

Flood Plain Analysis: A look at the affect of flooding on parcels in Tacoma, WA

INTRODUCTION

Tacoma, WA experiences around 40 inches of rain per year. Because of the amount of rainfall in the area, Pierce County created the Pierce County Flood Control Zone District in 2012. If requested, a free floodplain map of a parcel of property can be given.

In order to analyze multiple parcels that are at risk of flooding, a toolbox was built so that future analysis would be possible instantly. This allows for parcels to be quickly analyzed, which is usable by those like Pierce County Flood Control Zone District.

METHODS

In order to complete this analysis, a toolbox was built through ModelBuilder, shown in FIGURE 1. This model allows a flood plain to be analyzed with just inputting a parcel shapefile and a floodplain shapefile. This model has five steps that it will perform:

- 1. Identify parcels that are within floodplain boundaries
- 2. Identify parcels that are nearby to flood plains
- 3. Classify both sets of parcels
- 4. Create two new datasets based on these classifications
- 5. Create data tables that summarize the land use categories and total area of parcels in each set

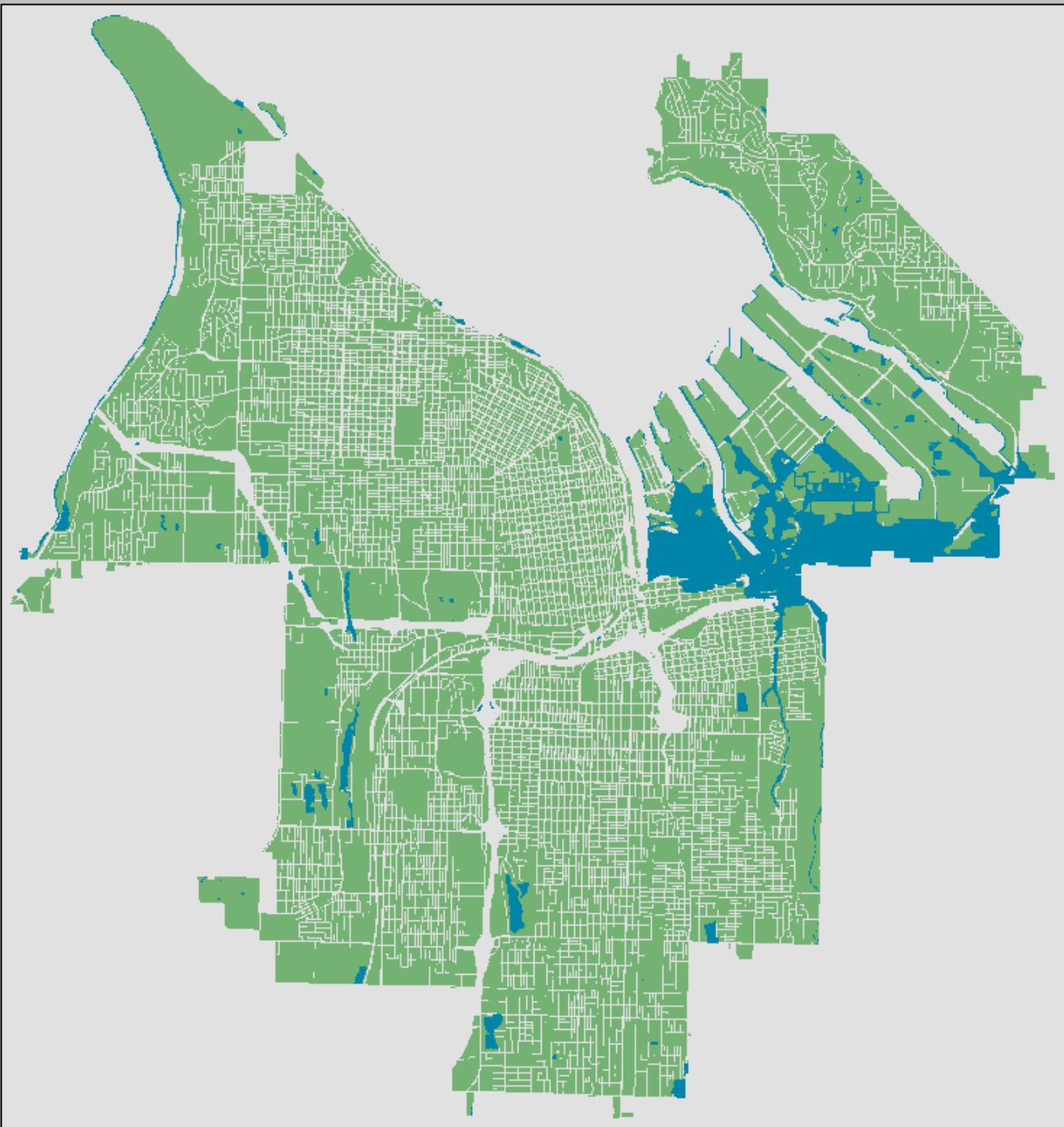


FIGURE 2 Floodplains

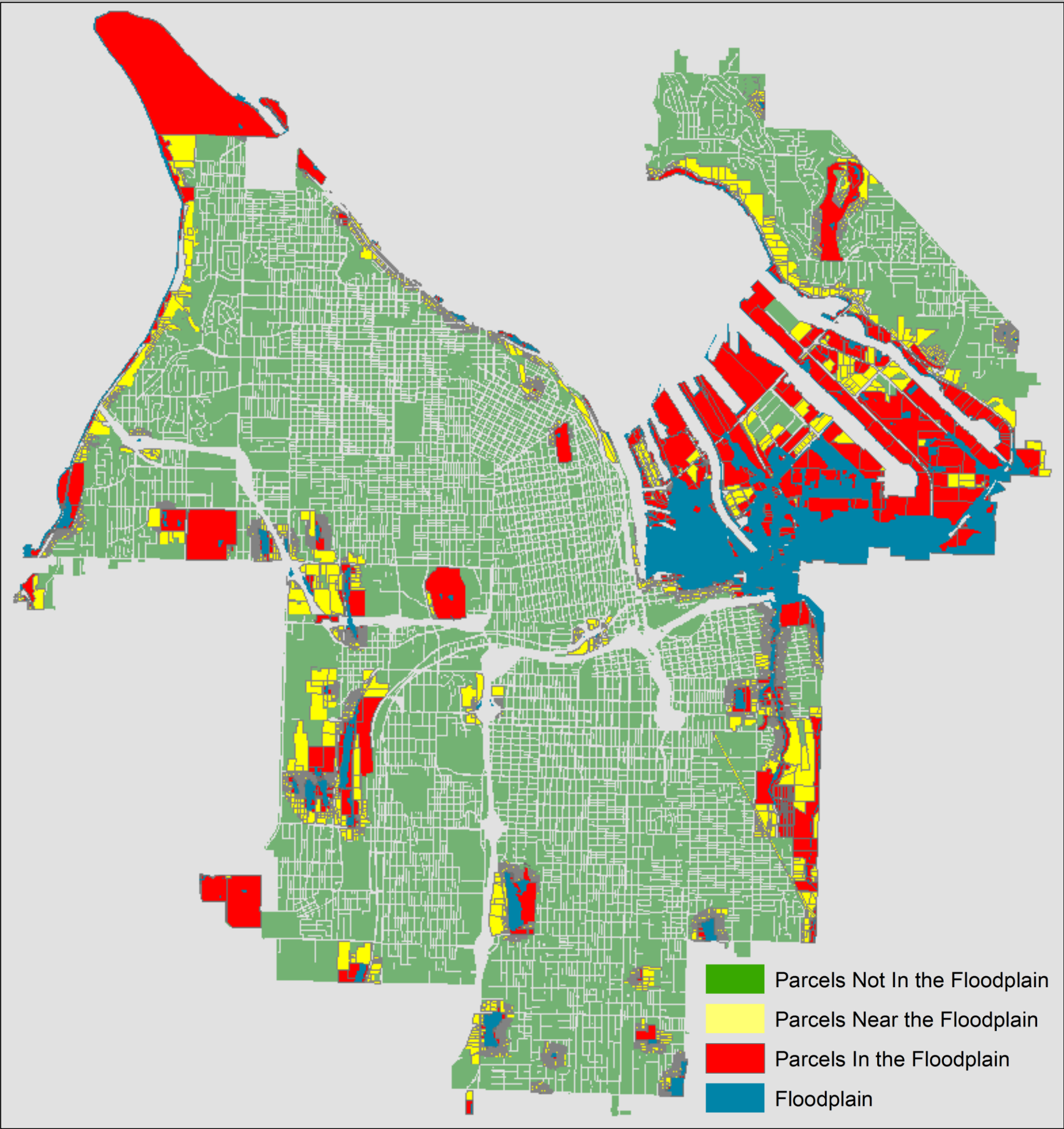


FIGURE 4 Parcels within and near the floodplain

