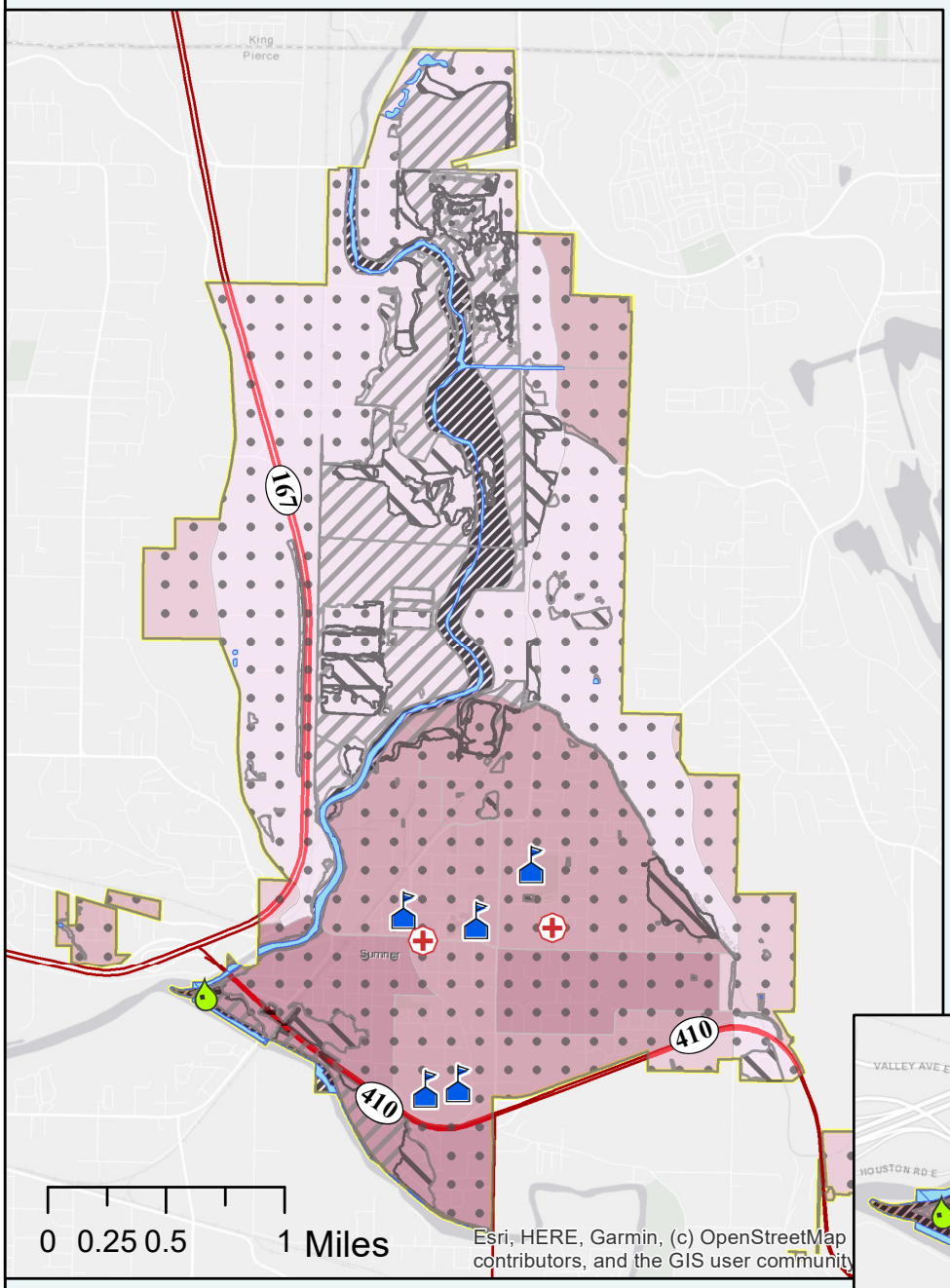
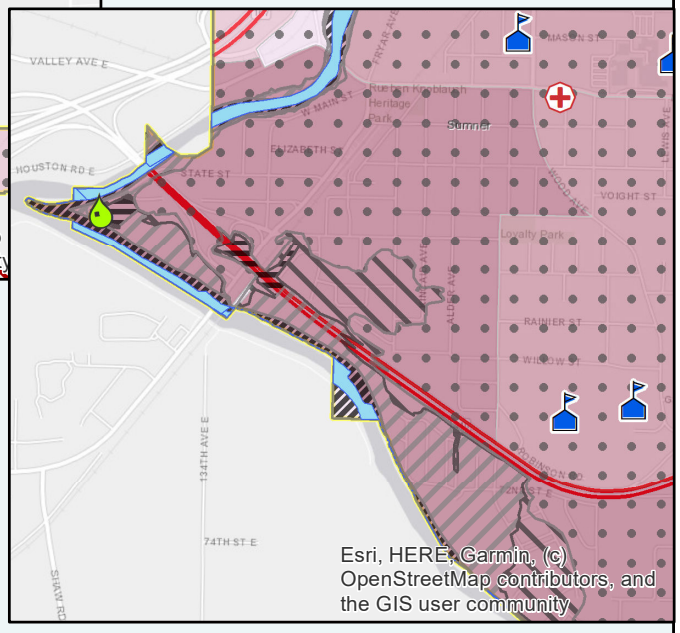
Flood Risk for Sumner's Population

