



## Team Members

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# Spatial Analysis of Stream Buffer Setbacks in the Texas Hill Country

Prepared by:

PAKK

Texas Hill Country

GIS Specialists

[hillcountryalliance.org](http://hillcountryalliance.org)

education  
conservation  
cooperation



- The Hill Country Alliance (HCA) is a nonprofit organization whose purpose is to raise public awareness & build community support around the need to preserve the natural resources & heritage of the Central Texas Hill Country.
- The Hill Country Alliance promotes responsible & planned growth in a region under tremendous pressure to urbanize.

# Purpose

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- Illustrate & measure land area affected by stream buffer guidelines expressed in the Regional Water Quality Protection Plan (RWQPP).
- Present a first order of protection
  - Illustrate setback buffers around streams
- Overview maps should help facilitate discussions of criteria considered in growth planning.

# Study Area



# Scope

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- Analysis & presentation of stream buffers in Hill Country
- Creation of cartographic base to serve as a future platform allowing addition of other criteria
- Web GIS, 6-county region of interest - Hays, Comal, Blanco, Kendall, Bandera, & Medina

# Processes

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- RWQPP required stream buffer sizes

Contributing Area	Width/Offset (feet from each side of centerline)	Total Width (feet)
32 to 120 Acres	100	200
120 to 300 Acres	150	300
300 to 640 Acres	200	400
Greater than 640 Acres	300	600

- Watershed sizes range from 7,607 to 50,884 acres
- Due to the size of these contributing areas, we will be applying the broadest category of stream buffer.

