Investigating Sea Level Rise in Newburyport, Ma

by Jillian Kent

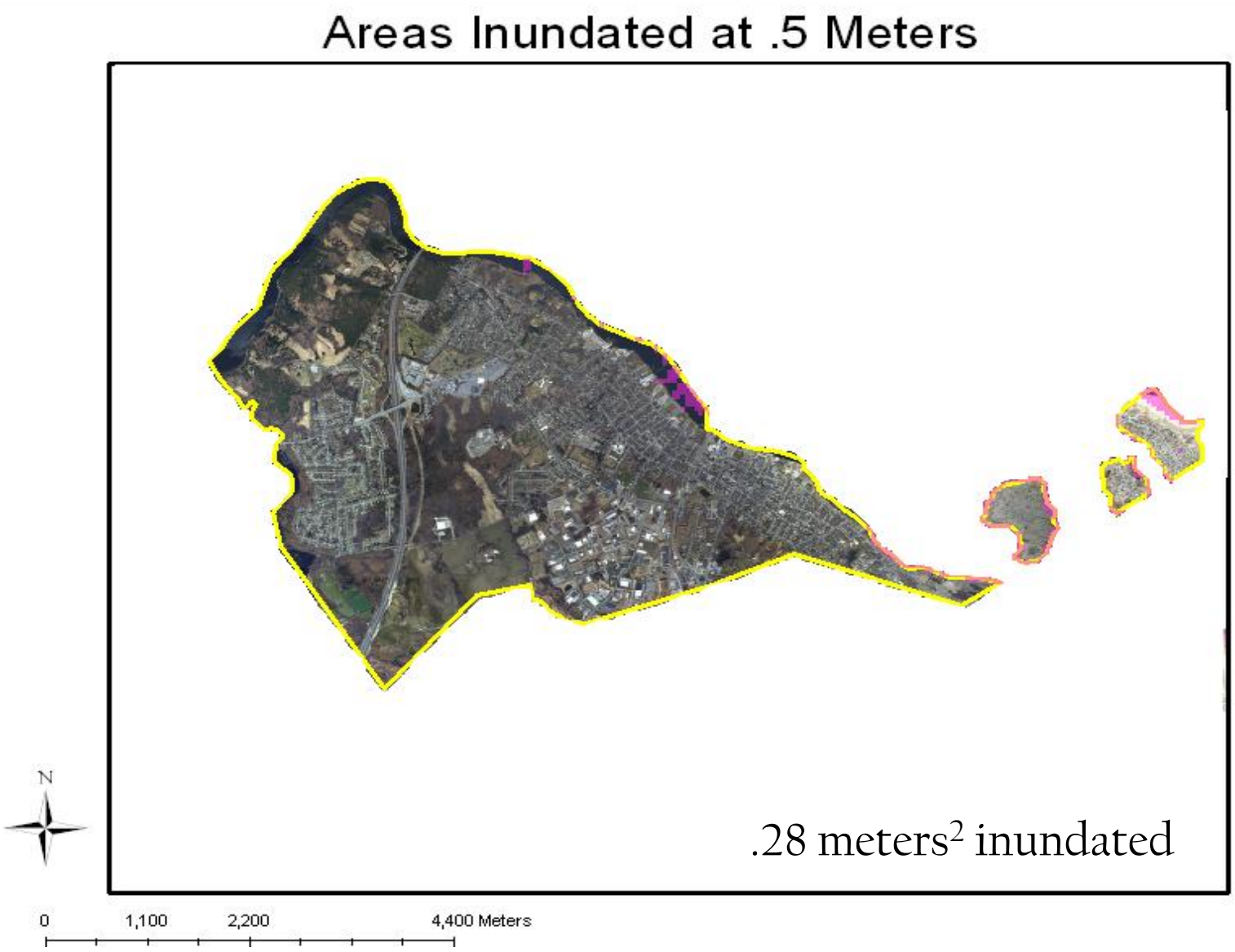
Objectives

To produce a series of 3 maps to demonstrate which proportion of Newburyport will be inundated at .5 meters, 5 meters and 10 meters.

