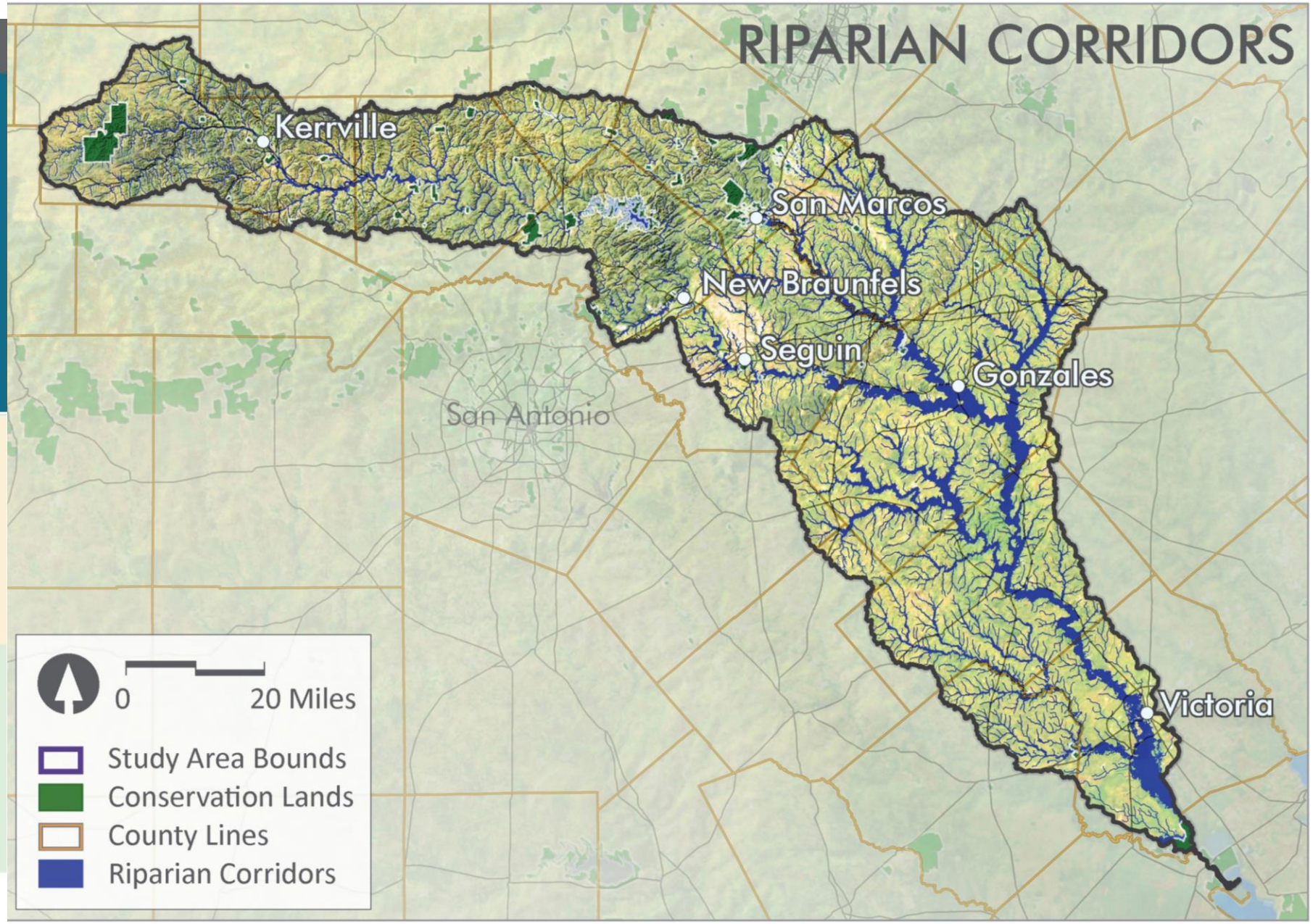

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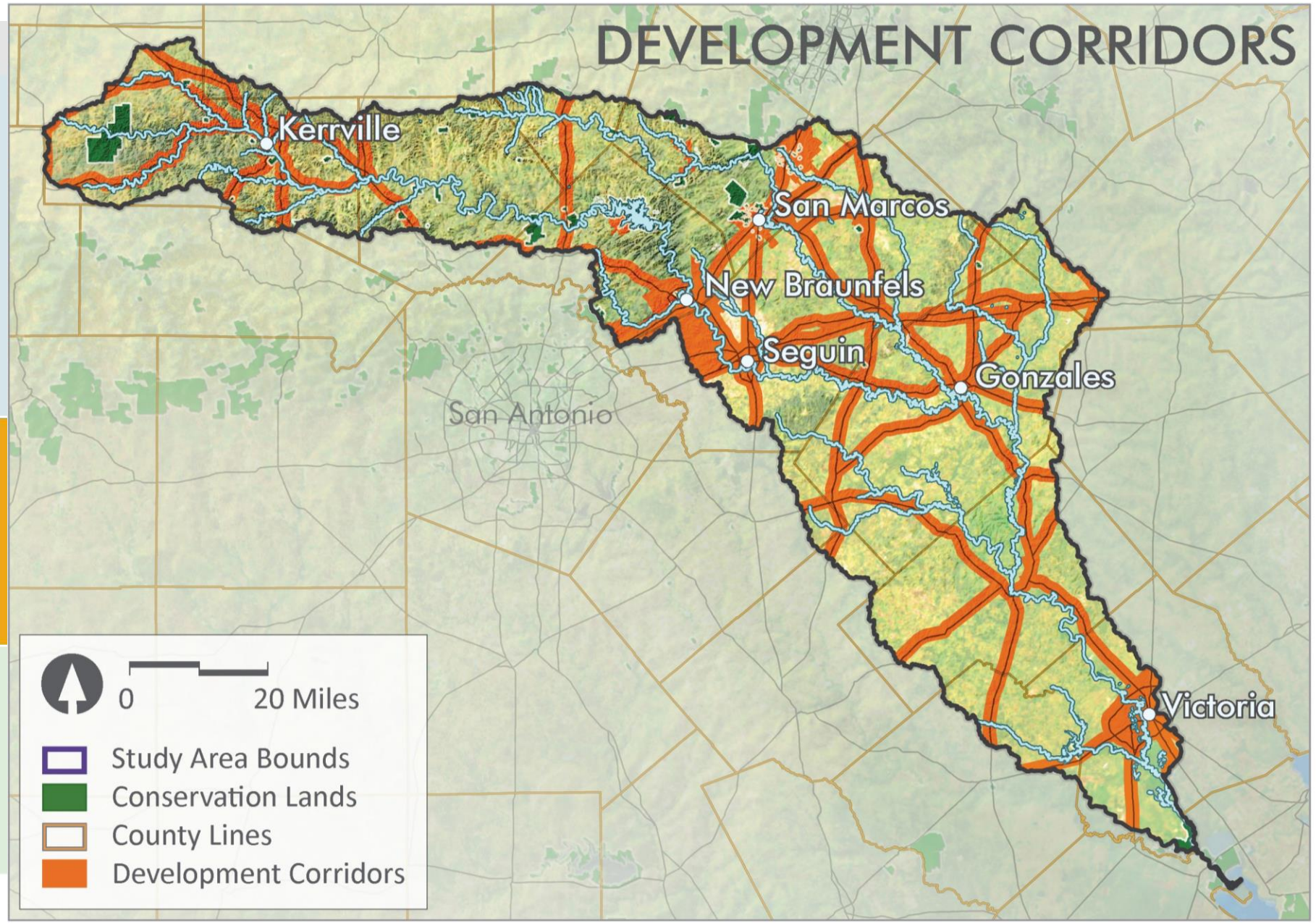