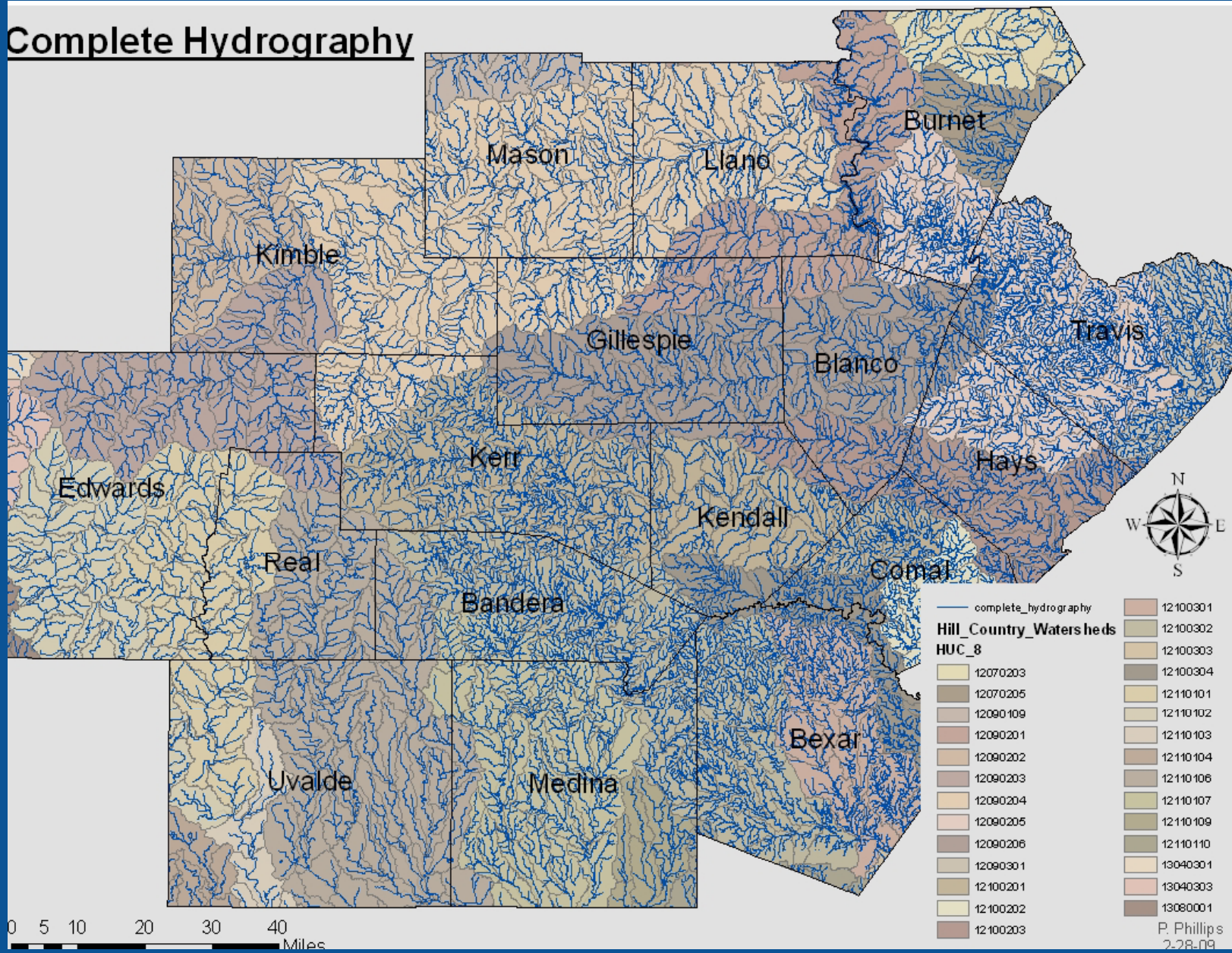
# Processes

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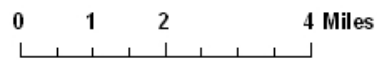
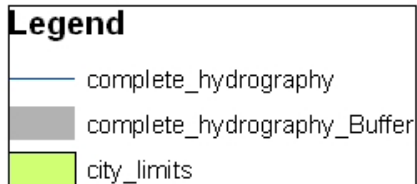
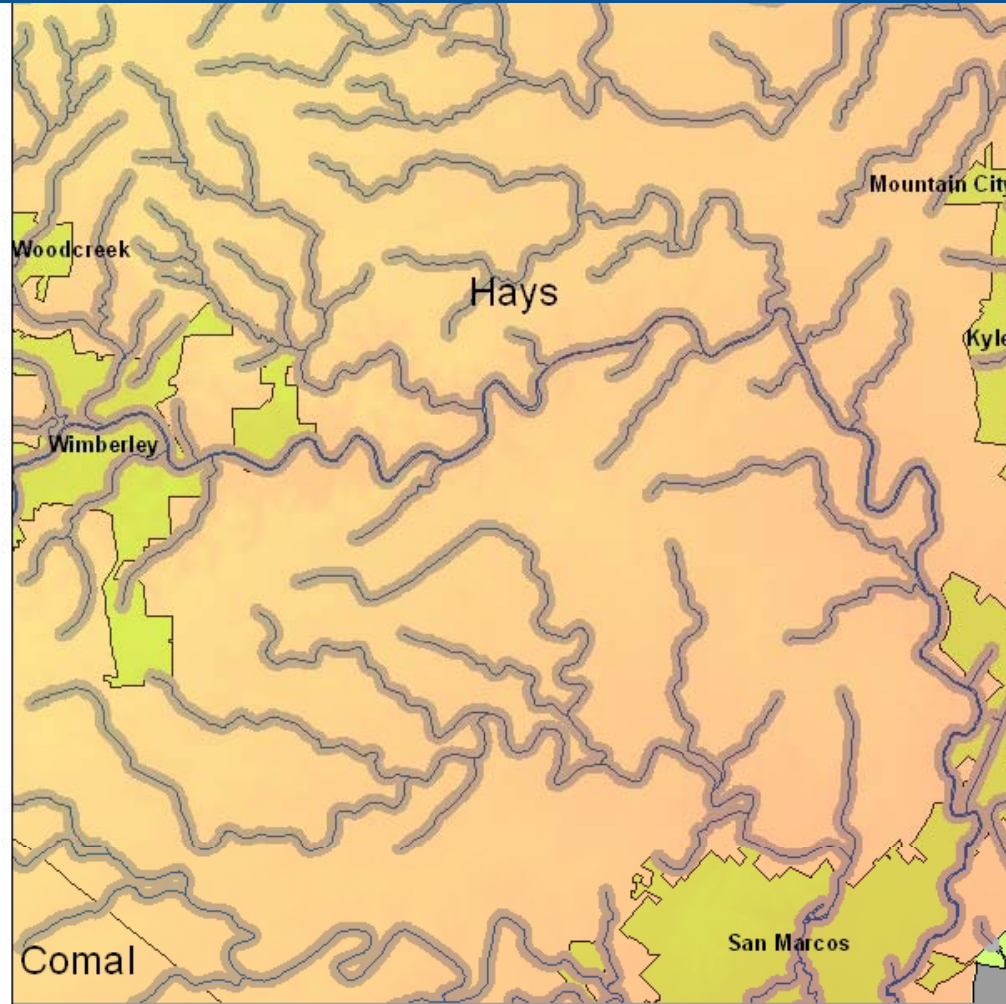
- 600 ft total buffer width generated from applying 300 ft buffers from the centerline of hydrography features
- Dissolve function to separate buffers
- Calculate acreage per county of buffer setbacks
- For location & identification purposes, details such as main roadways, urban areas, population census tracts, etc. will be added



