Backyard Garden Suitability in Gloucester Massachusetts

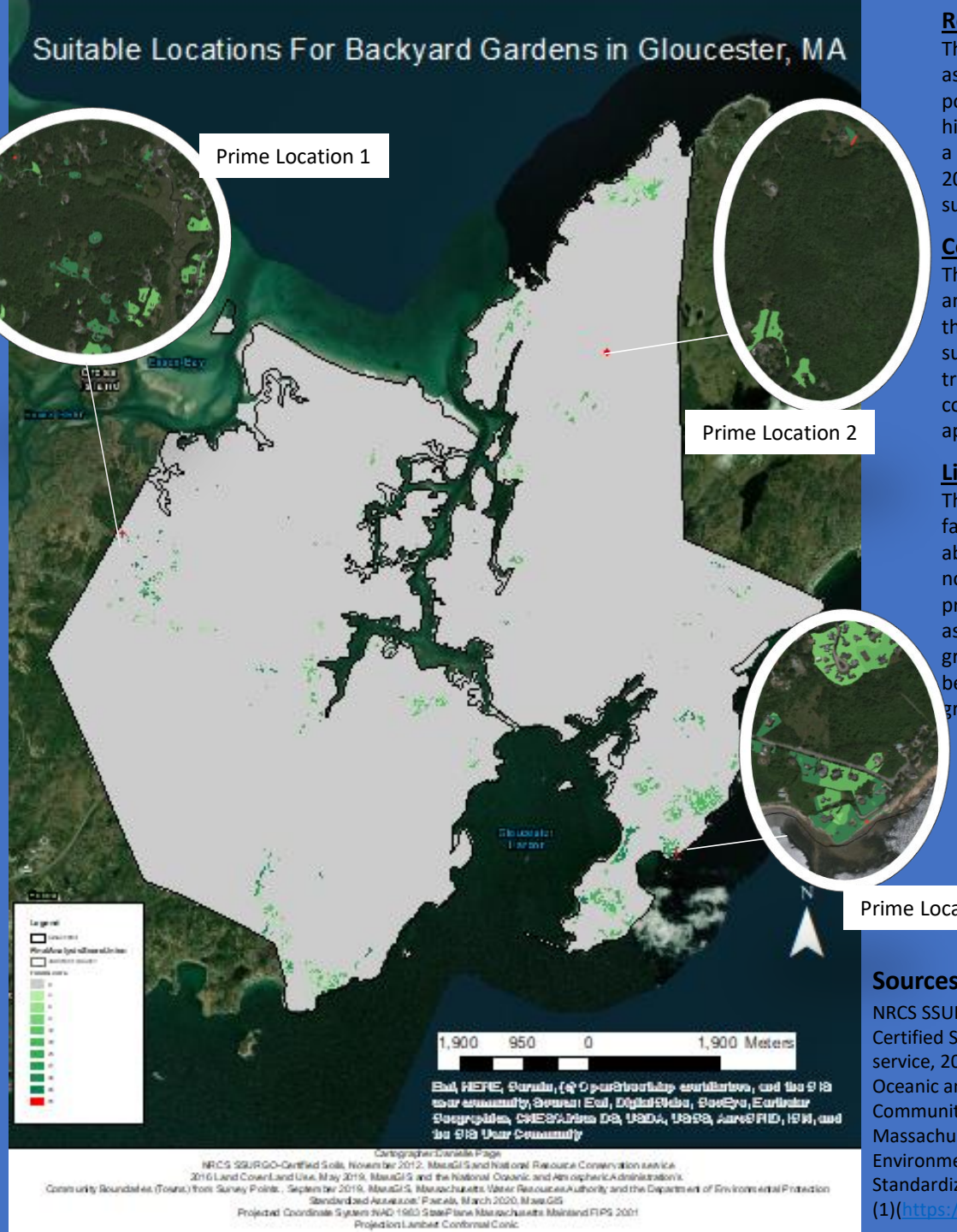
By Danielle Page

Background

As of March of 2020, the US was faced with the unprecedented COVID-19 pandemic which meant huge risk to anyone in a large group of people. Citizens have been able to forego the non essential trips to stores, however supermarkets have remained open as a necessity for obtaining food. In my town of Gloucester Massachusetts the grocery stores are trying their best to separate people and take precautions however these precautions do not eliminate the risk of coming into contact with the virus. The only sure way to avoid it is isolation.
The ability to produce food with a backyard garden could be extremely advantageous in this pandemic, as it would limit the need to take the risk of going to the supermarket. According to some anecdotes(1) one fifth of an acre is a sufficient amount of land to grow enough food to supplement the diet of a family of four if it is done efficiently and in the right location.

Methods

With this knowledge my question became: Where in the town of Gloucester would be best suited for a backyard garden? My approach is based mostly on physical characteristics of the land such as lot size and soil composition.
I used data from MassGIS for my analysis. The layers I included were NRCS SSURGO-Certified Soils, 2016 Land Cover/Land use, Community Boundaries (Towns) from Survey Points, Standardized Assessors' Parcels. Through selecting attributes and clipping this data I was able to find areas of prime farmland as well as the land cover and lot size of residential areas in the city of Gloucester. I used the field calculator to rank each data set on a scale of 0-3, zero being the least suitable and three being the most suitable. Then created a Union of all of the sets and used the field calculator to calculate an overall land score by multiplying the individual scores of each attribute (farm land suitability, residential suitability, land cover suitability, and lot size suitability).



Results

