



# Using GIS to Assess Hurricane Katrina's Impact on New Orleans and the Current State of Redevelopment

## Purpose

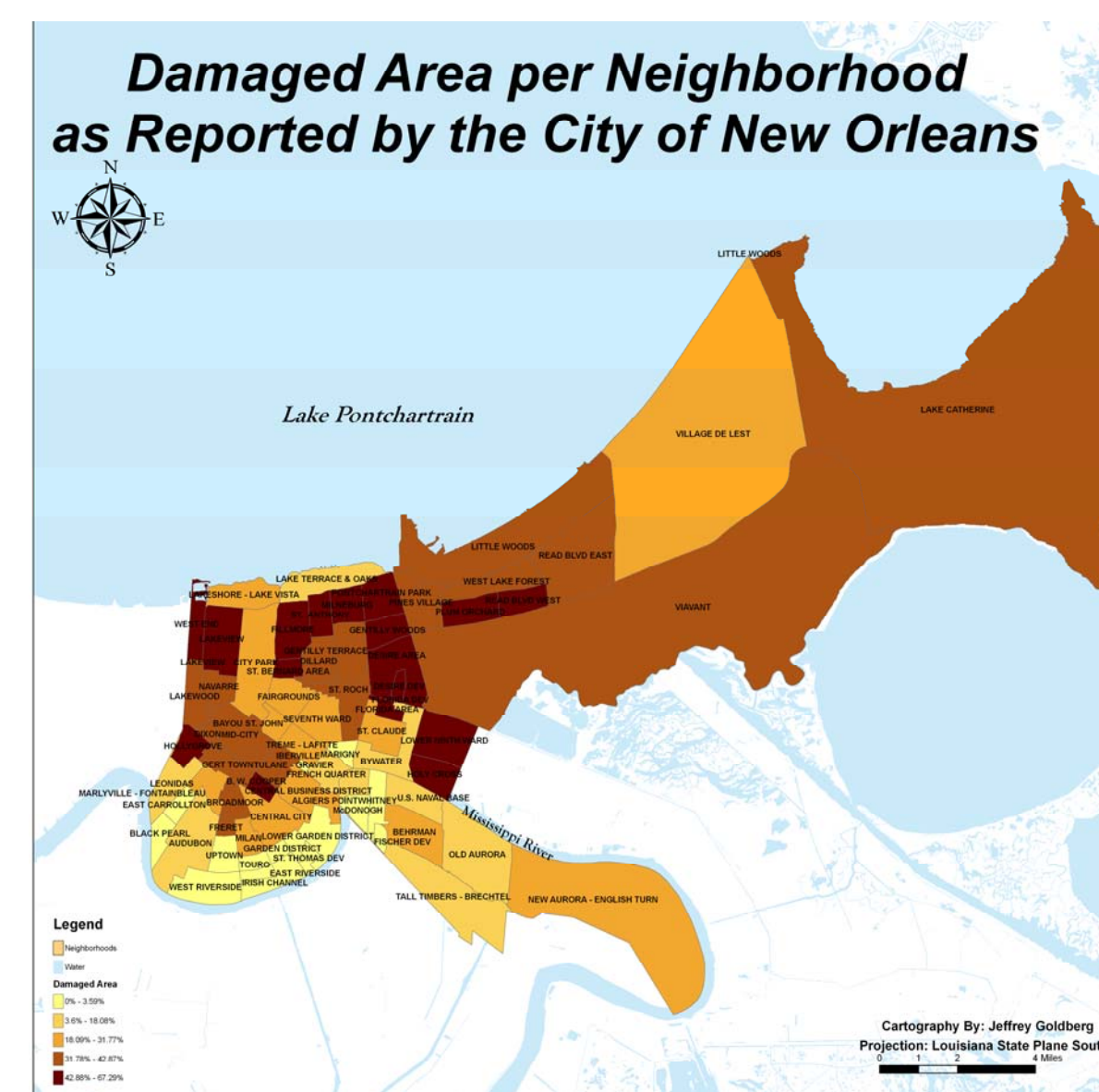
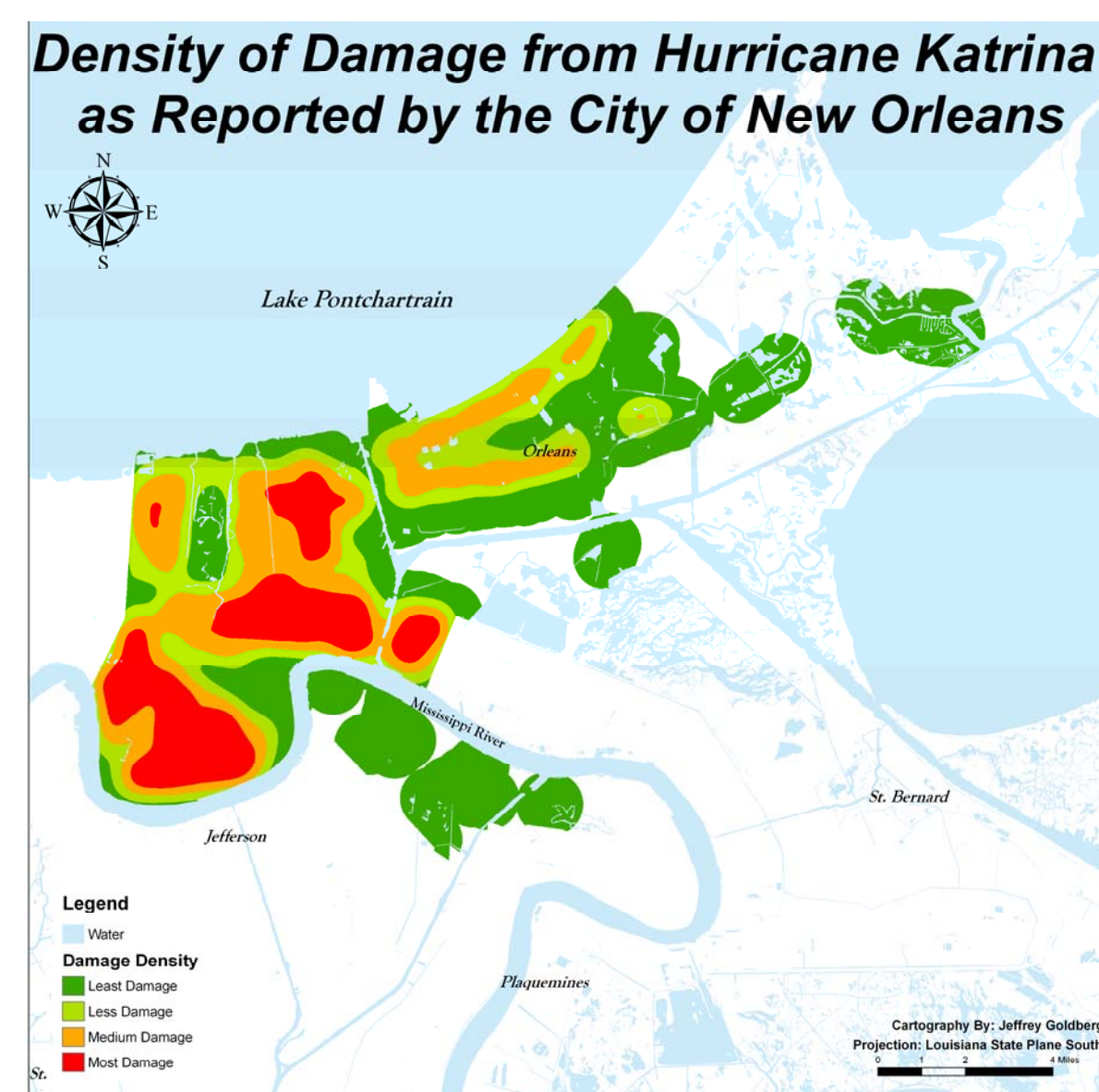
Because of its unique physical geography, the City of New Orleans represents a constant challenge to urban planners, engineers and governmental representatives charged with protecting the city from coastal floods. On average, the "Big Easy," as New Orleans is affectionately known, lies eight feet below sea level, making the city extremely vulnerable to major hurricanes that cyclically plague the Gulf Coast of the southern United States.