# Complete Hydrography



# Sample Buffer



Map created by Amon Clack, 2009



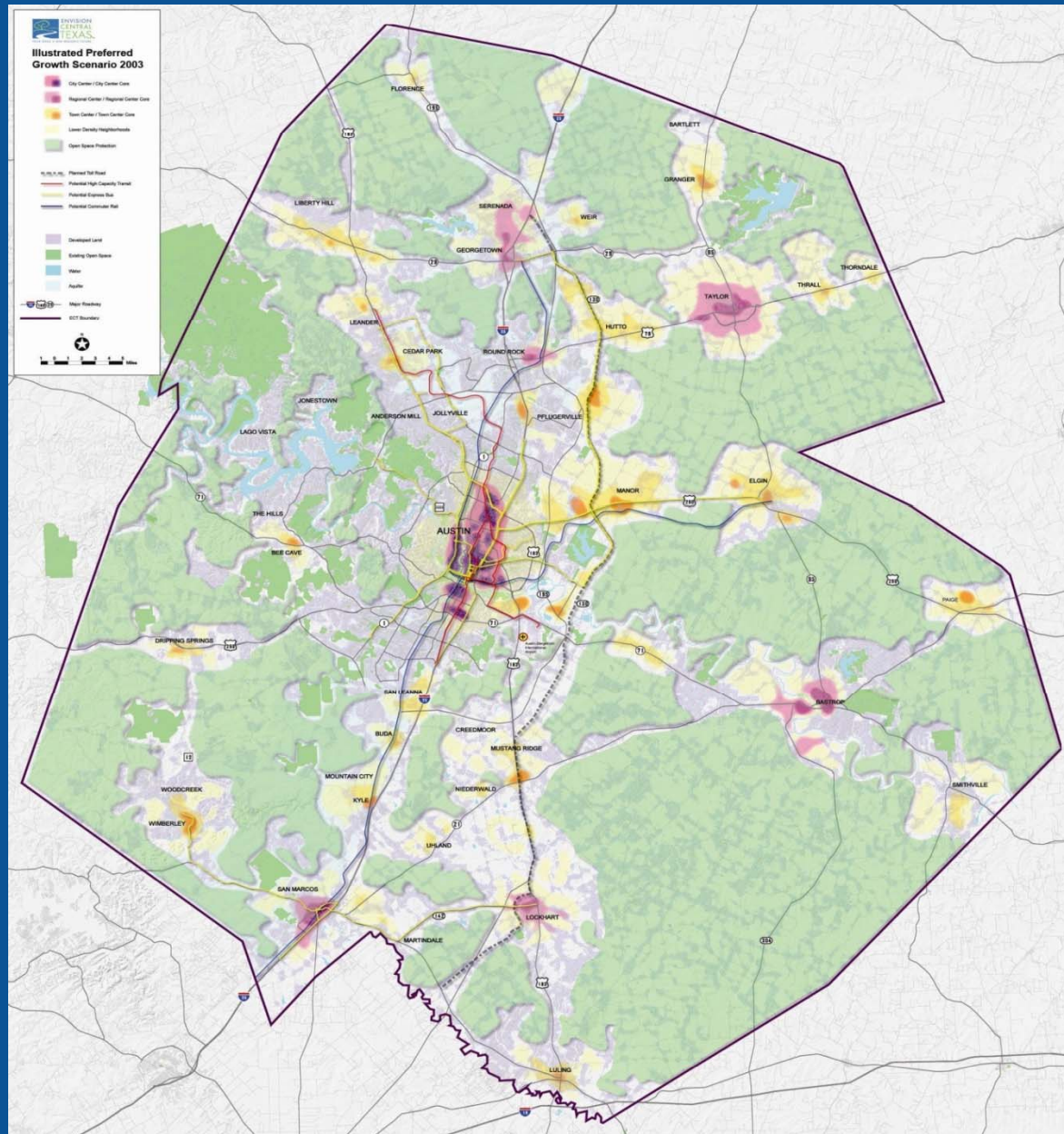
# Data (example of a few of the data layers available)

