Hill Country Geospatial Solutions

"Worldwide solutions for Texas sized problems."

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Market Analysis of the Austin Region for the Capitol Area Council Boy Scouts of America

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Summary:

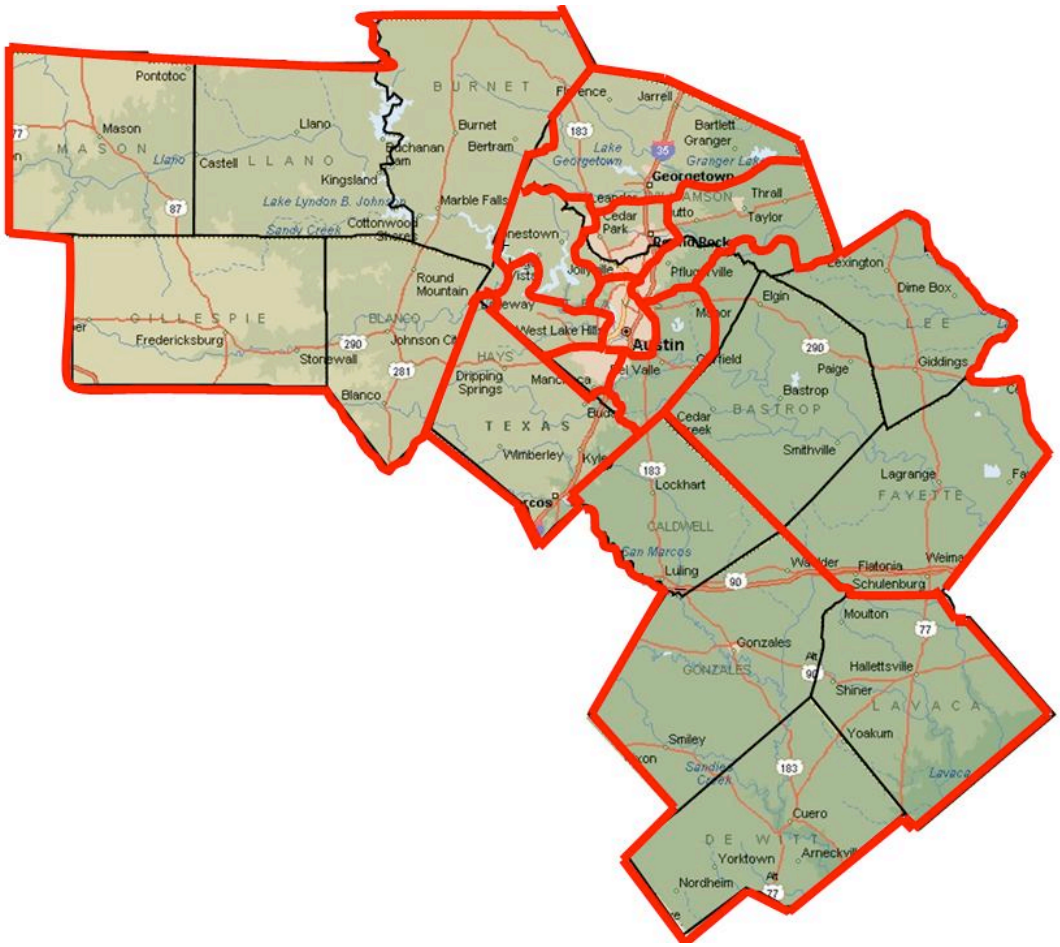
The Capitol Area Council, Boy Scouts of America approached Hill Country Geospatial Specialist (HCGS) requesting a proposal for a GIS application of their marketing needs to increase their fifteen county member enrollment. The Capitol Area Boy Scouts have a need to expand the areas of influence of their current units, and target specific demographics to broaden the scope of Scouting available to a larger group of children. Helping the Capitol area Boy Scouts increase their enrollment will in effect enrich the lives of a larger group of children providing them with experiences and skills that will help them grow to be the productive members of society we need leading our communities into tomorrow.

Purpose:

HCGS's goal is to provide Capitol Area Council Boy Scouts with data and maps showing the areas best suited to target their marketing for increasing their membership. Mapping existing members and location of existing units will provide a basis for defining these target areas. Gathering and analyzing local demographic data for the 15 counties (Bastrop, Blanco, Burnet, Caldwell, DeWitt, Fayette, Gillespie, Gonzales, Hays, Lavaca, Lee, llano, Mason, Travis, and Williamson) associated with the Capitol Area Council Boy Scouts districts will provide the descriptive characteristics of the target areas. Combining the existing locations of scouts and their units with demographic data from these fifteen counties should provide Capitol Area Council Boys Scouts with the direction they need in marketing to possible new members for their organization.