and Critical Facilities



Sumner has been facing issues with flooding along the White River for many years. The river flows right through the city and they have attemped to remove housing and industrial facilities from the floodplain to reduce flooding damage. The main flood hazards are located in the northern section of the city. This happens to be where the gradient of the river flattens out and water slows down. These is also a slight flood hazard along the southern boundaries of the city. Vulnerable areas are those with high populations along with public health care facilities, schools, and wastewater treatment plants. Most of these areas have a very low flood risk as they are within a 500-year flood zone. The wastewater treatment plant may be in a dangerous area as ponding could lead to an overflow in the plant and release untreated water downstream. Nearby pubic health care facilities and schools can act as a makeshift shelter in the event of a flooding emergency.



- Schools
- Public Health Care Facilities
- Wastewater Treatment Plant
- Major Roads
- City of Sumner Boundaries
- Surface Water

FEMA Flood Zones

- Zone A - 1% Annual Chance (No BFE)
- Zone AE - 1% Annual Chance (BFE)
- Zone AE - Floodway
- Zone AH - Ponding
- Zone X - 500 year flood
- Zone X - 500+ year flood

Population Density (per Sq/Mile)

- 84.90 - 686.20
- 686.21 - 1212.78
- 1212.79 - 2317.17
- 2317.18 - 3326.95
- 3326.96 - 4043.68