File Name	Data Type	Description	Source
complete_hydrography	Shapefile	Major Rivers, Major Streams, Intermittent Streams, water bodies and Dams for 17 county area	Marston
Hill_Country_Watersheds	Shapefile	Watershed areas ranging from 7,607 to 50,884 acres	Marston
HCA_DEM	DEM	Digital Elevation Model of the 17 county area	HCA
City_limits	Shapefile	Useful for Location Reference/ Map clarity	HCA
cities	Shapefile	Useful for Location Reference/ Map clarity	HCA
HCA_area_lakes	Shapefile	Hydrology	HCA
HCA_counties	Shapefile	Useful for Location Reference/ Map clarity	HCA
major_aquifer_HCA	Shapefile	Hydrology	HCA
minor_hwy_HCA	Shapefile	Useful for Location Reference/ Map clarity	HCA
MUDs	Shapefile	Municipal Utility District	HCA
streams_HCA	Shapefile	Named Stream	HCA
2000_Block_Groups	Shapefile	Population Data	HCA

# Implications

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- Use of stream buffer map(s) for reference while collaborating with other area stakeholders for development of full build-out map.
- Future development efforts may utilize PAKK's stream buffer analyses and acreage calculations for potential growth maps, similar to ETC's Preferred Growth Scenario 2003.