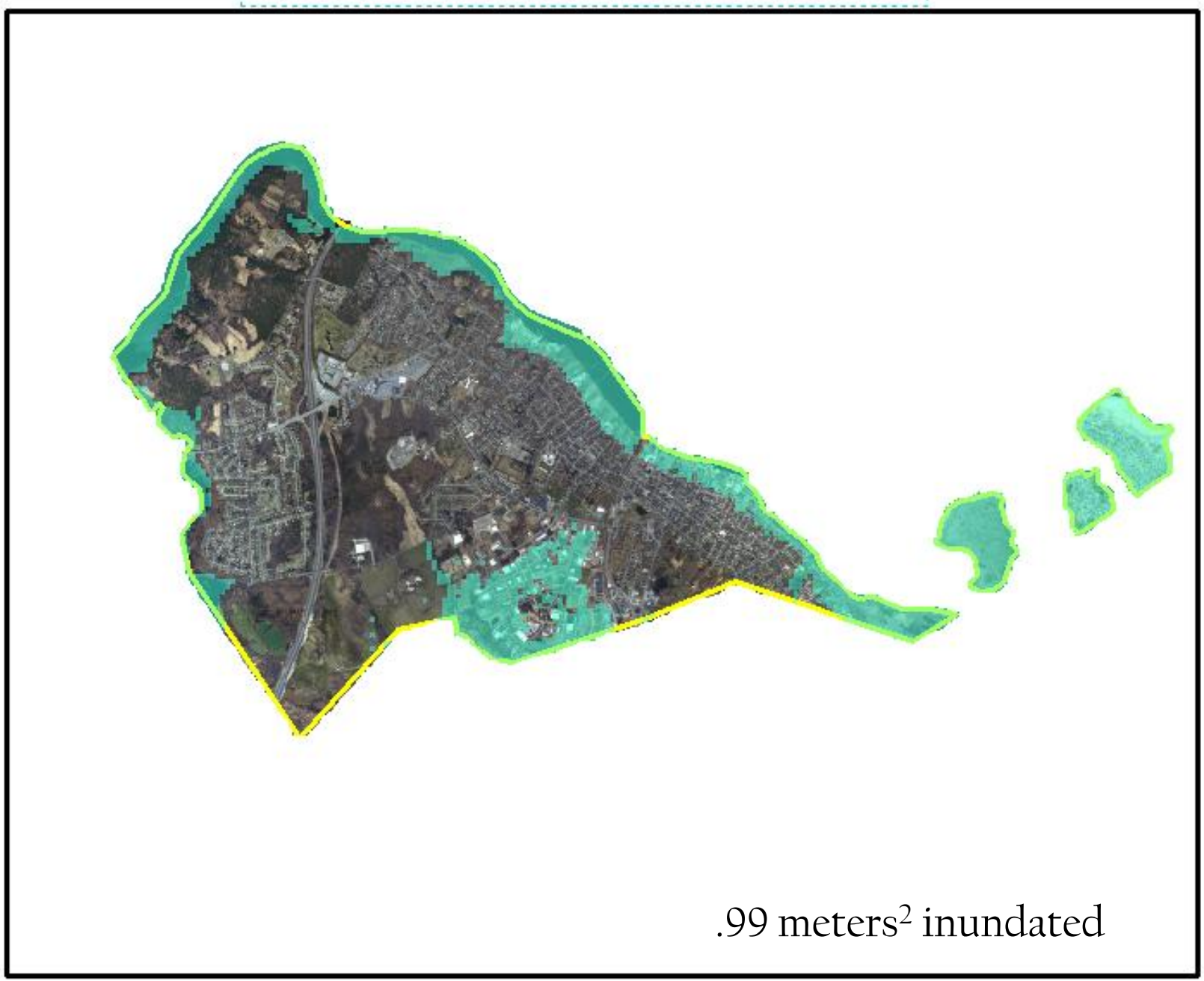
Methods

- Using ArcGIS, I :
  - Downloaded 7 DTMs that cover Newburyport
  - Put them into Microsoft Excel, then uploaded them to ArcGIS
  - Downloaded the towns polygon layer, and selected and clipped Newburyport from the rest of Massachusetts.
  - Merged all of the DTM files together to create one layer
  - Converted the merged shapefile into a raster elevation grid.
  - Created an Inverse Distance Weighting raster layer.
  - Used the Raster Calculator to identify areas that met my elevation criteria at .5 meters, 5 meters and 10 meters
  - Calculated the total area within Newburyport that would be inundated using Zone dataset