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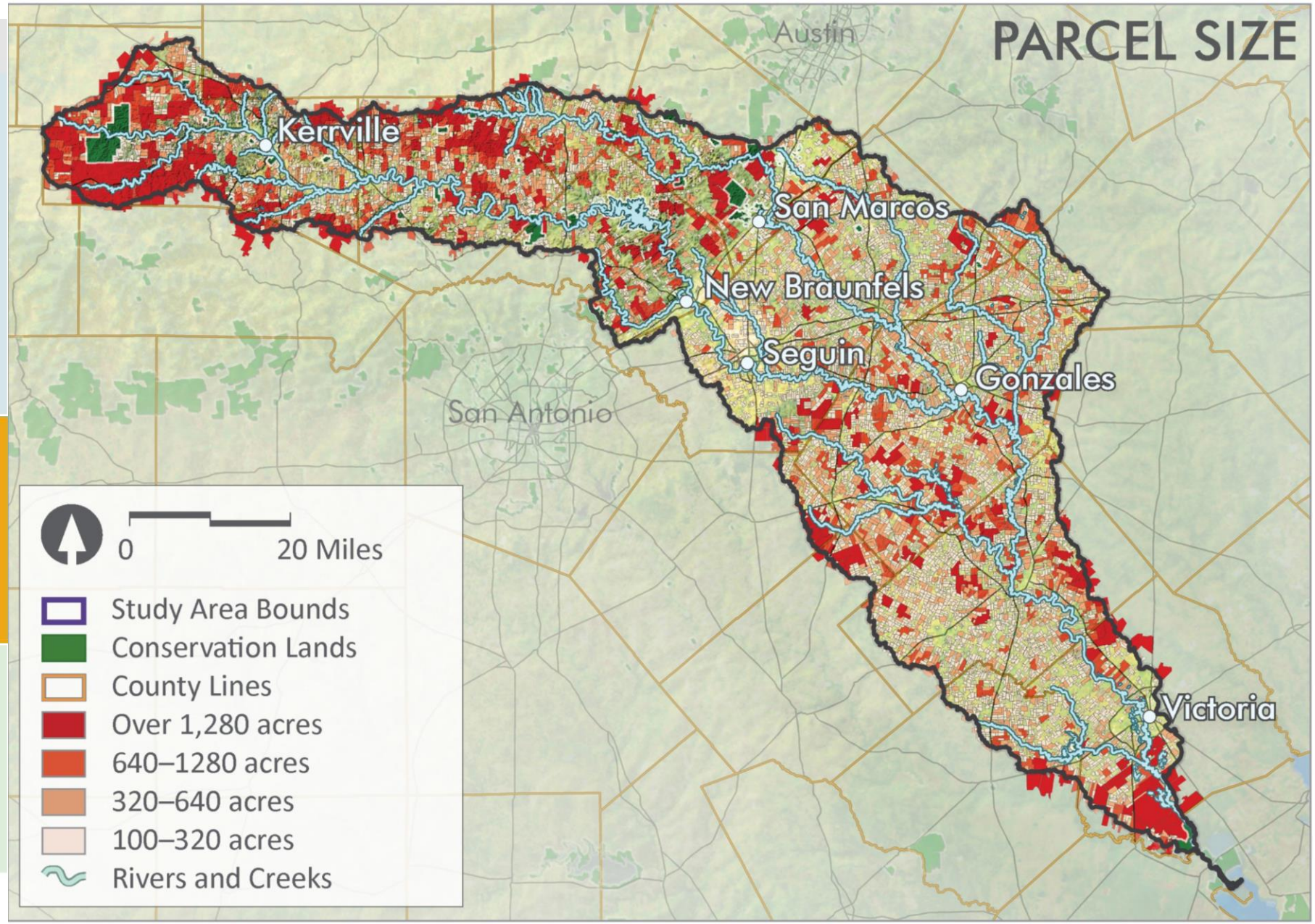

