G
E
S LVE

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"The Return of Green Space"

Prepared for:

Environmental Service Committee

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GeoSolve

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Introduction

Problem

In order to improve the recycling program at Texas State University – San Marcos, the Environmental Service Committee (E.S.C.) is going to remove all of the current collection receptacles throughout campus and place new receptacles where they are most needed. To comply with the necessary design and style adopted by the Campus Master Plan, the E.S.C. must replace the current recycling bins with a specific style and design. With each receptacle costing $400, it is imperative that the E.S.C. place the new receptacles in the most beneficial areas.

Purpose

GeoSolve will create for the E.S.C. of Texas State University a GIS database to establish the best possible locations to place the new recycling receptacles for the recently adopted Campus Master Plan. Each location should bring in as much recyclables as possible to offset/justify the expense. GeoSolve will present a ranking of locations with respect to vending machines locations, dining halls, major campus entrances, bus stops, campus residents, people within each classroom, seasonal sports, and other major gathering points on campus. By giving each location a ranking, the E.S.C. of Texas State University will be able to pick the best locations to put the recycling bins according to how much funds are available. This will also allow for flexibility to move receptacles according to where people might be at different times of the year (ex. Bobcat Stadium in fall). Also, if more funds become available to E.S.C. of Texas State University you will be able to refer back to our report to find the best new locations. It is GeoSolve's goal to maximize the affect of each location in order to get the best results for the project.

Scope

With the exception of Freeman Ranch and the university owned apartments, the entire campus will become the study area for this analysis.

Proposal

Data

Our data is provided from departments at the University like the Department of Institutional Research, Office of the Vice President for Finance and Support Services, and Auxiliary Services.

- DOQQ files –
- Building shapefile
- Venting machine shapefile
- Building excel file
- Other hand collected data

Software

- ArcGIS 9.1
- Microsoft Office
- Microsoft Excel

Methodology

The team will be able to complete the project by using ArcGIS 9.1 for spatial analyzing. We will use technical skills of acquiring, managing, analyzing and displaying to achieve the final desired result, coupled with network analyses of student traffic flow across campus. The result will be locations where recycling bins should be located on the main campus. No programming will be involved, although we would like to develop a model that the E.S.C. can use for future needs.

Implications

The final result will be a ranking system of locations of where recycling bins should be located on the main campus. By viewing the ranking system, the E.S.C. can then decide what areas would receive the greatest benefit by placing a recycling bin there.

Budget

Data Collection

Total Hours (10 hours /week * 4 weeks * 5 consultants + 5 hours /week * 4 weeks * 1 consultant + 3 hours /week * 4 weeks * 1 consultant)		232
Hourly Pay	$	35.00
Subtotal	$	8,120.00

Data Analysis

Total Hours (10 hours /week * 4 weeks * 5 consultants + 5 hours /week * 4 weeks* 1 consultant + 3 hours /week * 4 weeks * 1 consultant)		232
Hourly Pay	$	45.00
Subtotal	$	18,560.00

Project Preparation

Total Hours (10 hours /week * 2 weeks * 5 consultants + 5 hours /week * 2 weeks* 1 consultant + 3 hours /week * 2 weeks * 1 consultant)		116
Hourly Pay	$	25.00
Subtotal	$	21,460.00

System Management

Project Manager		
Total Hours (5 hours /week * 10 weeks)		50
Hourly Pay	$	40.00
Pay	$	2,000.00
Assistant Project Manager		
Total Hours (3 hours /week * 10 weeks)		30
Hourly Pay	$	20.00
Pay	$	600.00
Subtotal	$	24,060.00

Equipment Costs

Supplies ($150 /workstation * 5 workstations)	$	750.00
Maintenance ($200 /workstation * 5 workstations)	$	1,000.00
Depreciation ($187,500 [total value of equipment] / 36 [equipment life in months] * 2.5 mo.)	$	13,020.83
Subtotal	$	38,830.83

Software

Esri Software License ($3,500 for 5 workstations/ 24mo. * 2.5mo.)	$	364.58

Total Costs:	$	39,195.41

Timeline

- **Data Collection.** The data collection process will take four weeks to complete. The purpose of this process is to gather all of the appropriate data required to complete this project so that we can incorporate it into a GIS. Throughout this stage of the project, the entire team will not only collect the existing data available for this project, but will also begin any necessary digitizing and data collection themselves to start the manipulation process.
- **Analysis.** The entire team will work together to analyze the data in a duration of four weeks.
- **Project Preparation.** This stage of the project will take two weeks to complete. Team members will work together to complete the final deliverables by interpreting our final results.

Timetable

Tasks		*Dates of Tasks*													
Data Collection		Week 1 - 4													
Analysis						Week 4 – 8									
Project Preparation										Week 8 - 10					
	-	1	8	15	22	1	8	15	22	29	5	12	-	-	-
		February				**March**					**April**				

Conclusion

Final Deliverables

- Detailed Final Report of the best locations for a recycle bin
- Professional Poster for display
- CD containing:
    - All data
    - Metadata
    - Report
    - Poster
    - PowerPoint Presentation
    - Instructions on how to use the CD
        - Readme file

Summary

Recycling is a popular method to dealing with the lack of resources. Texas State University-San Marcos is now interested in recycling because many people, students, faculties, and other stuffs, visit the campus with many recyclable goods. The goal of our study is to identify the best locations for recycling bins in order to get the maximum amount of recyclable goods by considering relevant factors. One of them is how many people are in each building and where vending machines are located. Also, locations of smoking areas, sidewalks, and bus stops will be considered.

Participation

The cover and title pages were written by Seth Clark; the table of contents was written by our team members. The introduction was composed by Richard Bolton; the problem, budget, timeline, and timetable were composed by Heather Hilbert. The data, methodology, and implications sections were written by Braden Warns; and the final deliverables, conclusion, and participation were written by Sadaharu Koshitani.