

## Greening UToledo through Service

Greening UToledo through Service (GUTS) aims to create native landscape installations around the University of Toledo campus with the help of undergraduate service learning volunteers.

### The Challenge

While the University of Toledo already hosts numerous native installations, site selection relies on instinct rather than a data driven approach.

### The Solution

This research replaces guesswork with geospatial intelligence by utilizing Geographic Information Systems (GIS) to determine the location with the highest impact for the next GUTS installation.

### Why GIS?

GIS allows for spatial analysis by combining the capacity of buildings, area of parking lots, and locations of existing gardens to use a weighted suitability model to determine optimal locations.



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#### More Information:



*Special thanks to Dr. Todd Crail for research guidance and the University of Toledo Department of Natural Sciences and Mathematics for providing building capacity.*



## Growing With Purpose:

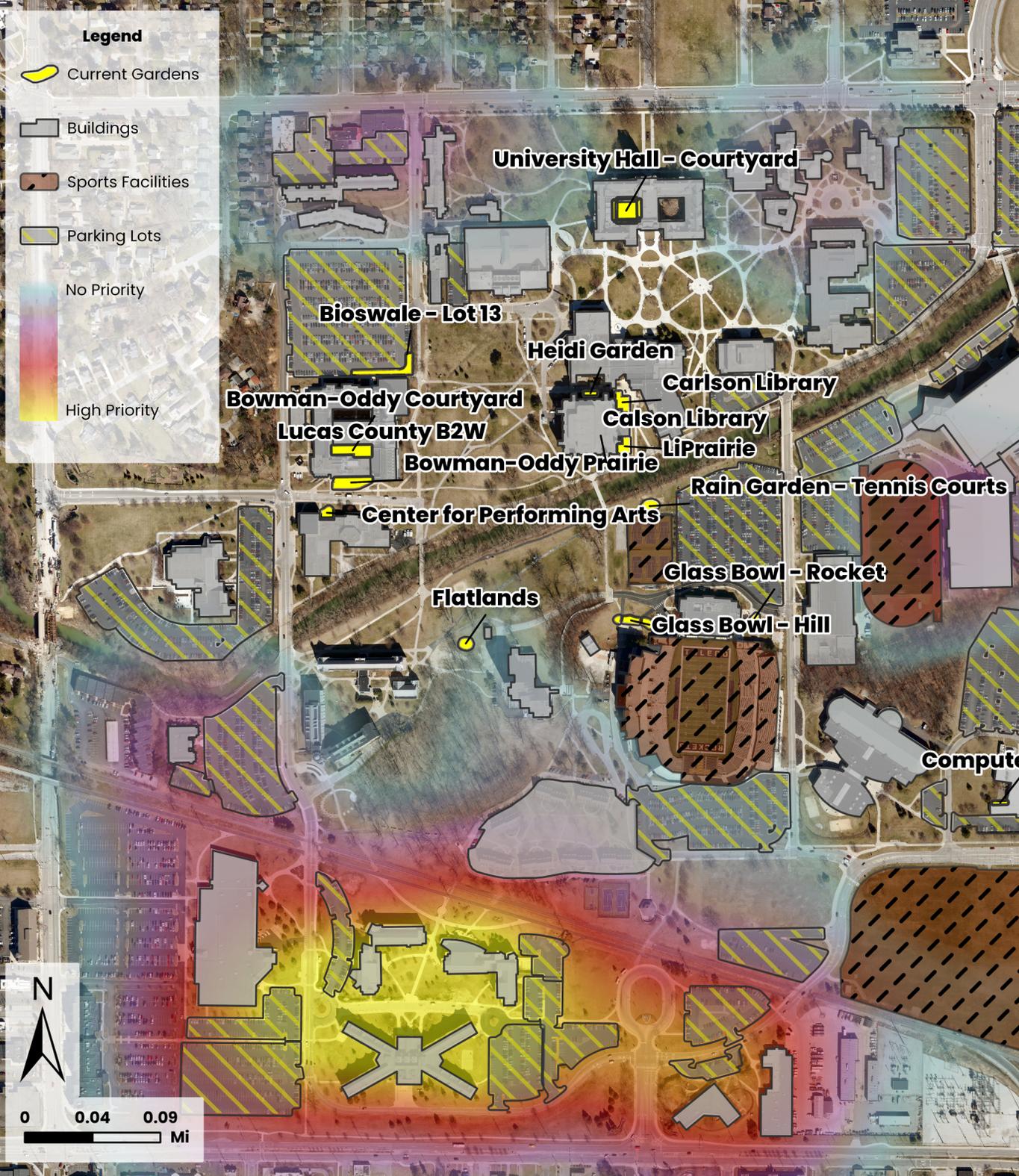
A GIS Model for Future GUTS Installations



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## Weighted Suitability Model

The weighted suitability model is based on the following criteria:

- Building Capacity**  
 Capacity is used as a proxy for foot traffic. The higher the building capacity, the higher the weight applied on a scale from **1 to 5**. For buildings that did not have capacity data, an arbitrary weight was applied based on importance of the building.
- Parking Lot Size**  
 The weight applied to parking lots is based on the physical size of the lot. Using a scale from **1 to 5**, the larger the lot, the higher the weight applied.
- Existing Garden Proximity**  
 A negative weight was applied to buildings and parking lots based on how close they are to existing gardens. The scale based on proximity ranges from **-5 to 5** where the further away the building or parking lot are, the higher the weight.

**Objective:** To identify gaps in the current campus landscape where high-occupancy buildings and large parking lots lack proximity to native greenery.

**Result:** High-weight areas on the map represent the highest priority sites for the next GUTS installation.