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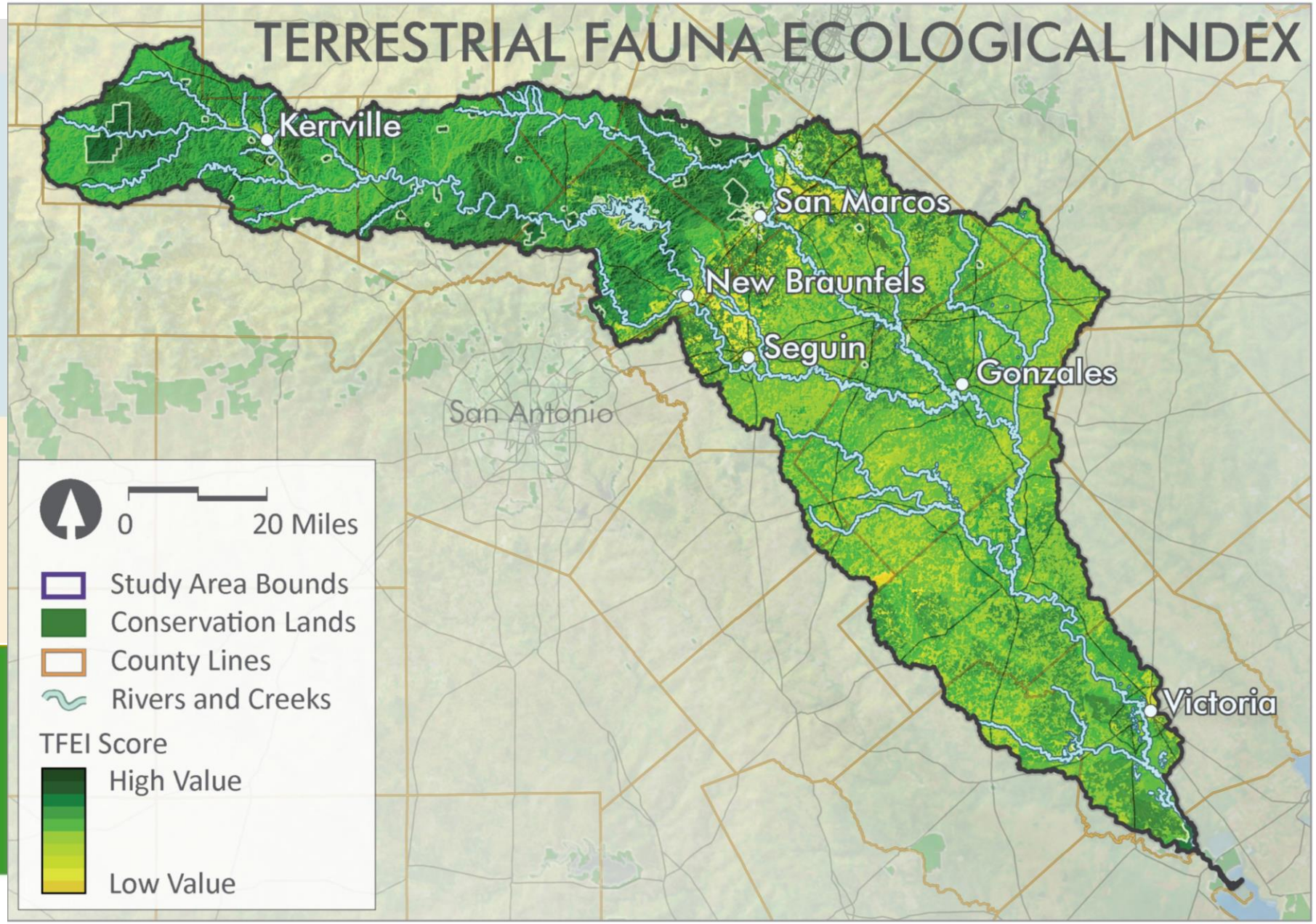

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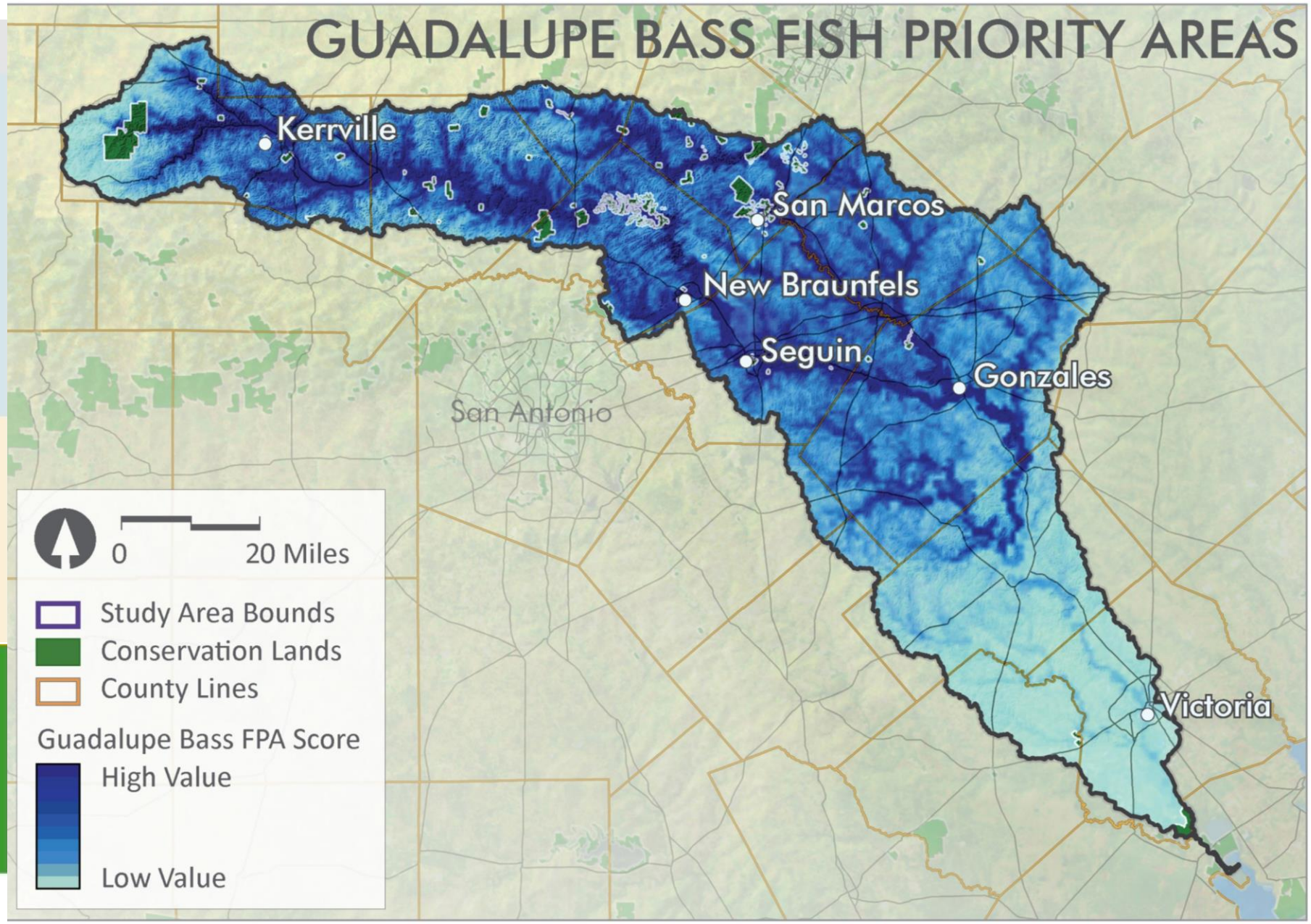
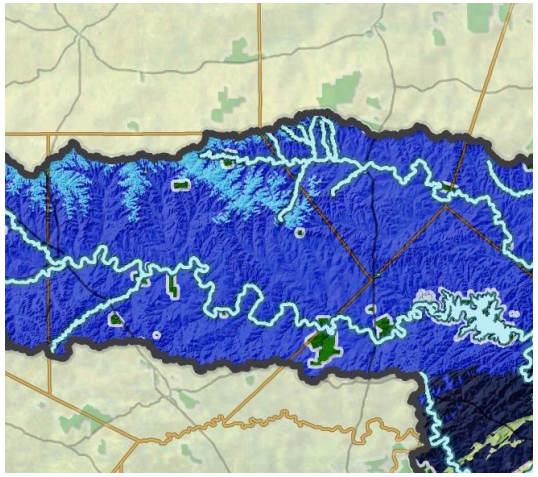