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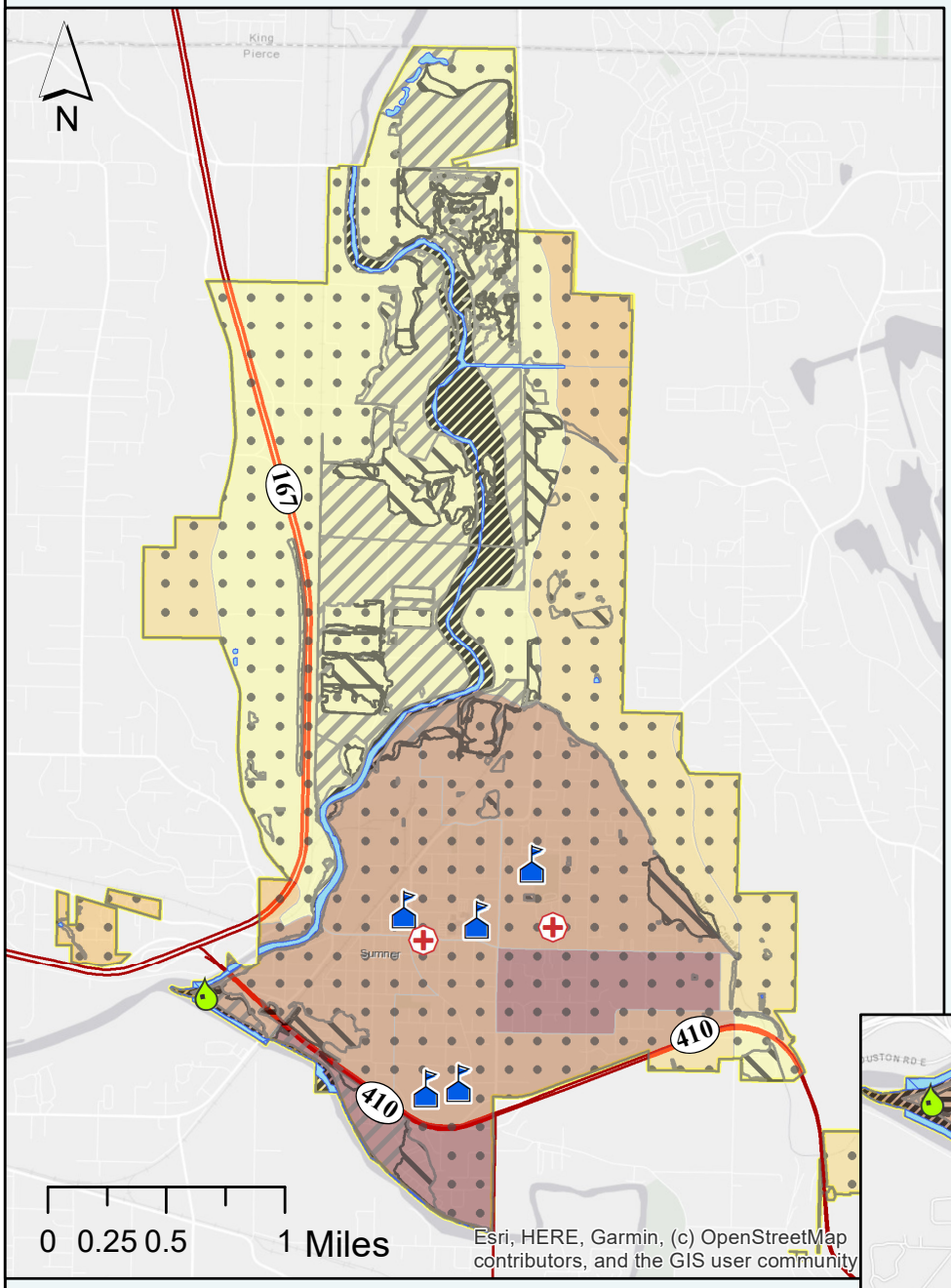
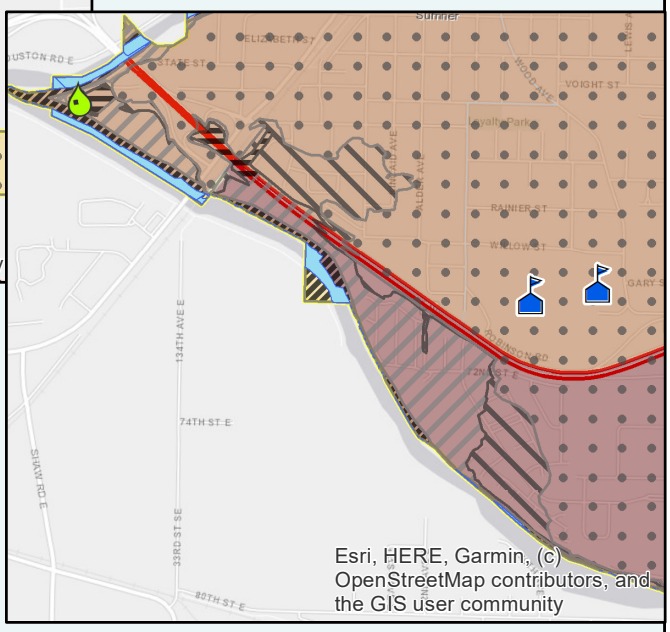
Flood Risk for Sumner's Housing Units