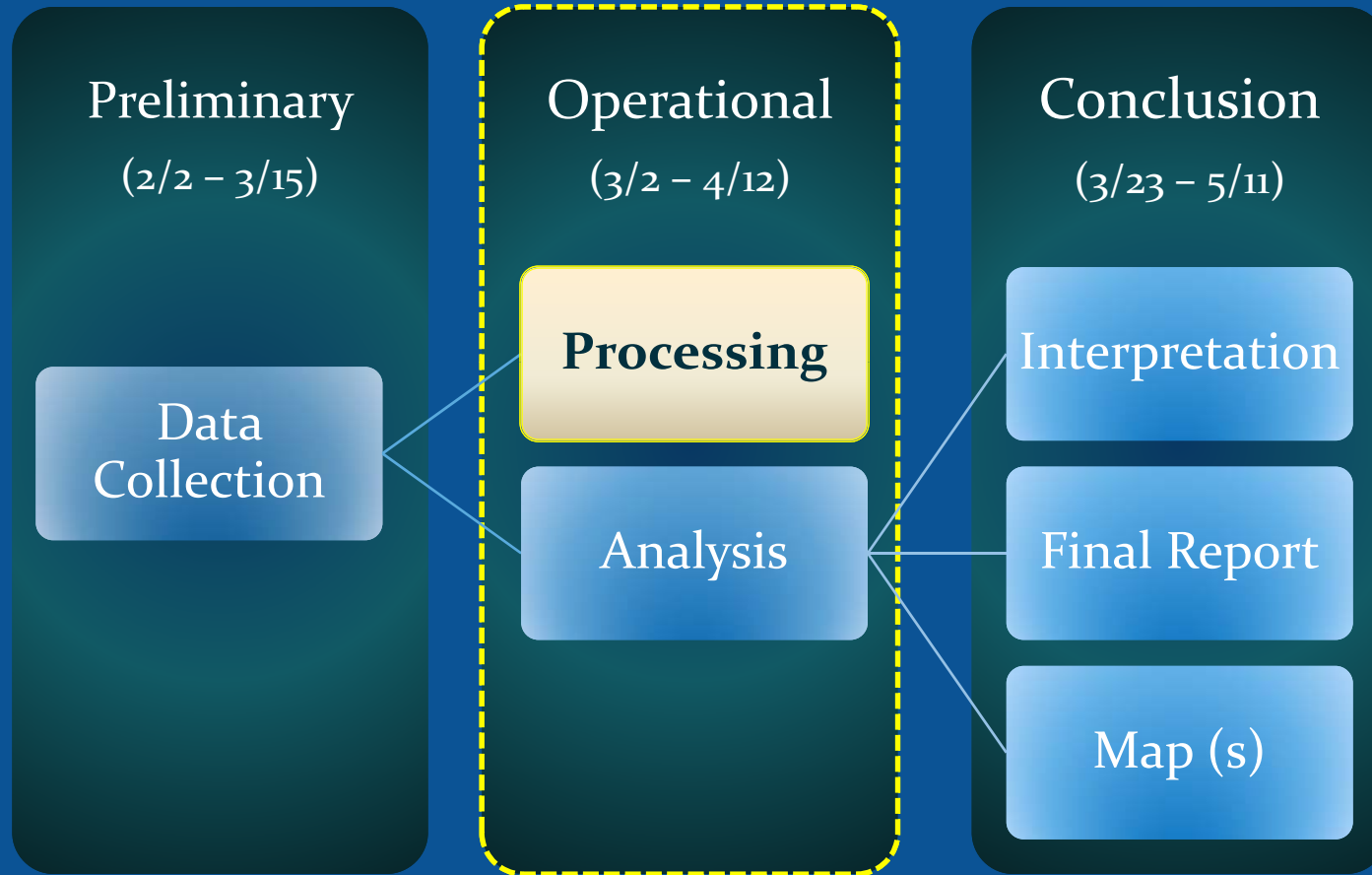
<http://envisioncentraltexas.org/resources.php>

# Challenges

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- *Level of Detail*
- *Presentation of Final Map(s)*
- *Width of Hydrography Features*

# Timeline



Client Presentations

Progress Report Presentations

Final Presentations

March 2, 2009

April 6, 2009

May 11, 2009

# Estimate

Item	Description	Estimated Hours	Hourly Rate	Total
Project Management	Coordination, scheduling, documentation & research	240	\$60.00	\$14,400.00
Data Collection	Collection, Categorization, Exploration, and Identification	40	\$40.00	\$1,600.00
Analysis/ Cartography	ArcGIS & Web GIS Functions	100	\$65.00	\$6,500.00
Layout/ Printing	Final Poster and Reports	90	\$30.00	\$2,700.00
Website Development	Creation and documentation of project deliverables	45	\$40.00	\$1,800.00
Total Project Cost				\$27,000.00

HCA (non-profit organization) Discount .....(\$27,000)



# Final Deliverables

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- Final Report
- Project website access
- Poster highlighting analyses and results
- CD containing
  - Data
  - Metadata
  - Reports
  - Digital image of poster
  - Presentations
  - Instructions for CD access - readme file

# Conclusion

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- The outcome of this project will assist HCA in future delineation & execution of the Regional Water Quality Protection Plan.
- Implementation of this plan will serve to smooth the progress of a rapidly growing area in the utilization & protection of limited natural resources, particularly water.
- Data, analysis, & results from this project should provide a platform for future GIS analysis in the construction of a full build-out landuse map.

# Contacts

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