Scope:

As the name implies, Capitol Area Council Boy Scouts encompasses Austin and the surrounding area. Twelve separate districts made up of 15 counties represent the area that will be covered in this study. Existing data from the Boy Scouts is provided in zip code form, while most demographic data reviewed in preparation for this project is represented by county. The spatial element most relevant to the Capitol Area Council is their districts. HCGS will make every effort to display the zip code data and county level data in a manner pertinent to the existing scout districts. **(Map represents Capitol Area Council's Districts)**



Basic spatial elements of the cities and country side will also be used. Map features and landforms will provide relevant visual identification tools to the data represented in the maps. Personalization of maps by using local spatial representations relevant to the end user will enable quicker and simpler application of project data to the Capitol Area Council's purpose.

Data:

Capitol Area Council Boy Scouts has provided the basic data the project is to be built around. Addresses for scouts and meeting locations (units) were provided in excel form by the Council. Capitol Area Council's districts were provided in the form of a jpeg map. HCGS will use this as a reference map to build a vector (polygon) shape file to represent this data.

Texas Natural Resource Information System (TNRIS) will be used for the majority of vector data needed representing roads, county boundaries, city points, and bodies of water. If DEM's or other raster data is needed, it will be from TNRIS too. This data can be downloaded directly from their website, unzipped, and loaded into a GIS.

The U.S. Census Bureau has demographic data available that can be sorted to meet our projects needs. Tables in existing shape files can be used to build the demographic layers relevant to the potential marketing areas for Capitol Area Council Boy Scouts.

Software:

Arc map, Arc view, and Arc Catalog, by ESRI, will be used to build the data base. Arc View can be used for basic viewing and production of maps. Arc Catalog is used to build the data base that will be used by HCGS to perform analysis of data using Arc map. This project will use the Excel, PowerPoint, and Word extensions of the Microsoft Office Suite 2007. Excel and Word documents will be the bulk of products produced with this software, but a Power Point presentation will be prepared as well. Statistical Analysis Software (SPSS) will be used to build demographic data, and Macromedia Freehand will help provide some aesthetically pleasing elements to the project.

Methodology:

Our first step in the project will be to geocode the addresses of scouts and unit locations. Geocoding is taking data in tabular form with a location attribute and analyzing it against an existing file containing address and street data, to produce a point for the location attribute. This will show were the Boy Scout or unit is located in reference to city and county shape files.

Unfortunately not all data provided by the Boy Scouts can be directly analyzed by the geocoding process due to its manner of entry into the Excel file. The time it would take to properly build these files so all data could be geocoded is outside the time frame allowable for this project. Somewhere in the neighborhood of eighty five percent of all addresses provided by Capitol Area Council Boys Scouts will be able to be geocoded (Remaining ungeocoded are primarily PO boxes). Demographic data is not available at the address level, so this level of accuracy will be fine for comparing existing area of scouts to demographic details.

Hot Spot Analysis is a method of defining areas of high concentration of a particular attribute. High concentration levels of scouts, based on their address, can be defined in this method of analysis. These Hot spots will represent areas Capitol area Boys Scouts will want to avoid in marketing campaigns. These areas are already saturated with membership.

New layers of data, called shape files, can be built in Arc Map. The districts map provided by the Boy Scouts will be used to create a new layer file. This layer file will be drawn by hand (digitally) using a printout of the districts map as a reference. This layer file will be essential in representing the districts location against other area files. HCGS will use this layer to clip other data layer files enhancing the precision in location analysis.

A method of location analysis will be used to find the best areas for Capitol Area Boy Scouts to focus marketing campaigns. A point can be located on an existing layer, or file, of data based on its proximity to other attributes in the layer. Demographic data, existing scout locations, and district areas will be used as actors upon the population levels present at the block level of U.S. census data to determine areas best marketed to. Most of the other methods of data analysis are done in preparation for this stage. It will produce the results most relevant to the Client's needs.

A formula will be used to show general population growth. Population 1990 will be subtracted from population 2000 and then divided by population 1990 to find the 10 year growth percentage. The ten year growth percentage can then be divided by 10 to find the annual growth percentage. This will be applied to the overall population of the area. This data will be provided graphically, but an opportunity may arise to provide a map representation of the data. If so, HCGS will provide this in the deliverables.

* At this time, we would like to include advice concerning possible future projects using data provided from this one. Population projection can be applied to each variable relevant to future marketing areas. This will provide an overall representation of such designated future date to the extent, location analysis could be performed.*

Time Line:

The project will officially begin with data collection. This process should take a maximum of three weeks with contribution from all five team members. Management will perform data research functions as well as checks on the quality of data being gathered in reference to project needs.

By early March HCGS hopes to have all required data collected for the project and began the processing of the data for analysis. Processing will include any data conversions to formats compatible to Arc GIS software and building of data layers from collected data.