and Critical Facilities

Sumner has been facing issues with flooding along the White River for many years. The river flows right through the city and they have attemped to remove housing and industrial facilities from the floodplain to reduce flooding damage. The main flood hazard is in the northern section of Sumner, but the smaller flood hazard in the southwest section of the city has potential to be a flood risk. The vulnerable areas are areas with a high density of housing units along with public health care facilities, schools, and wastewater treatment plants. The wastewater treatment plant may be in a dangerous area as ponding could lead to an overflow in the plant and release untreated water downstream. In the southwest section of the city there is a high density of housing units that are within a 100-year flood zone. This means that in this area there is a flood risk. Fortunately, there are schools and public health facilities that can act as a makeshift shelter in the event of a flooding emergency.





- Schools
- Public Health Care Facilities
- Wastewater Treatment Plant
- Major Roads
- City of Sumner Boundaries
- Surface Water

FEMA Flood Zones

- Zone A - 1% Annual Chance (No BFE)
- Zone AE - 1% Annual Chance (BFE)
- Zone AE - Floodway
- Zone AH - Ponding
- Zone X - 500 year flood
- Zone X - 500+ year flood

Housing Units (per Sq/Mile)

- 35.02 - 149.4
- 149.5 - 302.8
- 302.9 - 855.0
- 855.1 - 1503
- 1504 - 2039

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The critical facilities I chose for Sumner are public healthcare facilities, schools, and wastewater treatment plants. Public healthcare facilities are already taking care of sick and injured people and could take in more people hurt during a flood. Additionally, as this is a valuable and therefore vulnerable place if a flood were to happen. Schools are large areas that could act as a shelter to the community and could be a welcoming place to those families with children that cannot go back home. Finally, wastewater treatment plants are a critical facility because of the waste involved. If these facilities were flooded that could bring untreated water downstream or into the flood waters. In sum, I wanted there to be critical facilities that the community could go to for help and shelter, along with one that could make the flooding emergency worse.

The flood hazard in Sumner is mainly focused along the White River that runs through the middle of the city. The flood hazard is mainly located in the northern section of the city with smaller flood and ponding hazards along the southwest edge of the city. When looking at population density, the more people there are the more vulnerable the area is. With most of the population in the southern section of Sumner, the south section is vulnerable to flooding. Housing units can be damaged during flooding and this makes them vulnerable. Housing unit vulnerability in Sumner is focused in the south section of the city, similar to population. Both population and housing units are low in the northern section of the city, and therefore less vulnerable. Additionally, all the critical facilities are city vulnerabilities as well.

The flood risk in Sumner is where the flood hazards and city vulnerabilities overlap. In the south section of Sumner, along SR-410, there is a flood risk. This area is considered zone AE by FEMA, which means it is either a floodway or there is a 1% chance every year that this zone could be flooded. Population density here is between 3 and 4 thousand people per square mile. There are also between 1,500 and 2,000 housing units in this part of Sumner. Additionally, part of SR-410 is within this flood risk area and could mean the difference between families getting to safety or staying in life threatening area.

Another risk here is that the wastewater treatment plant is within the AH flood zone, which means there can be ponding, and this facility is very close to the river and AE zones. The flood risk at this facility would make the flooding situation even worse with untreated water flooding the city. Although there is a lot of risk along the southern edge of the city, there are schools and public healthcare facilities that are not too far away from those in need and with a very minimal chance of flooding, only 0.2% chance every year. Finally, the north part of the city has a very minimal flood risk, as the flood zones and vulnerable communities do not coincide.

In conclusion, the northern section appears to be safer than the southern section of Sumner. The first suggestion I would make to the City of Sumner would be about having more major roads through the south of the city to be able to transport people out of this risky area in the event of a flood. Additionally, although the wastewater treatment plant is only in an area of ponding, I would suggest moving the plant to a safer location, more north, that has a very minimal chance of flood waters reaching the facility. Sumner has had problems with flooding along the White River for many years and they have done a nice job of reducing the risks in the north half of the city. More attention needs to be brought to the south end of the city, were more of the vulnerabilities are located and at risk.