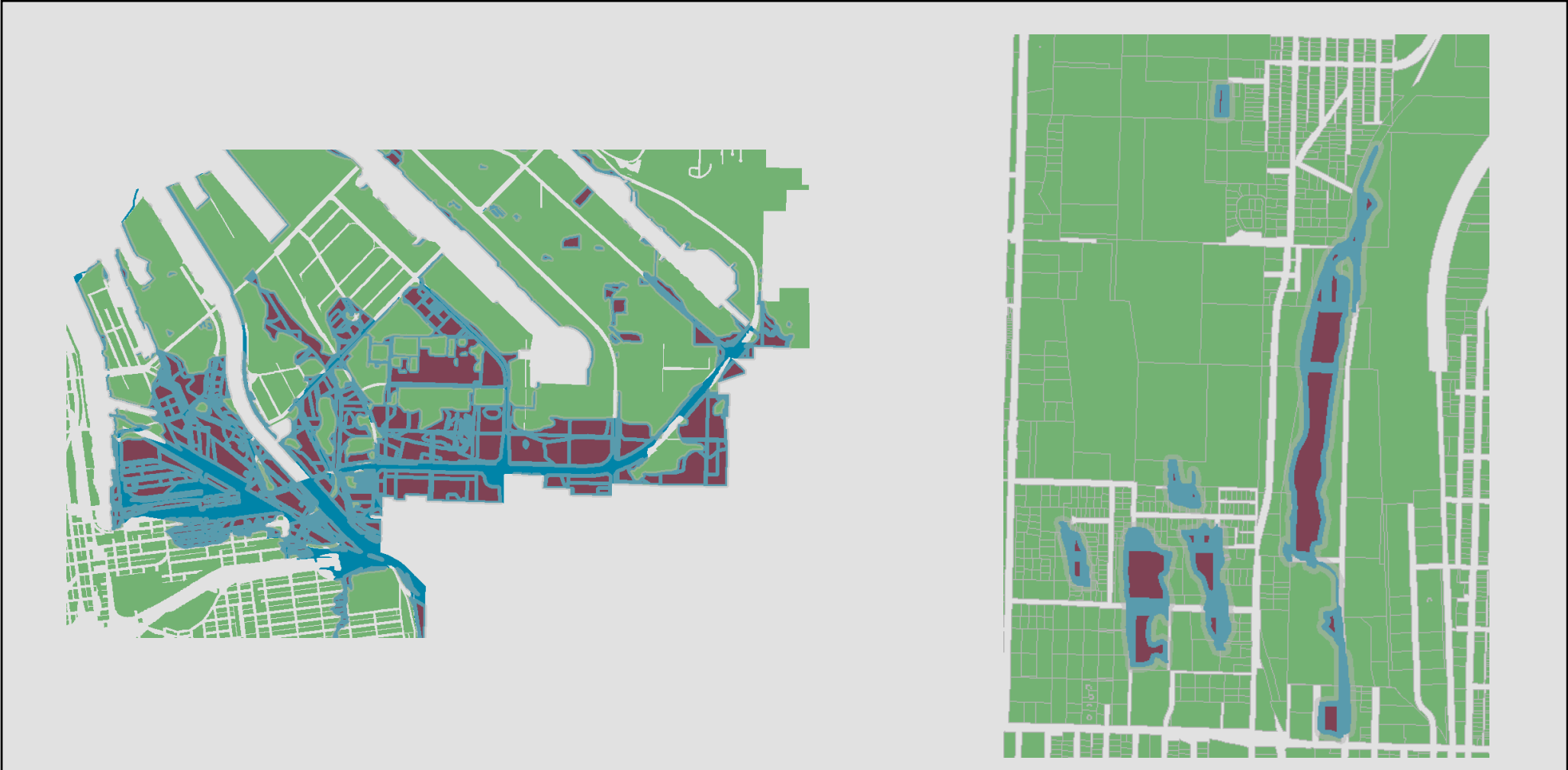


FIGURE 5 Closeup of parcels determined to be flooded

RESULTS

FIGURE 2 shows the floodplains of the Tacoma area that will be flooded. Out of the 71,178 total parcels in Tacoma, WA, there are 1,226 parcels that are directly at risk of flooding, shown in FIGURE 3. There are another 4,275 parcels that are partially at risk for flooding, as shown in FIGURE 4. FIGURE 5 is a closeup of two areas that the model determined were parcels that would be flooded.

The parcels that will be most affected by flooding, both within the floodplain and near the floodplain, are single family dwellings followed by vacant land that is zoned for residential use.