Analysis will began in this portion of the project as data becomes available from processing. Team members will alternate job functions proportionately from the flow of processing to analysis until all data is processed and all team members can focus on data analysis.

Products from analysis will be reviewed at this time to insure its validity to final deliverables. Any inconsistencies in collected data with final needs of the Capitol Area Boys Scouts can be observed at this time and adjustments made to better meet our client's needs.

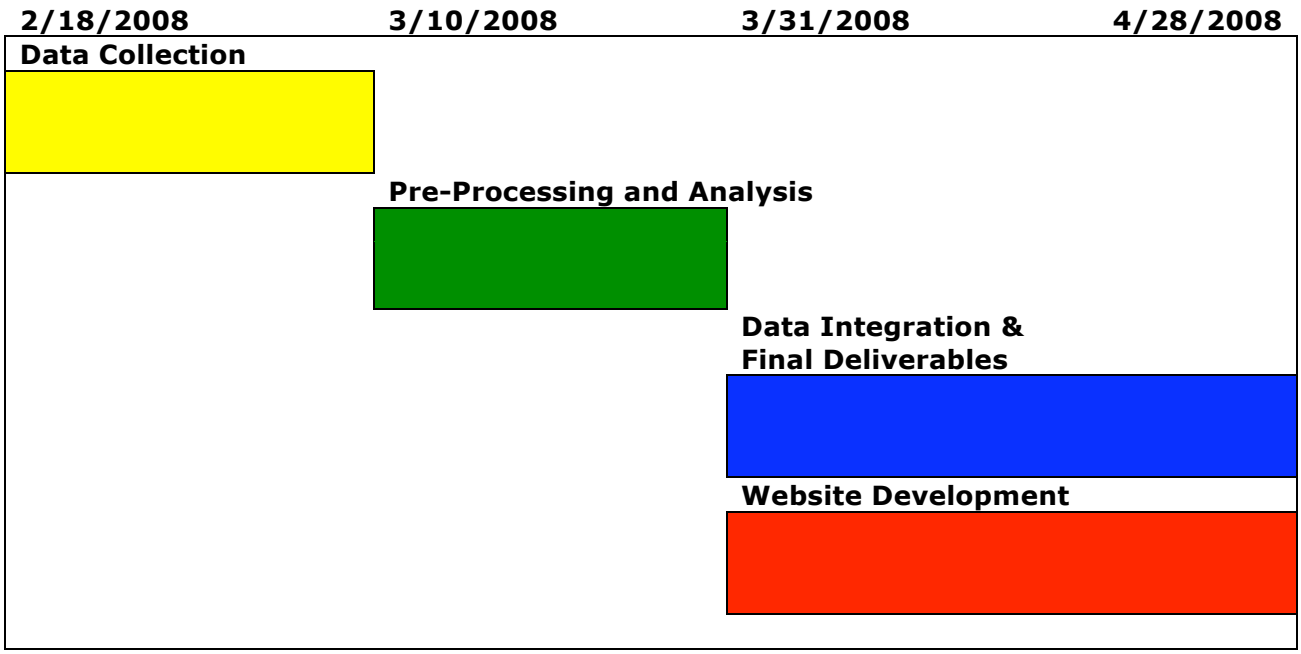
Data processing and analysis will be completed in three county groups, so once this portion of the project is complete, integration of data to one data base must began to prepare for final delivery. HCGS plans to be at this phase of the project by the end of March.

Data integration and final deliverables production will be a joint process as data processing and analysis were. The two combined should take four weeks. Only four team members can concentrate on this portion of the project at this time. Web-site development needs at least four weeks of full time commitment by one team member.

Overall goal by HCGS for project completion from start to finish is ten weeks. Challenges to overcome to meet this time line include but are not limited to the quality of data collected, relevance of data to clients needs after analysis has been performed, and the speed at which products of analysis can be converted into presentable deliverables. HCGS has conducted a fairly thorough preliminary study of available data's content relevance to the Capitol Area Boy Scouts needs. In a situation where this amount of work has not been conducted prior to a project, a more flexible time line may be required or billing for pre-project work may be required.

(Time Table Graph-Next pg.)

Time Table



Final Deliverables:

A detailed report of the processes of the project will be provided to Capitol Area Council Boys Scouts. The report should provide Capitol Area Council with enough insight to methods used by HCGS to decide whether or not the project has been conducted to meet their desired needs. Suggested project improvements and future projects will be suggested in this report. Two bound copies will be provided. Additional copies may require adjustments to the project budget.

Maps and data will be accumulated and displayed in poster form. The central theme of the poster will be the marketing needs of Capitol Area Boys Scouts. Extraneous data will be included to the extent that it does not interfere with the presentation of these points.

