Risk Assessment

Water Pipe Distribution
Naperville, Illinois

Honglin (Jim) Wei

1 inch = 314 feet

0 265 530 1,060 Feet

In this assignment, I establish a framework for defining critical water mains and risk environments that leverages GIS data, assessed hydraulically critical pipe locations and their spatial relationships to high impact locations.

Using the provided data from Naperville, I developed a geo processing model that can be used as a planning tool to calculate risk and facilitate future distribution water pipe assessments to optimize preventative maintenance prioritization.

The risk are based on a variety of vulnerability and threats:

- Risk 1 - Natural Disaster - Flooding event
- Risk 2 - Third Party Damage – Maintenance of infrastructure near pipes
- Risk 3 - Proximity to Unstable Environment – Break due to soil composition
- Risk 4 - Pipe Break/Physical – Pipe Material or Vintage

- Very Low Risk
- Low Risk
- Medium Risk
- High Risk
- Roads
- Buildings
- Wetland, Rivers, Lakes

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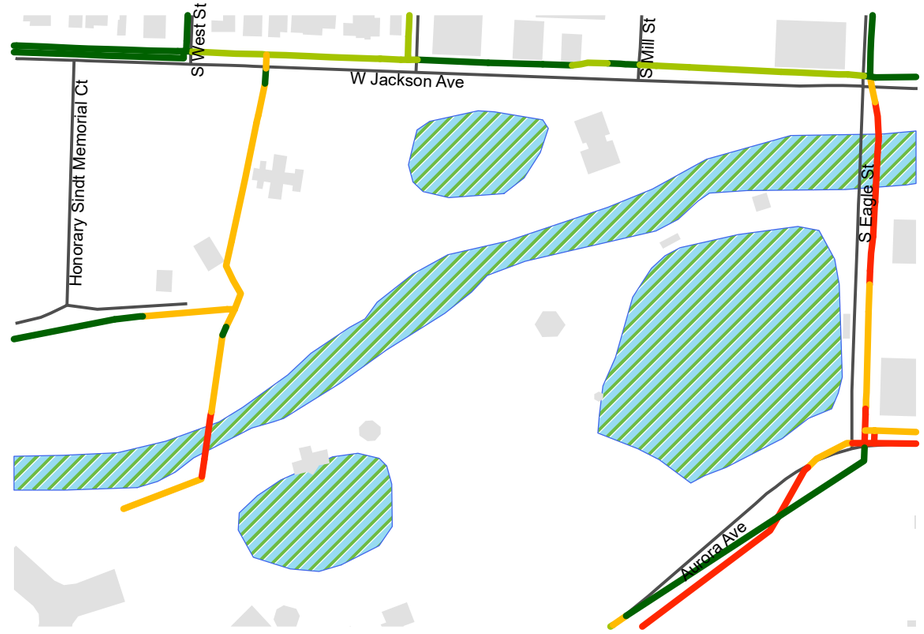