To assist urban planners, engineers and governmental representatives in the process of redeveloping the city, this GIS analysis utilizes data from Hurricane Katrina to assess flood damages, the current state of redevelopment and remaining vulnerabilities.

## Methodology

### Step 1

The first task was to determine where damage from Hurricane Katrina was most severe. Using damage assessment data from the City of New Orleans, the maps above depict both the density of damage throughout New Orleans, as well as the percentage of damage per neighborhood:

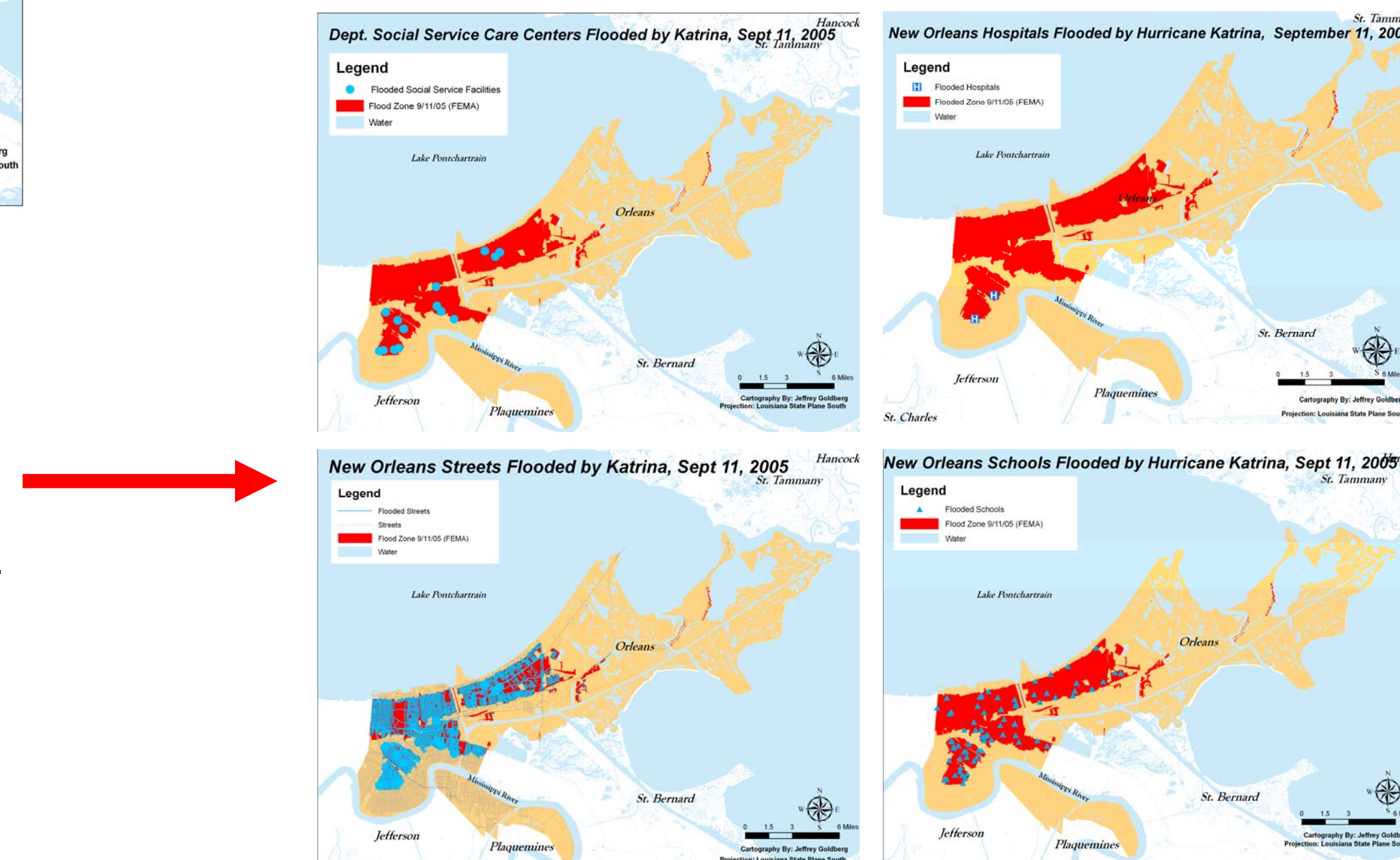
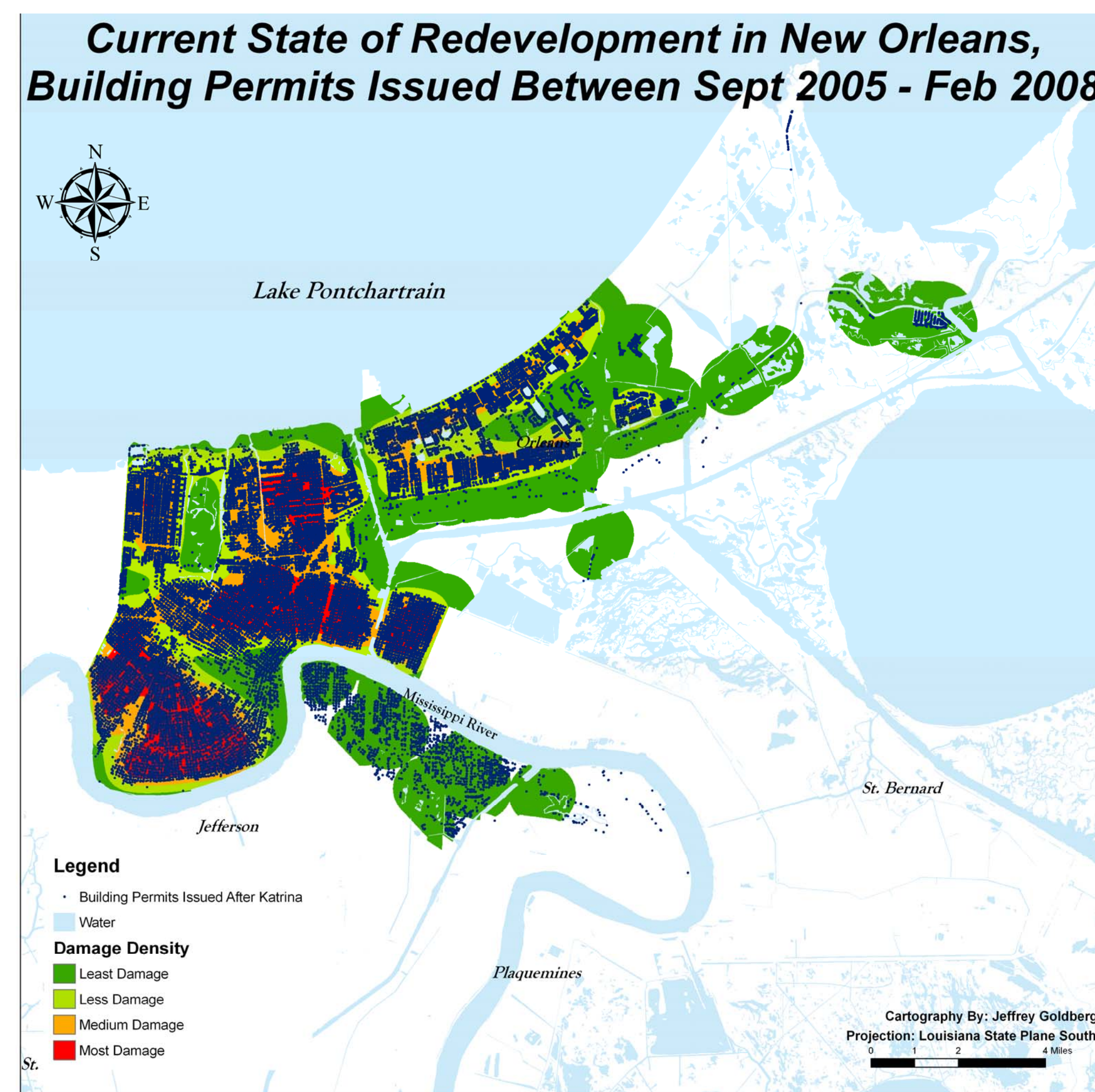