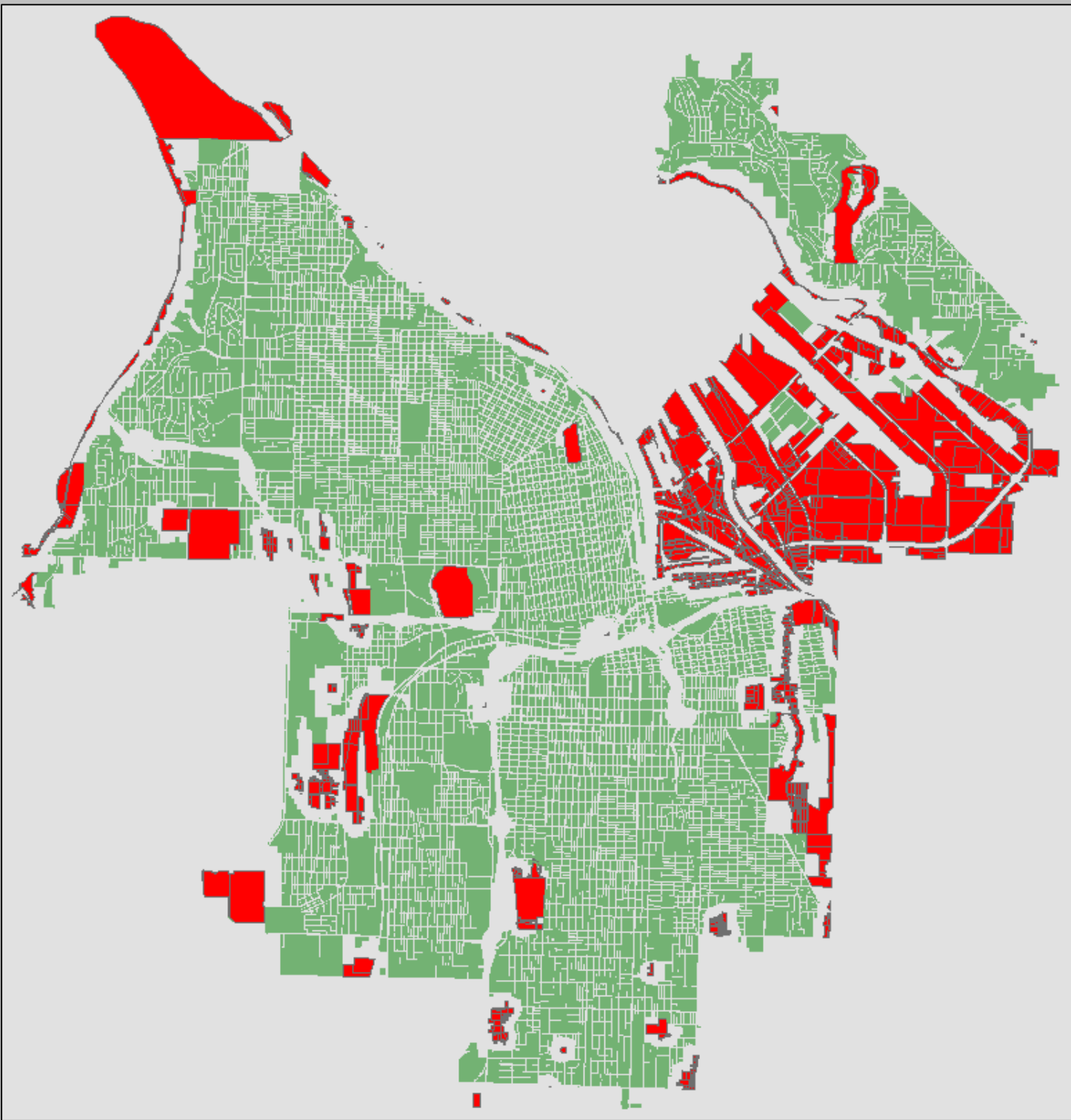


FIGURE 3 Parcels in the floodplain

DISCUSSION

The model build using ModelBuilder can be utilized by many different organizations for the purpose of identifying parcels within a floodplain. This analysis showed that the majority of those at risk during flooding would be people living in single family homes. This allows organizations to focus on these groups for mitigation strategies. This also allows organizations to reach out to those who are at risk in the floodplains in order to forewarn of the possibility of flooding.

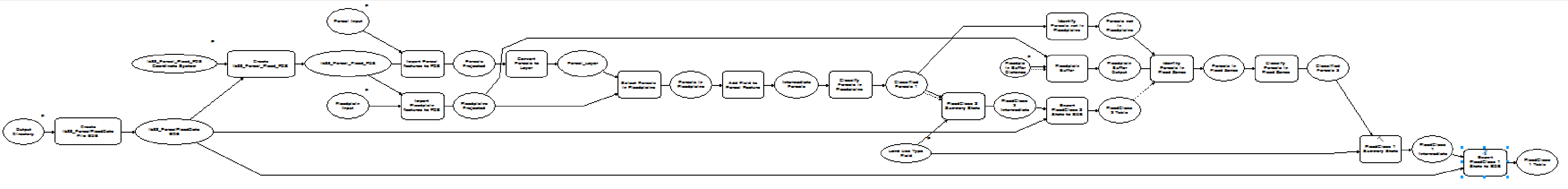


FIGURE 1