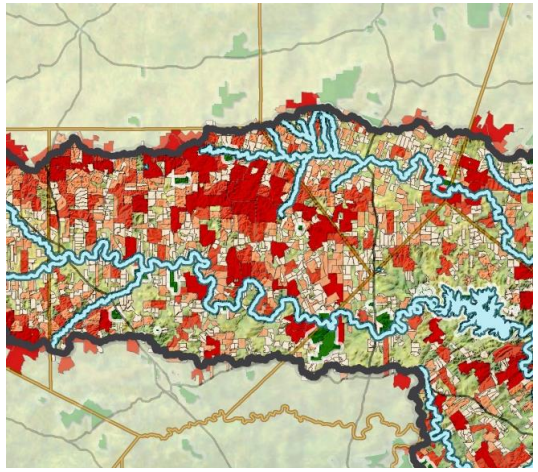
General Look at How a Procedural Model Works

Conservation Resources to Land Value Index (not all resources shown, just examples)

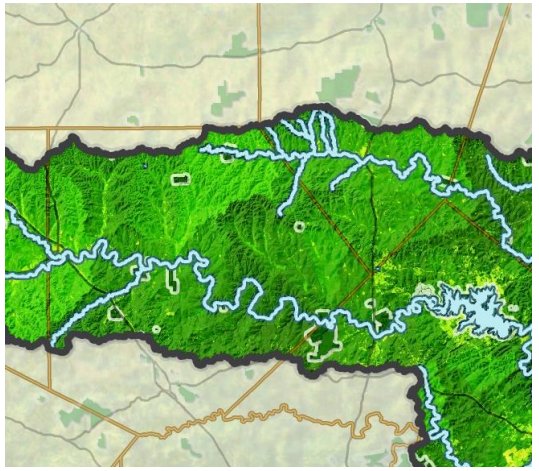
Aquifer Recharge



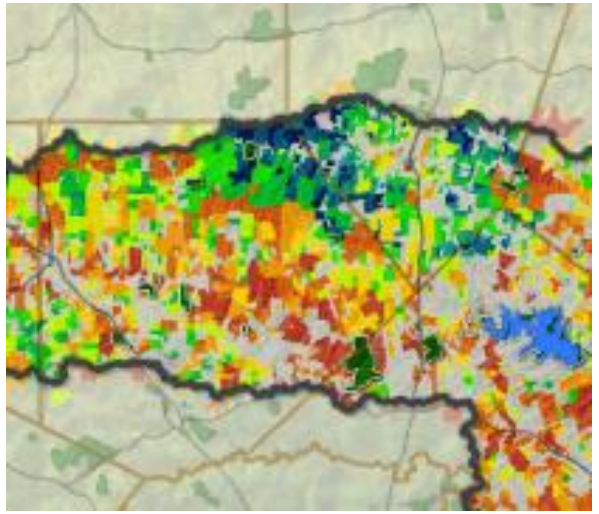
Parcel Size

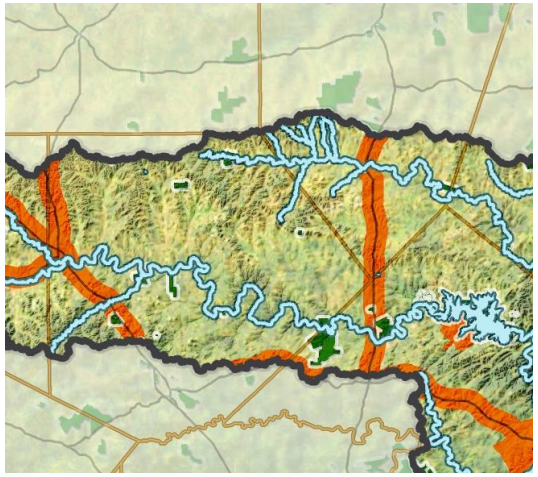


Fauna Ecological Index

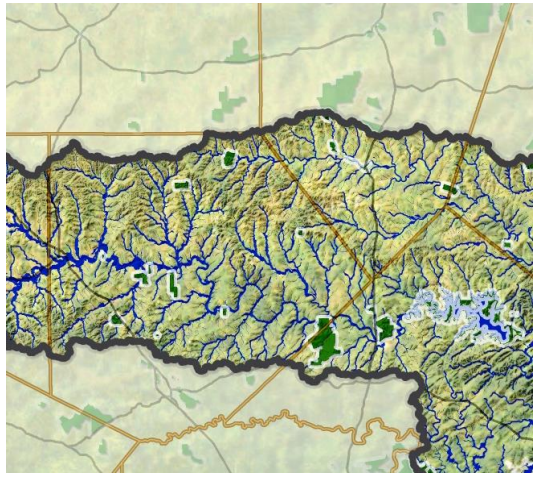


Suitable Sites for Conservation

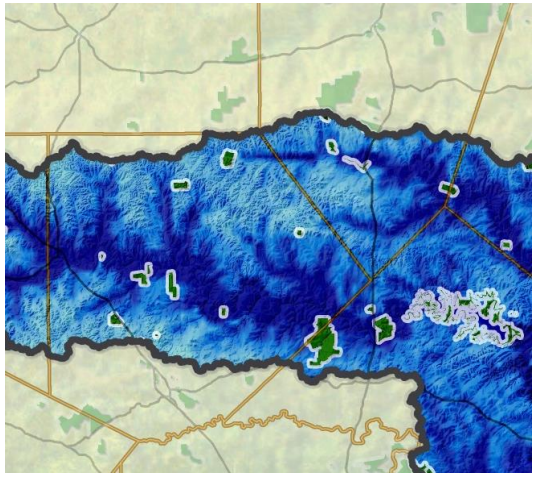