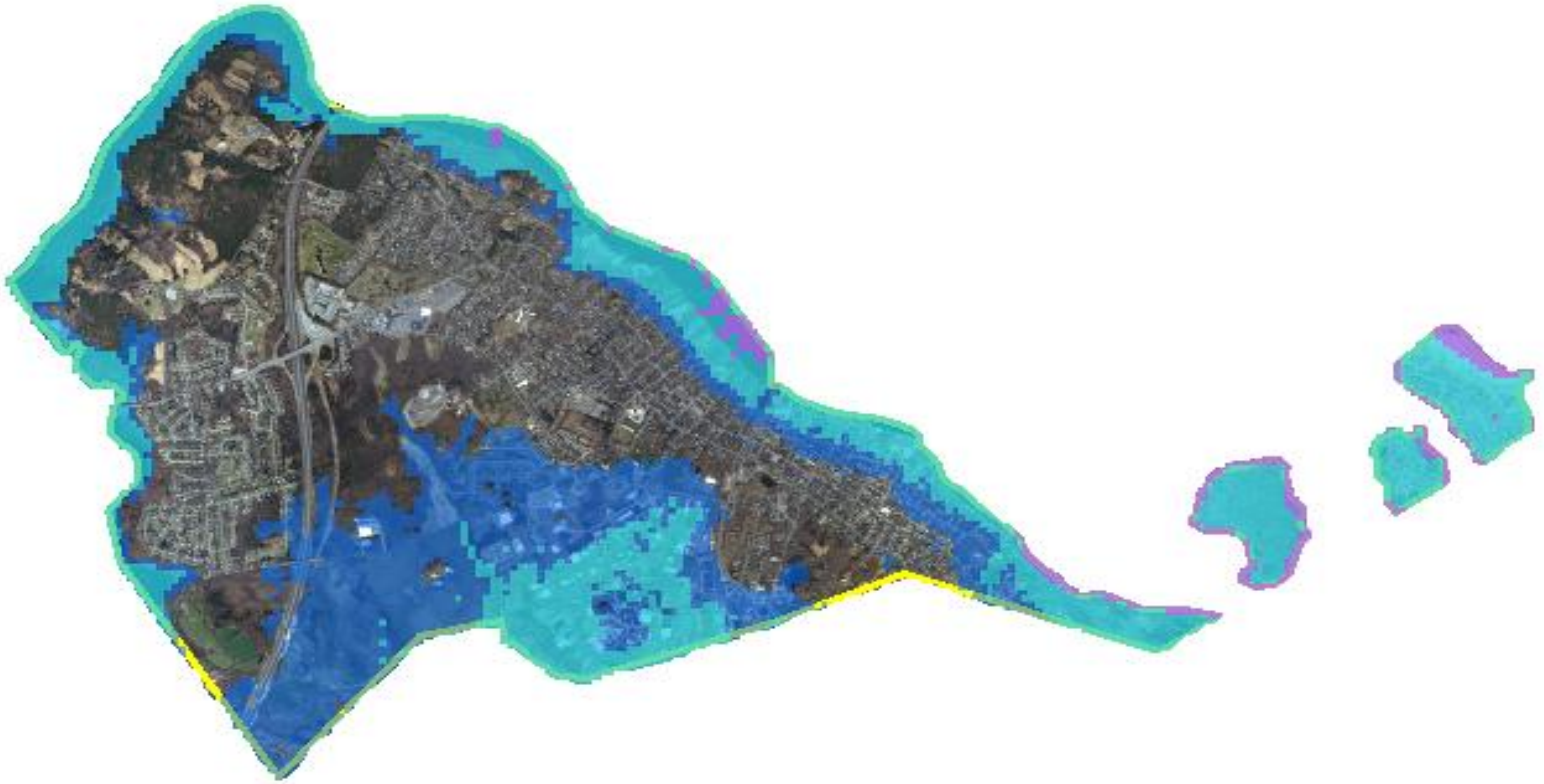
Results


Areas Inundated at .5 Meters
N
0
1,100
2,200
4,400 Meters
.28 meters^2 inundated

Areas Inundated at 5 Meters



Areas Inundated at 10 meters



N

0 1,100 2,200 4,400 Meters

1.16 meters^2 inundated

Conclusion

- Using ArcGIS and mass.gov/mgis I analyzed the projected sea level rise of Newburyport, Ma at .5m, 5m and 10m
- At .5m, .28 meters^2 of land was inundated
- At 5m, .99 meters^2 of land was inundated
- At 10m 1.16 meters^2 of land was inundated
- Most of the area inundated is residential area, and wildlife. All islands are completely inundated, as well as the airport and a bunch of parks.
- Errors– I had to do this 6 times from the beginning.

Citations

- ArcGIS
- www.mass.gov/mgis/
- Google Earth