The results found a total of 5645 out of 99095 polygons were selected as having some degree of suitability from 3-81 with 3 being the lowest possible suitability and 81 being the highest. Of these polygons only 3 had the highest possible suitability score while 4858 of the selected polygons fell below a score of 24 making them less suitable for backyard gardens. Less than 200 plots of land (polygons) fell in the upper range of backyard garden suitability.

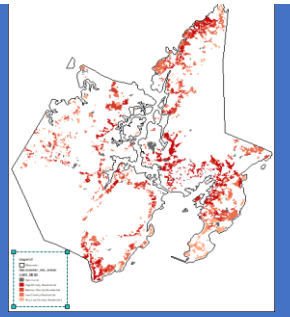
Conclusion

There were only three polygons that reached the highest possible score of 81 and are perfectly suited for backyard gardens. Observing the results it is clear that the city of Gloucester does not have many areas that are of prime suitability for backyard gardens, so the residents of the city may have more trouble growing their own food than in other parts of the world. This data could be used by residents or the town to take advantage of gardening in appropriate areas.

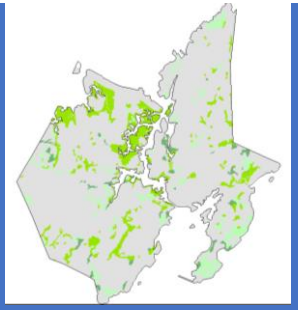
Limitations

The limitations of my analysis are that I did not look at non physical suitability factors such as household income or age of occupants which could limit the ability of residents to purchase supplies and perform gardening tasks. I also did not take into consideration which residences would benefit most based on proximity to grocery stores as the city of Gloucester is on 26.2 square miles so I assumed that all residents would be in a comfortable driving distance of a grocery store. Those who would benefit most from a backyard garden would be able bodied residents who did not have immediate access to a car or a grocery store.

Residential Areas by Density



Prime Farmland in Gloucester



Sources:

NRCS SSURGO-Certified Soils, November 2012, MassGIS and National Resource Conservation service, 2016 Land Cover/Land Use, May 2019, MassGIS and the National Oceanic and Atmospheric Administration's
Community Boundaries (Towns) from Survey Points , September 2019, MassGIS, Massachusetts Water Resources Authority and the Department of Environmental Protection
Standardized Assessors' Parcels, March 2020, MassGIS
(1)(https://urbanhomestead.org/about/by-the-numbers/)