Development Corridors



Riparian Areas

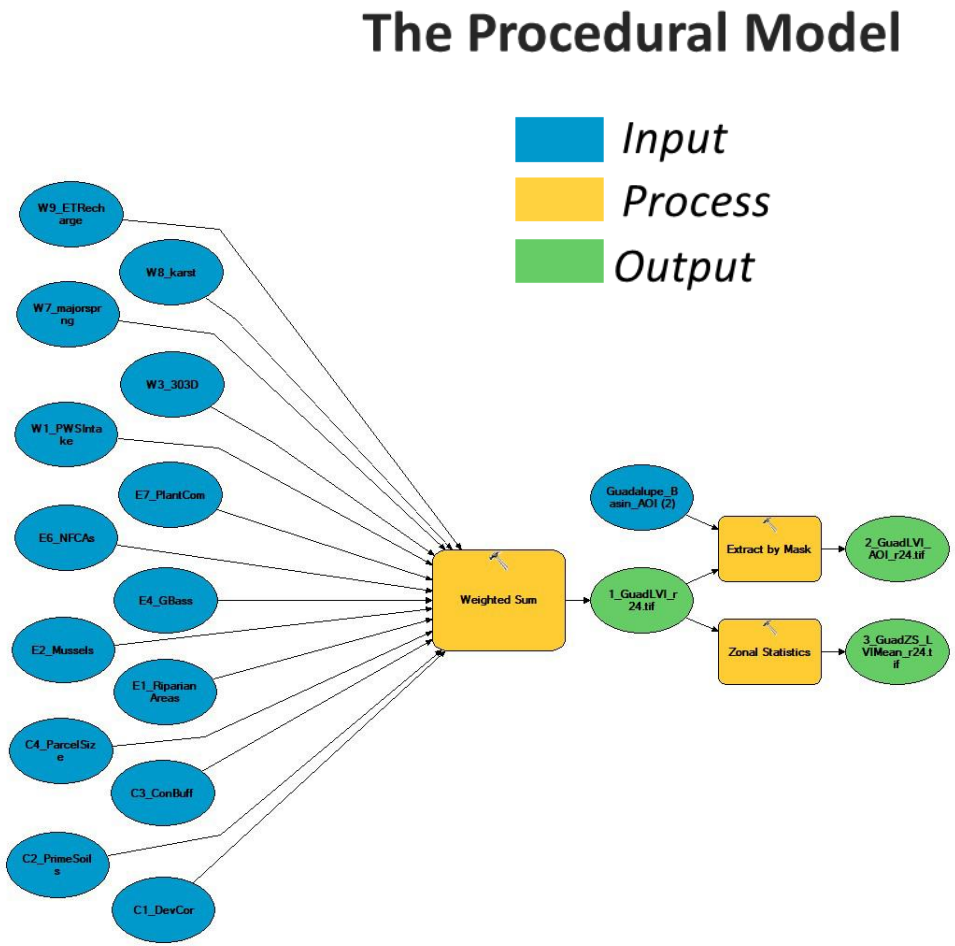


Guadalupe Bass Habitat

The Procedural Model

STEPS IN RUNNING THE MODEL

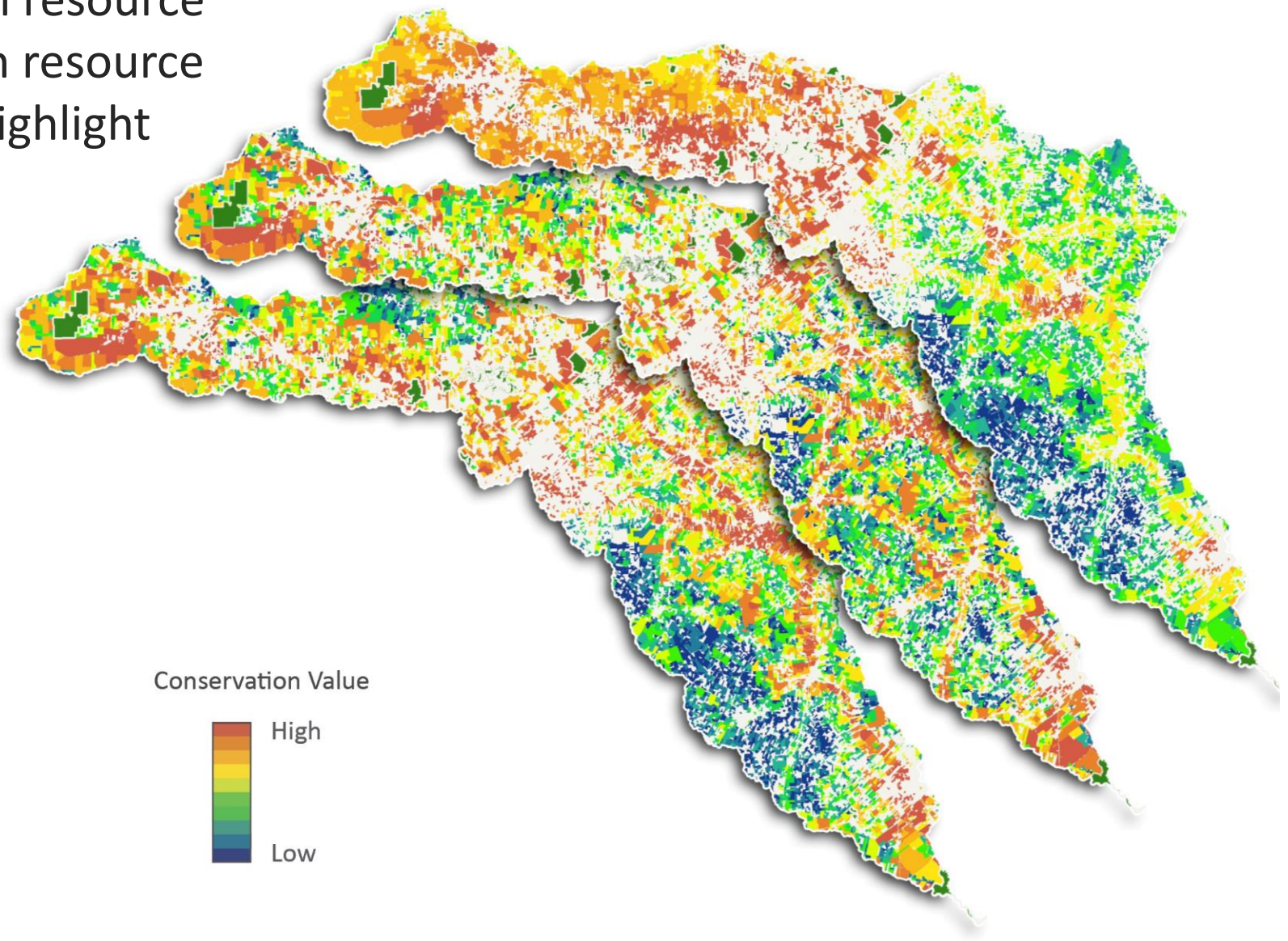
1. *Evaluate and adjust the existing conservation lands file as conditions change;*
2. *Add or delete individual conservation resources;*
3. *Adjust the values/weights of conservation resources;*
4. *Run model;*
6. *Evaluate results and obtain stakeholder feedback;*
7. *Repeat as needed.*