### Step 2

While useful, these maps are not able to convey the specific impacts of flooding. What key infrastructure was impacted by the storm? Using data from the most intense day of flooding, September 11, 2005 (as determined by FEMA), as well as infrastructural data from the Louisiana GIS Council, I was able to pinpoint the specific roads, schools, and Department of Social Service facilities that were affected by flood waters from the storm.

### Step 3

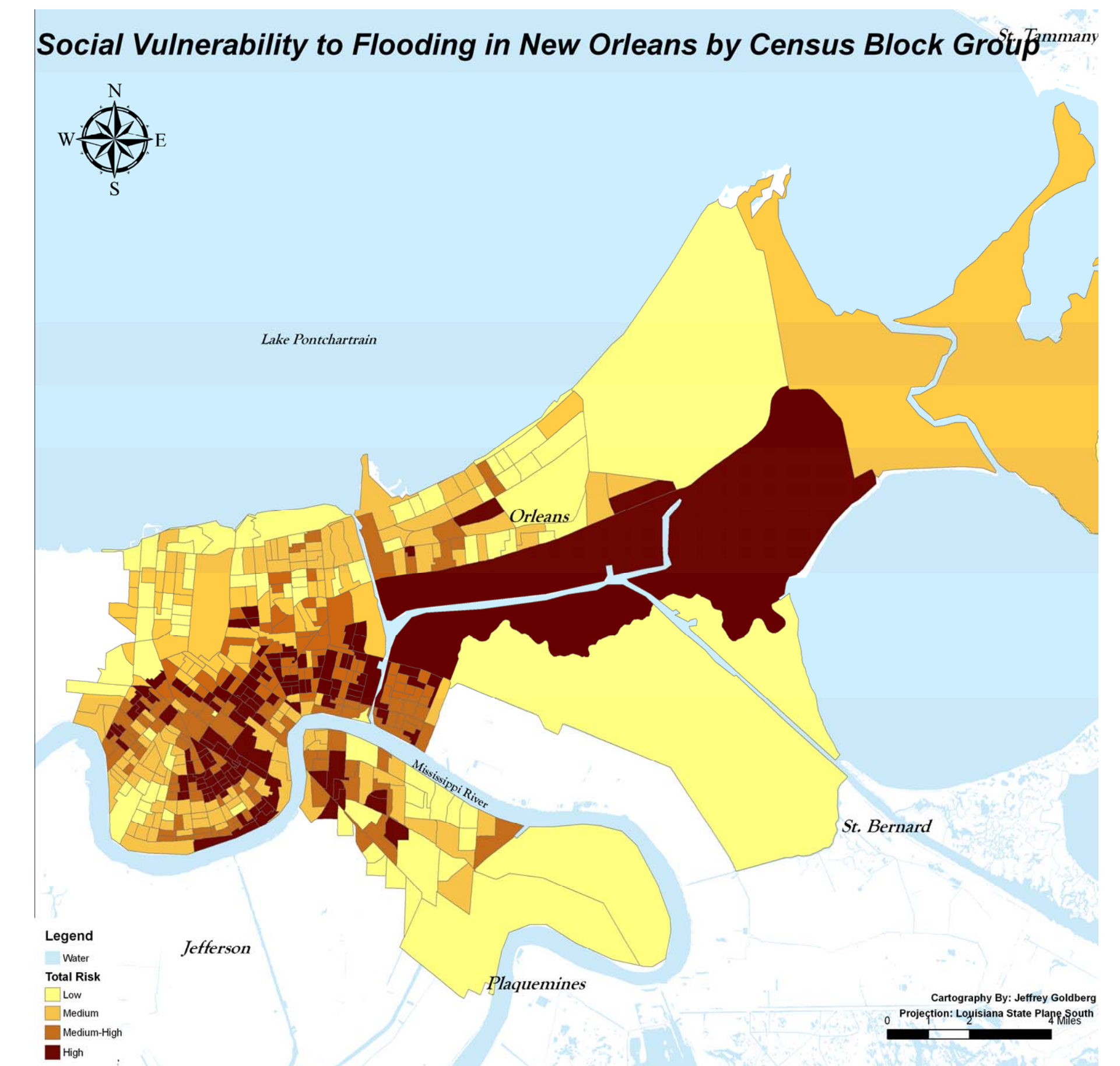
To assess the extent to which redevelopment efforts have targeted the most severely affected areas since the storm, I overlaid data on building permits that have been issued since Katrina on top of the damage density map. In doing so, I was able to convey a rough depiction of the current status of redevelopment. As you can see, building permits have been issued extensively in the most severely damaged areas of the city. However, it is important to note that this is merely an approximation of redevelopment efforts; the permit data does not convey whether or not buildings have in fact been constructed in these areas.



### Step 4

Finally, to convey remaining social vulnerability to future coastal flooding, I compiled multiple data layers from the US Census Bureau, and created a measure of total societal vulnerability based on specific demographic variables.

The demographic variables used to calculate this aggregate risk estimate include:



- Percent Single with child
- Percent over 65
- Percent Public Assistance
- Percent in Poverty
- Percent No Vehicle
- Percent Mobile Homes
- Percent Pre-1970 Structures
- Percent Rental Units
- Percent No Diploma
- Percent No English

Sources:

- City of New Orleans
- FEMA
- Louisiana GIS Council
- US Census Bureau