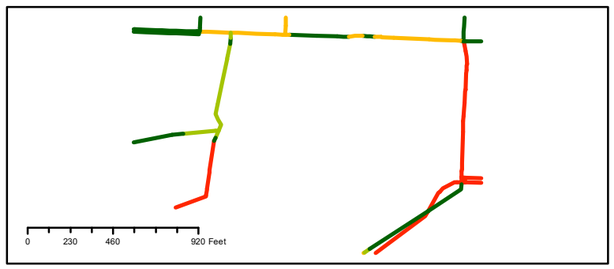

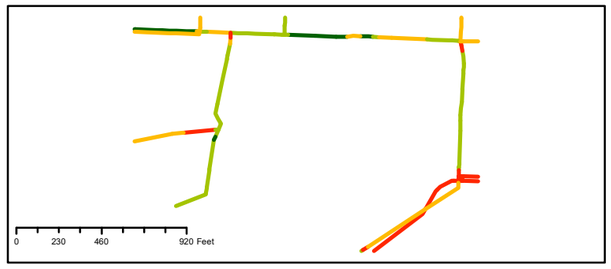

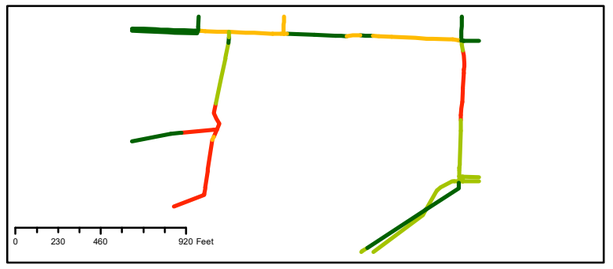

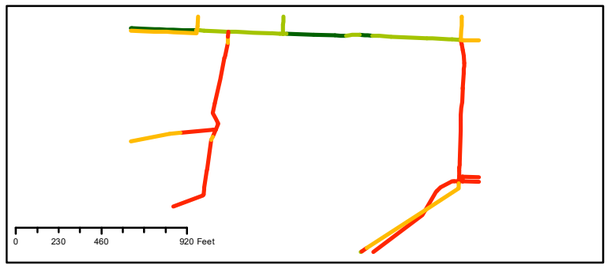

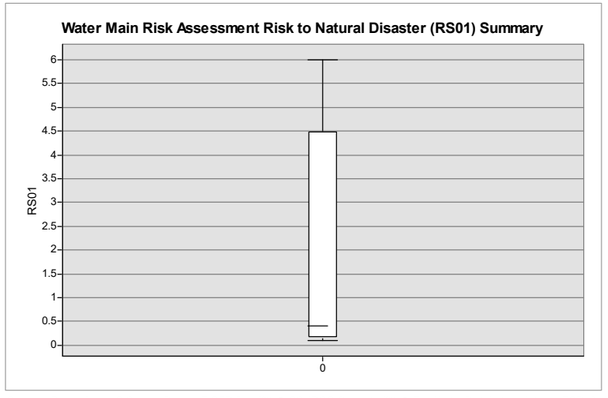

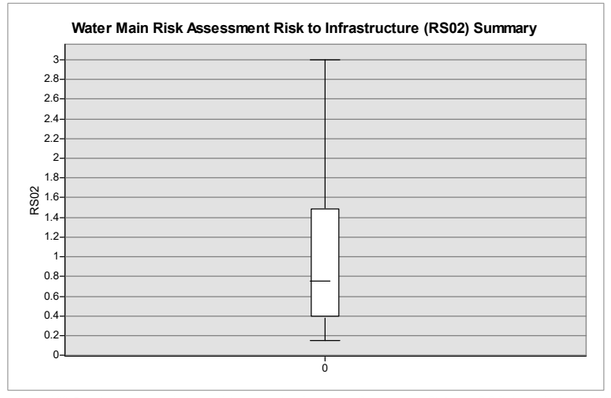

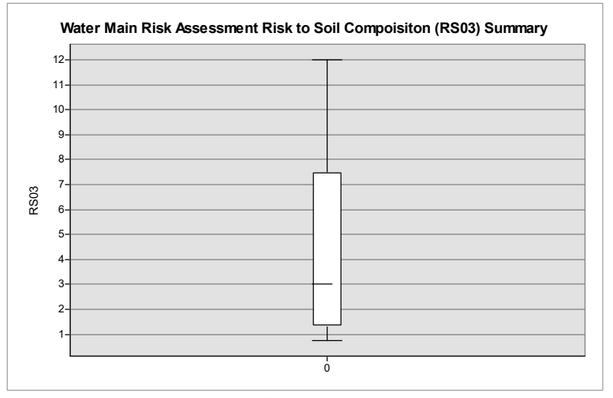

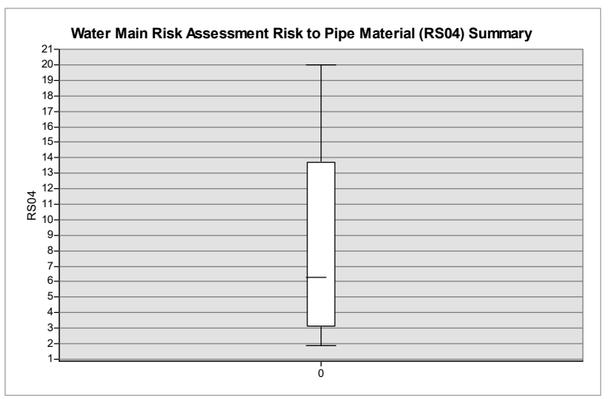

Sources: Roads from US Census Bureau TIGER files /2015, SSURGO Soil data /2015, The Water Distribution Network ESRI & Naperville Illinois / 2015, Watercourses and National Wetland Inventory from Illinois Clearinghouse Statewide GIS Data and Metadata / 2015, Key Social Infrastructure from building footprints OSM / 2015, 2020; Population Density US Census Bureau / 2010