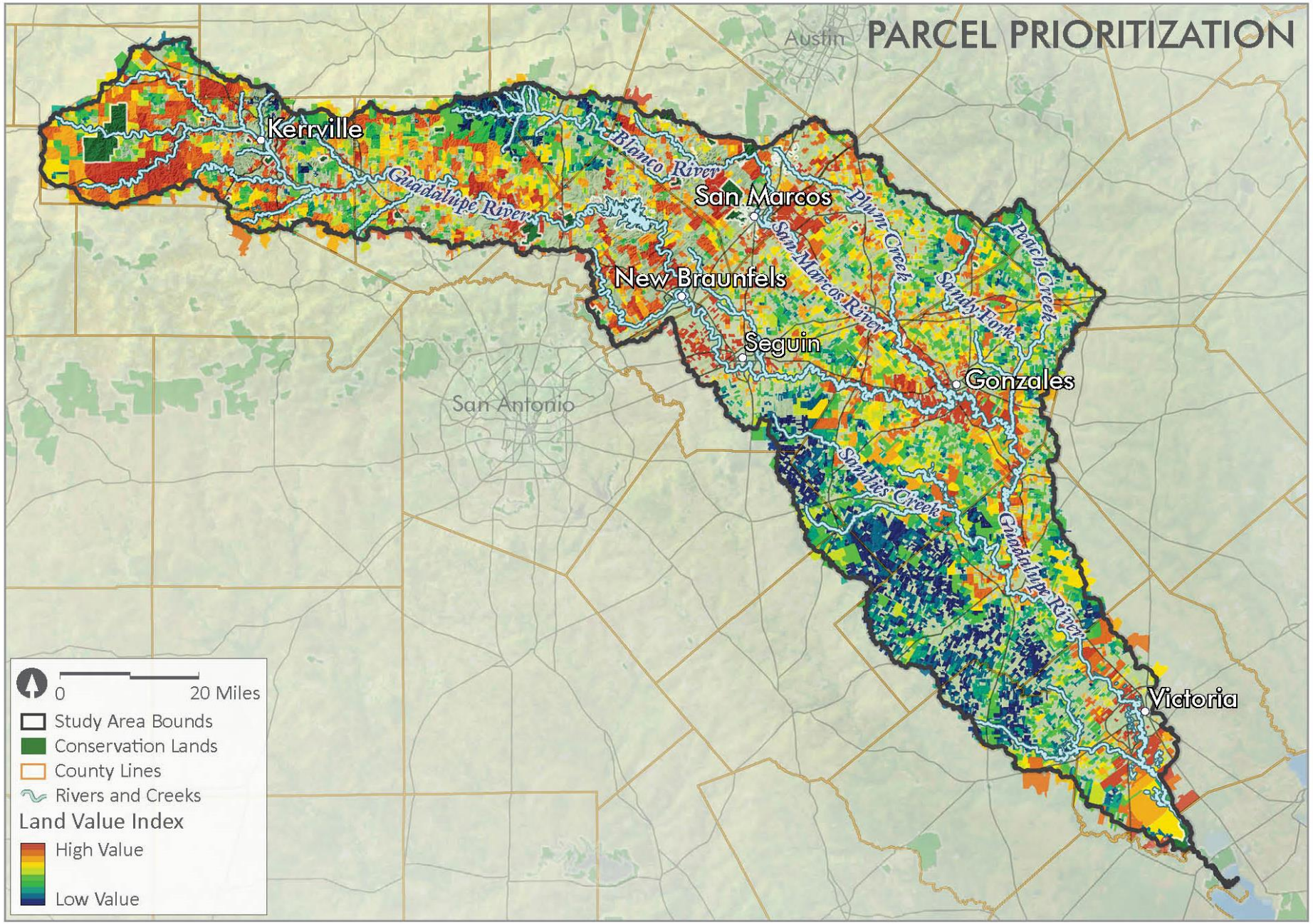
Sensitivity Analysis and Comparison of Conservation Scenarios

Example changes made:

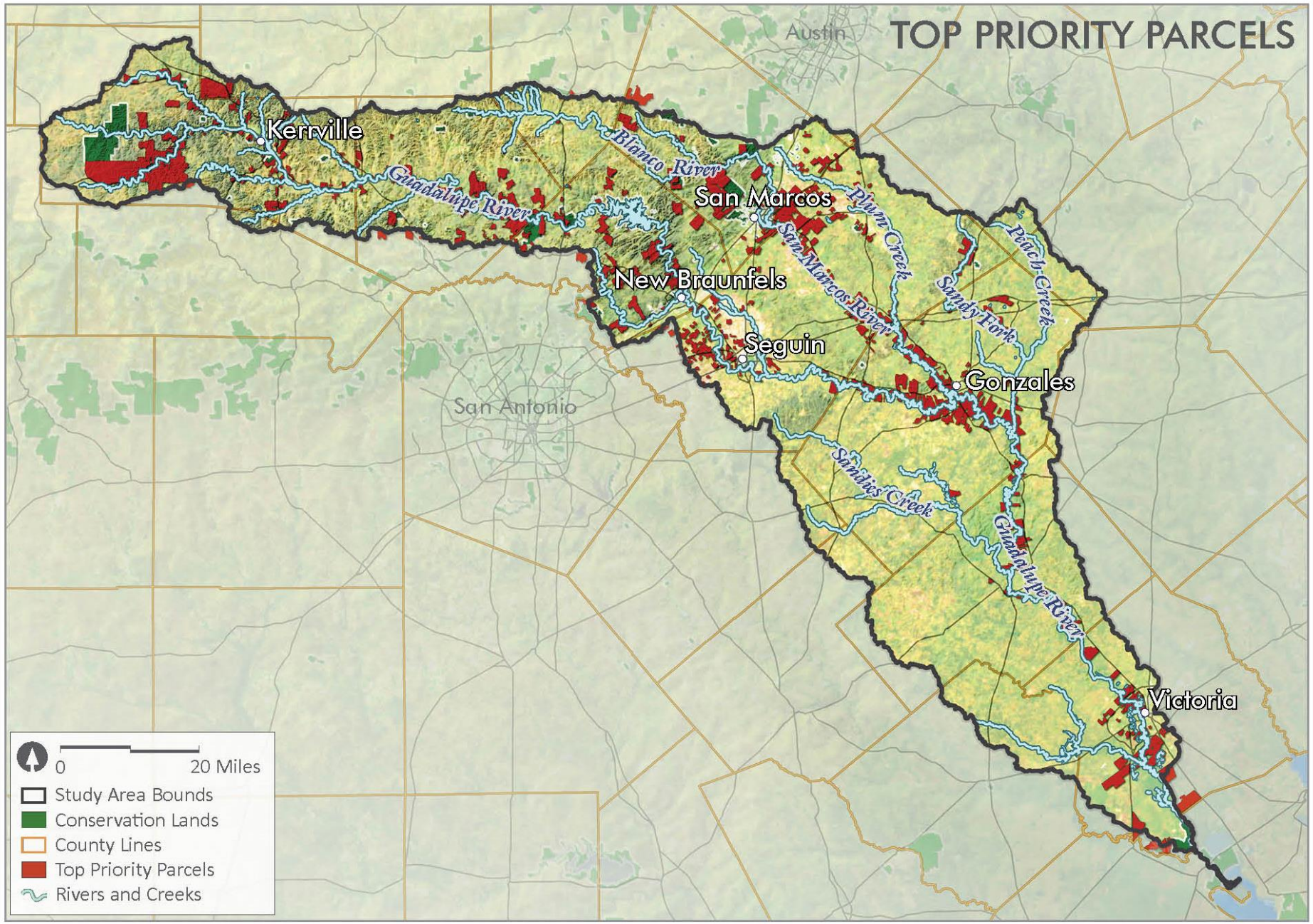
- Removal of conservation resource
- Addition of conservation resource
- Alteration of values to highlight different resources



