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Location Analysis for Outdoor Recycling Bin Placement: **Progress Report**

Prepared for:



The rising STAR of Texas

Prepared by: Dynamic GeoSolutions
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Introduction

Overview

This report was prepared by Dynamic GeoSolutions for Texas State Recycling and Waste Management to explain the progress that we have made in our location analysis for outdoor recycling bin placement. Following our presentation on 19 February 2014 we began work on the project. This report will update you on our accomplishments and considerations, and will contain an updated timetable and appraisal.

Purpose

This study will analyze the flow of foot traffic on campus to determine the most used paths, and with that information determine the optimal locations for outdoor recycling bins. The study will also take into consideration areas of high need, such as food court areas that produce a large amount of recyclable material, and currently underserved areas. Both university enrollment data and data collected in the field will be used to make recommendations for the placement of bins. In addition, we will update the digital file containing the locations of the outdoor recycling bins to show the locations of the newly placed bins, and create a map showing the intensity of pedestrian traffic across the central campus area. We will create this map in such a manner that it will be easy to update with new enrollment figures.

Scope

This study will cover the central campus area of Texas State University. According to the specifications of Recycling and Waste Management Supervisor Mario Garza this will comprise the area east of Academy and west of University, and north of University and Lindsey and south of Sessom (Fig. 1). All processes and deliverables

will be executed during the spring 2014 semester, February 2014 – May 2014, with the final recommendations being submitted no later than 2 May 2014.

Project Tasks

Considerations

The current data available to us contains student enrollment for 23 buildings within our study area, for five consecutive time periods. Based on this data, we have chosen to construct a basic network of simplified and direct walking paths between these buildings. The assumption that we have made about student movement is that for each of the four times at which building populations change, the students are redistributed evenly between the buildings. This does not take into consideration possible clustering of student movement about related academic buildings. These assumptions are appropriate for the scope of this project and the available data.

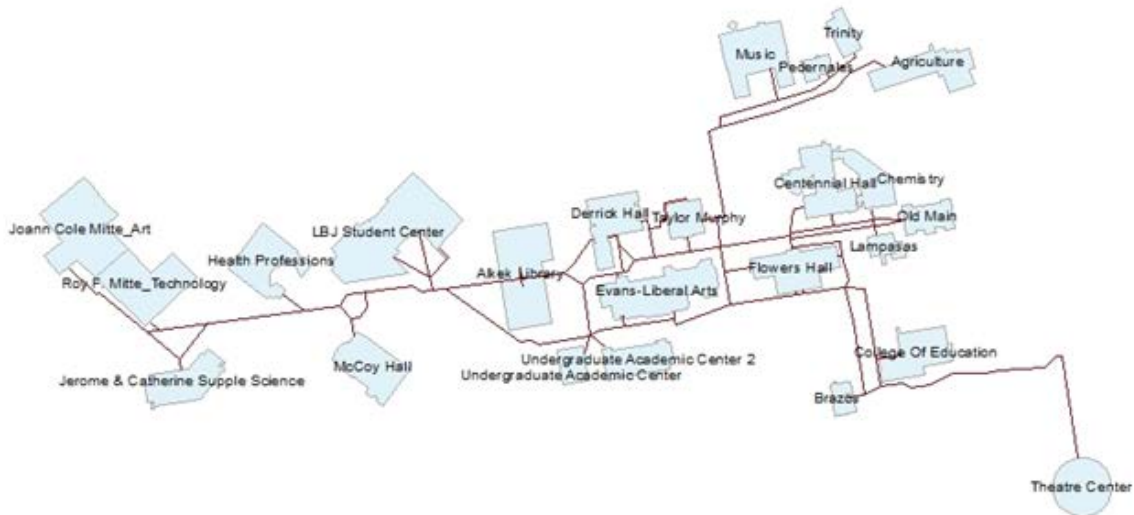
Progress

Population Change Dataset Creation

Using the data provided to us by Dr. Marc Turner we are creating a spreadsheet of building population change. First, we removed data from buildings not within our study area. Then we calculated the percent change of total students for each time period, and using this percent calculated the number of students moving from any given building to every other building at this time.

Network Creation

Based on the sidewalk layer in the campus GIS we created a simple network of walking paths between the buildings contained within the enrollment data.



Subsequent Process

Using the student population change data calculated in our spreadsheet, we will weight the walking path network to create a map of student foot traffic. From there we will apply additional weights to areas and buildings within our study area that do not have enrollment data, such as food courts, the library, Student Health Services, and bus stops. We will conduct field work to collect GPS points for the outdoor bins not currently mapped in the campus GIS and to verify our findings about high foot traffic areas. Lastly, we will overlay the existing outdoor recycling bins on our map of foot traffic to analyze their effectiveness and make recommendations for future bin placement.