HCGS plans to have a collection of at least 25 maps available to provide with the deliverables. This large number of maps is based on the need to show each district separately to understand the analysis for the marketing areas in each district. Each district will have a map displaying existing scout presence and a map for target marketing areas. Maps displaying a compilation of all districts will also be provided. An organized map book will be provided for delivery of these maps.

Population projections will be shown in graph form. As stated earlier in the methodology portion of this proposal, population projection will be shown in map form if a method is found prior to delivery of project.

A CD containing all data for the project will be provided Capitol Area Boy Scouts. Data, data sources, this proposal, the report, poster, power point presentations, and map jpegs will be included in this CD. Instructions on how to use the information on the CD will be provided by HCGS.

HCGS is developing a company web-site (www.hillcountrysolutions.info) specifically for this project. Team member profiles, company information, and this project will be available on the website. This tool is intended to allow HCGS the opportunity to share its product potential, along with providing Capitol Area Council the ability to show other Boy Scout organizations a way to meet their membership needs.

Budget:

The budget shown below is based upon an expected timeline of 10 weeks and the end products represented in the deliverables portion of this proposal. Any changes to overall time needed to complete the project or requested deliverables will change this budget.

Budget			
Data Collection			
Manager:	(5 hours/week * 3 weeks)	15 hrs	
Assistant Manager:	(7 hours/week * 3 weeks)	21 hrs	
GIS Analysts:	(10 hours/week * 3 weeks) * 3 consultants)	90 hrs	
Total Hours		**126 hrs**	
Hourly Pay			$30.00
Total			**$3,780.00**
Pre-Processing Data and Manipulation			
Manager:	(5 hours/week * 3 weeks)	15 hrs	
Assistant Manager:	(7 hours/week * 3 weeks)	21 hrs	
GIS Analysts:	(10 hours/week * 3 weeks *3 consultants)	90 hrs	
Total Hours		**126 hrs**	
Hourly Pay			$30.00
Total			**$3,780.00**
Data Integration			
Manager:	(5 hours/week * 4 weeks)	20 hrs	
Assistant Manager:	(7 hours/week * 4 weeks)	28 hrs	
GIS Analysts:	(10 hours/week * 4 weeks * 2 consultants)	80 hrs	
Total Hours		**128 hrs**	
Hourly Pay			$30.00
Total			**$3,840.00**
Website Development			
Webmaster:	(10 hours/week * 4 week)	40 hrs	
Hourly Pay			$25.00
Total			**$1,000.00**
System Management			
Project Manager:	(5 hours/week * 10 weeks)	50 hrs	
Assistant Manager:	(3 hours/week * 10 weeks)	30 hrs	
Total Hours		**80 hrs**	
Hourly Pay			$35.00
Total			**$2,800.00**
Equipment Cost (for 10 weeks)			
Supplies:	($150/workstation * 5 workstations)		$750.00
Maintenance:	(130/workstation * 5 workstations)		$650.00
Depreciation:	($20000 [Total value of equipment] /36[equipment life in months] * 2.5 [months equipment is used])		$1,388.88
Total Equipment Costs			**$2,788.88**
Data			
Purchased Data:			$2,500
Software License for 10 Weeks:			$5,000
Outside Statistical Analysis Fee:			$550
Total Data Costs			**$8,050.00**
Travel Expense			
100 miles @ $0.85 cents/mile			$85.00
Total Cost of Project			**$26,123.88**

Conclusion:

HCGS feels that this proposal clearly outlines our intention to provide Capitol Area Council of Boys Scouts with information pertaining to the best marketable areas for their districts in Central Texas. Our results can only be as clear as the data provided and collected by HCGS. Adjustments in methodology can be made in relation to the quality of data available. With more precise data, more precision can be generated using tools available in a GIS specific to the type of data. As mentioned in the time table portion of this proposal, HCGS feels the pre-project activities performed by our group will allow us to meet the schedule outlined in this document. The budget is an estimated total cost, but we do not see large variation in this cost unless client's needs change. Deliverables outlined here are what we feel will best meet Capitol Area Council of Boy Scouts needs. This proposal was developed based on a Request for Proposal from Capitol Area Boy Scouts and we feel it addresses the issues most pertinent to the client laid out in before mentioned request.

Participation:

All five team members participated in the development of this proposal. Mark Parker produced the introduction, Beau Barela produced the body of the proposal, Charles Good did the time table, Justin Holder produced the budget, and Eric Brotherton did the Conclusion, power point presentation, and reference page. All five members reviewed the document for its consistency with the over all goals of the project.

References

- http://www.census.gov
  - U.S. Census Bureau
- http://www.tnris.state.tx.us
  - Texas Natural Resources Information Systems
- http://www.txdot.gov
  - Texas Department of Transportation
- http://www.bsacac.org
  - Boy Scouts of America Capital Area Council
- http://www.directionsmag.com
  - The Worldwide Source for Geospatial Technology