Final Conservation Scenario



Final Conservation Scenario: Top Priority Parcels



Final Conservation Scenario: Top Priority Areas

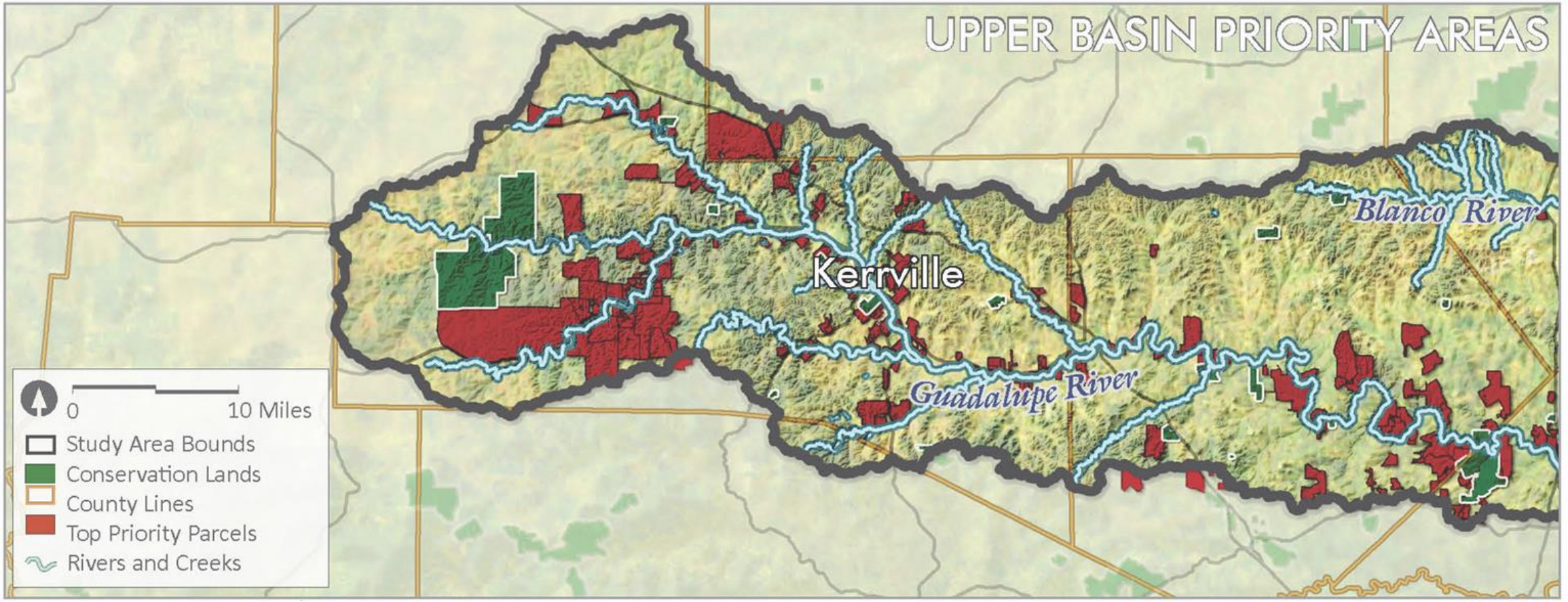
	Conservation Resources	Study Area Total	Top priority areas (% of study area total)
Total	Total Acreage		379,945
	Number of Parcels		889
	Average parcel size (acres)		427
Water	Major Spring Buffers (acres)	8,402	2,317 (28%)
	Aquifer Recharge Areas (acres)	934,782	161,383 (17%)
	Karst Areas (acres)	382,052	63,175 (17%)
	Public Water Supply Surface Intakes (acres)	414,842	121,837 (29%)
	Riparian Corridors (acres)	787,486	131,462 (17%)
	303D Impaired Waterway Buffers (acres)	15,025	3,217 (21%)
Cultural	Parcel Size	n/a	n/a
	Number of Parcels Adjacent to Conserved Land	300	73 (24%)
	Development Corridors (acres)	1,106,671	173,022 (16%)
	Prime Farmland Soils (acres)	1,133,323	126,442 (11%)
Ecological	Native Fish Conservation Areas (acres)	2,975,987	354,643 (12%)
	Guadalupe Bass Fish Priority Areas (acres)	8,274	4,057 (49%)
	Mussel Priority Areas (acres)	119,259	44,382 (37%)
	High Terrestrial Fauna Ecological Index (acres)	389,621	59,034 (15%)

Final Conservation Scenario: Top Priority Parcels

Key Resources:

- Parcel Size and Proximity to Conserved Land
- Wildlife, Mussel, and Guadalupe bass habitat
- Riparian Corridors