Implications

The final results of our analysis will aid Texas State Recycling and Waste Management by identifying potential locations for outdoor recycling bins in order to maximize the collection of recyclable materials. Included in the process will be a statistical analysis to determine percentages of students gained and lost from each building in order to identify which paths have the highest flow of traffic. The resulting map of campus foot traffic will be useful not just for the scope of this project, but for the placement of other bins into the future.

Appraisal

We have not encountered any major problems with our data or methodology and our progress is satisfactory. We should have no problems submitting our final recommendations to Texas State Recycling and Waste Management by 2 May 2014.

Timetable

Project Timeline

January 2014						
S	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

February 2014						
S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

March 2014						
S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

April 2014						
S	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

May 2014						
S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Data Collection	Weeks 1-4
Pre-Processing of Data	Weeks 5-9
Data Analysis	Weeks 10-12
Data Interpretation	Weeks 13-14

Dates of Importance:

- February 19th – Proposal Presentation
- March 26th – Progress Report Presentation
- May 2nd – Final Presentation

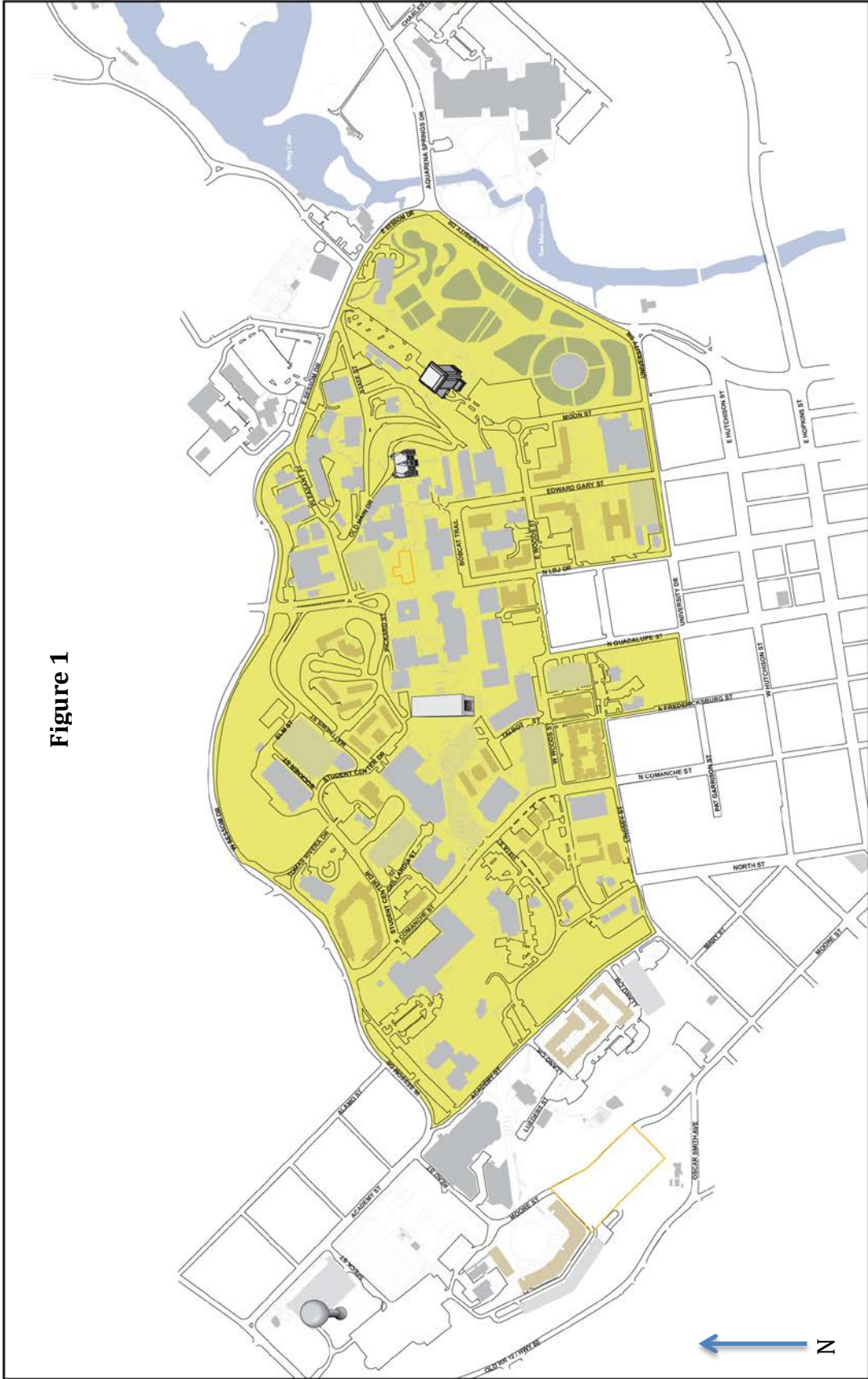


Figure 1