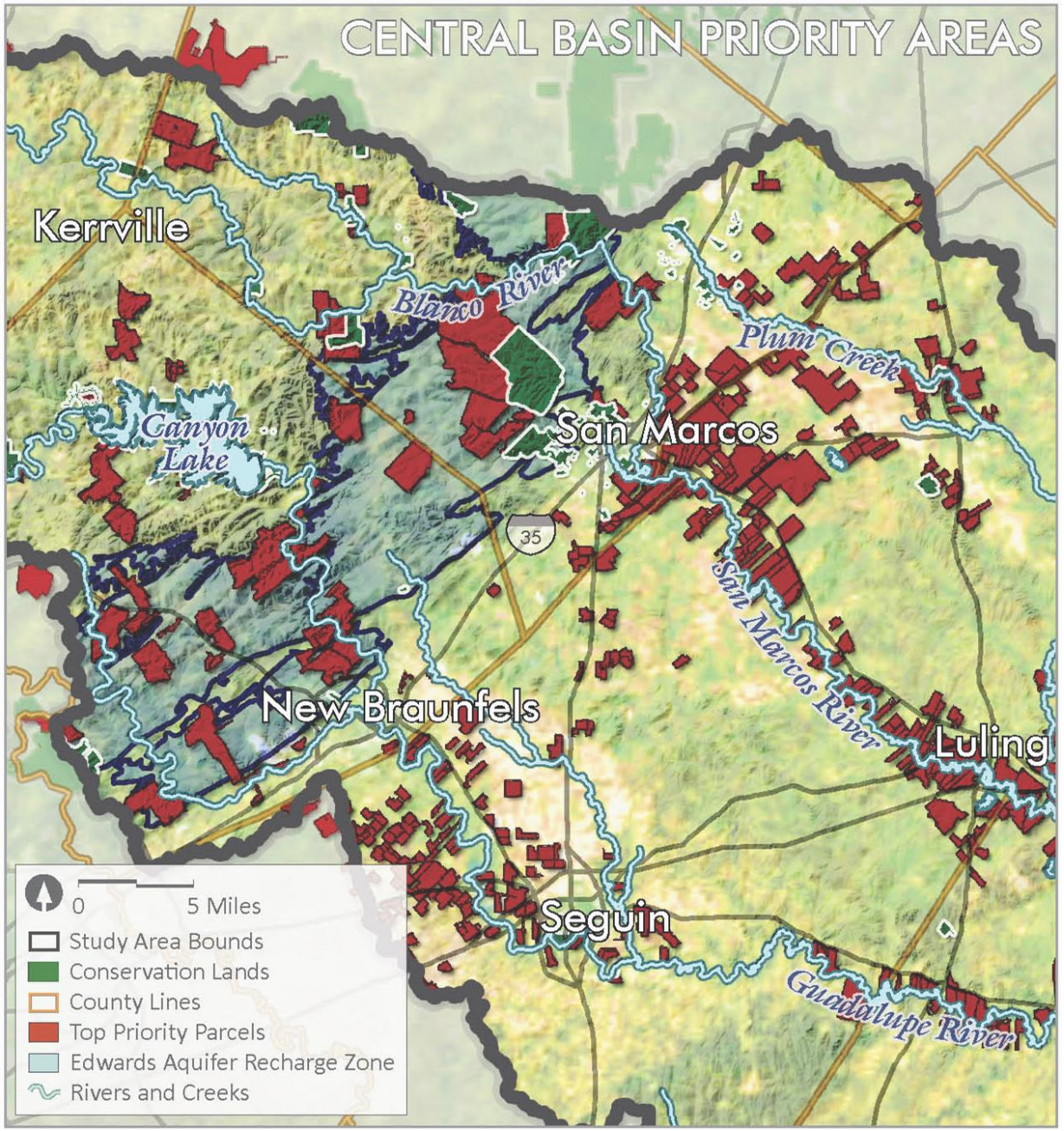


Final Conservation Scenario: Top Priority Parcels

Key Resources:

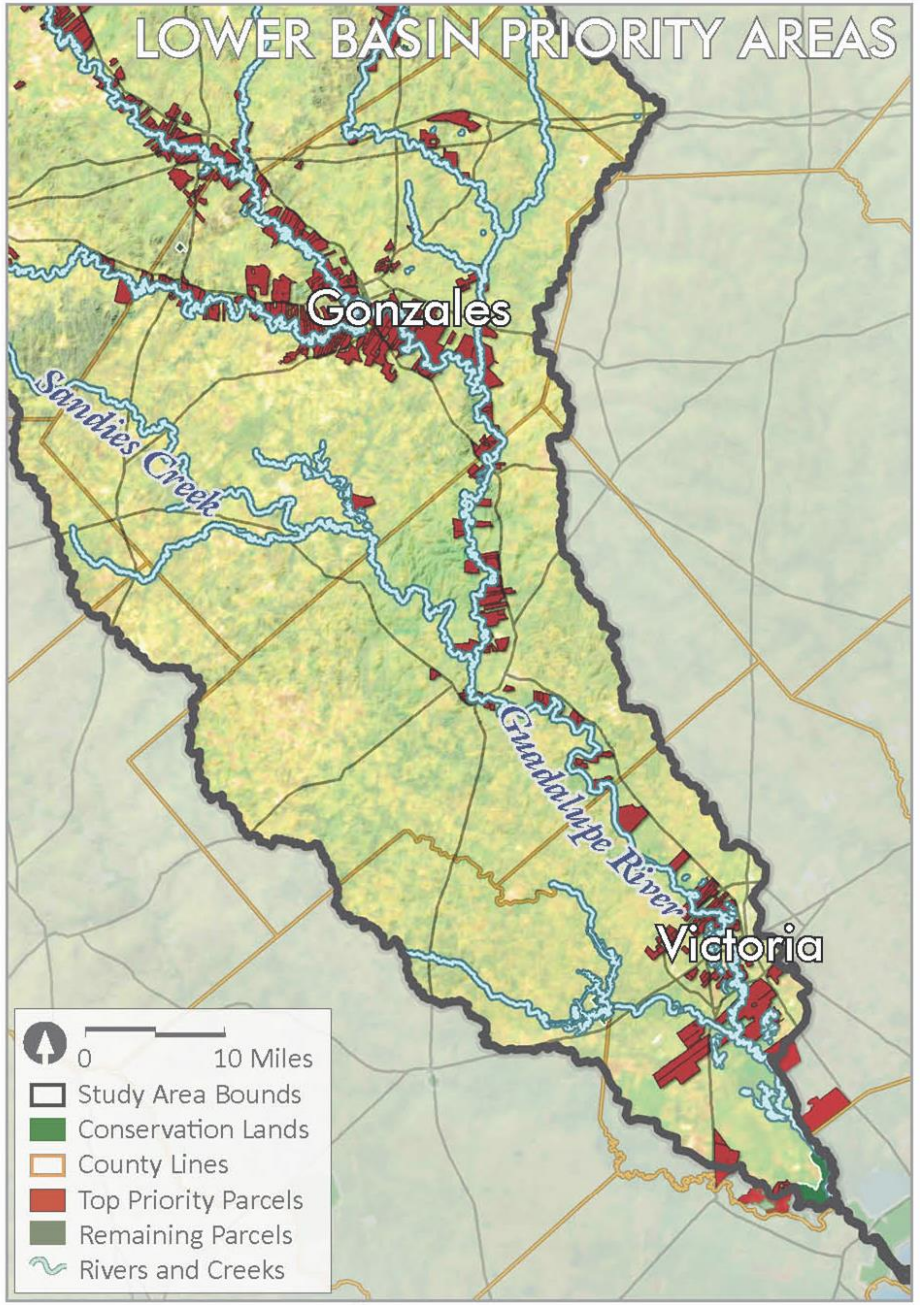
- Development Corridors
- Aquifer Recharge Zones
- Wildlife habitat
- Major Spring Buffers
- Riparian Corridors



Final Conservation Scenario: Top Priority Parcels

Key Resources:

- Mussel and Guadalupe Bass habitat
- Development Corridors
- Riparian Corridors
- Prime Farmland Soils



Thank You.

Questions?

Jonathan Ogren
jogren@siglogroup.com

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