

Visualizing the Intersections of Environmental Justice for Water Policy: An Exploration of Queens and Kings Counties

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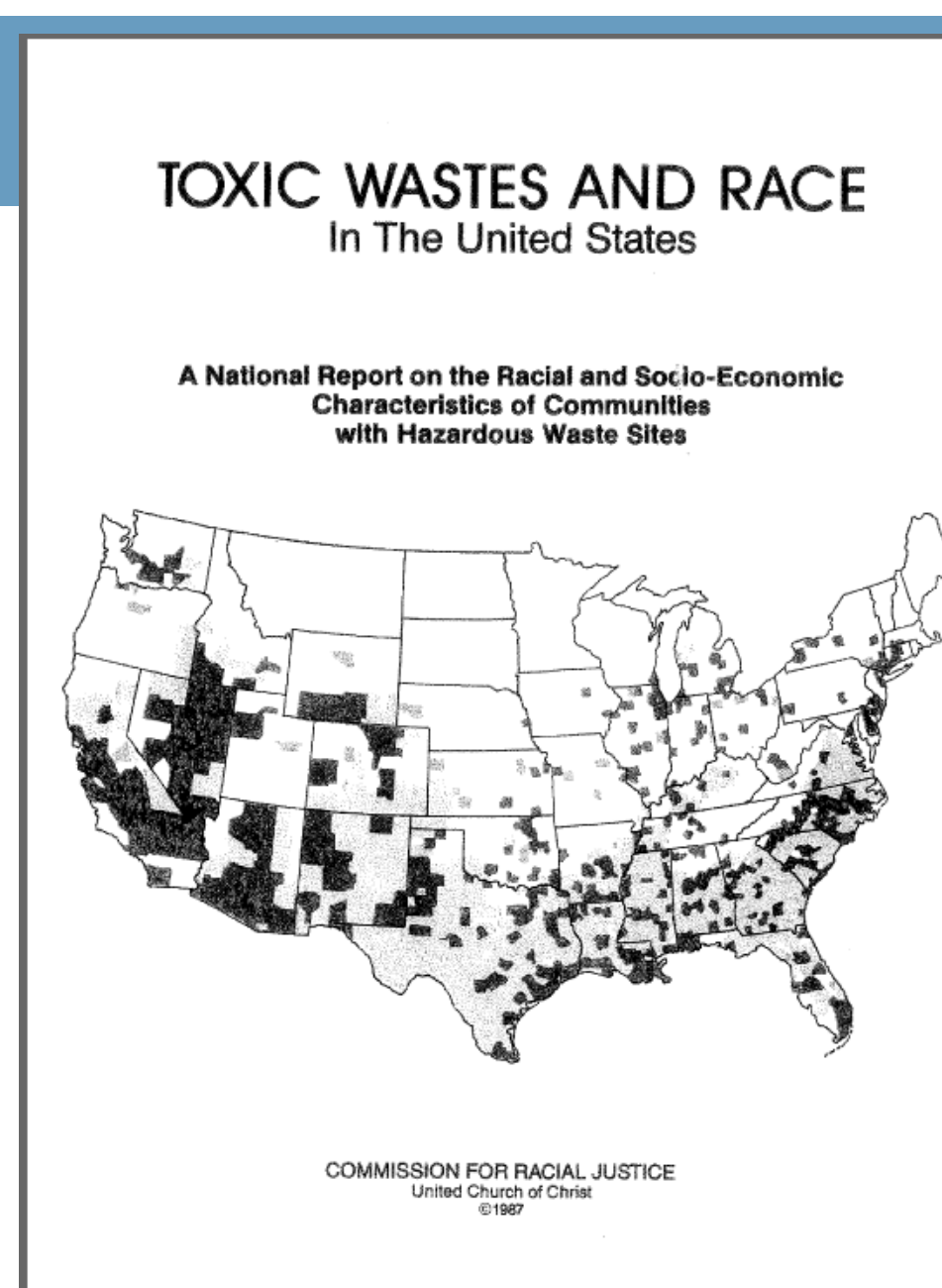
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Abstract

This poster attempts to apply the concept of intersectionality, the exploration of how “distinct social hierarchies” such as gender, race, and class “mutually construct one another” (Collins, 1998) to the physical and social processes inherent to environmental justice policy surrounding hydrological resources. While critical environmental justice work has evolved beyond examining the correlation between hazardous waste sites and high minority and low-income populations (see e.g. Pulido, 2000), policy work and mapping practices still reinforce this basic understanding. By overlapping hydrologic restoration areas alongside pollution sites and “potential environmental justice zones” as dictated by the New York State definition of environmental justice, one is able to see which neighborhoods in Queens and Kings counties experience both the most significant physical and social burdens and opportunities. After identifying these “opportunity neighborhoods,” I find that despite the high correlation between both physically-inclined Hudson Estuary Program grants and socially-inclined Environmental Justice grants with these neighborhoods, few if any of the grants recognize both the physical and social processes inherent to environmental justice.

Background

Since its inception, the environmental justice movement has depended on maps as a tool for building political willpower. In 1987, the United Church of Christ released one of the first national, environmental justice maps with the dark areas showing the overlap between high black and Latino communities and areas with five or more untreated, toxic waste sites (see right). In doing so, the Church and its political allies were able to show that the siting patterns were not just based on the decisions of a few “bad apples” (i.e. negligent corporations) but on structural racism embodied in spatial patterns. Since its start, critical thinkers have expanded environmental justice work to consider a wide variety social hierarchies, including gender and ability, as well as expanded the scope of inquiry to include environmental “rewards” such as access to green space in addition to environmental risks such as pollution (Heynen, Perkins, & Roy, 2006). However, these changes are not yet reflected in how environmental justice is mapped and how grants are distributed in New York City.



Data Collection and Methods

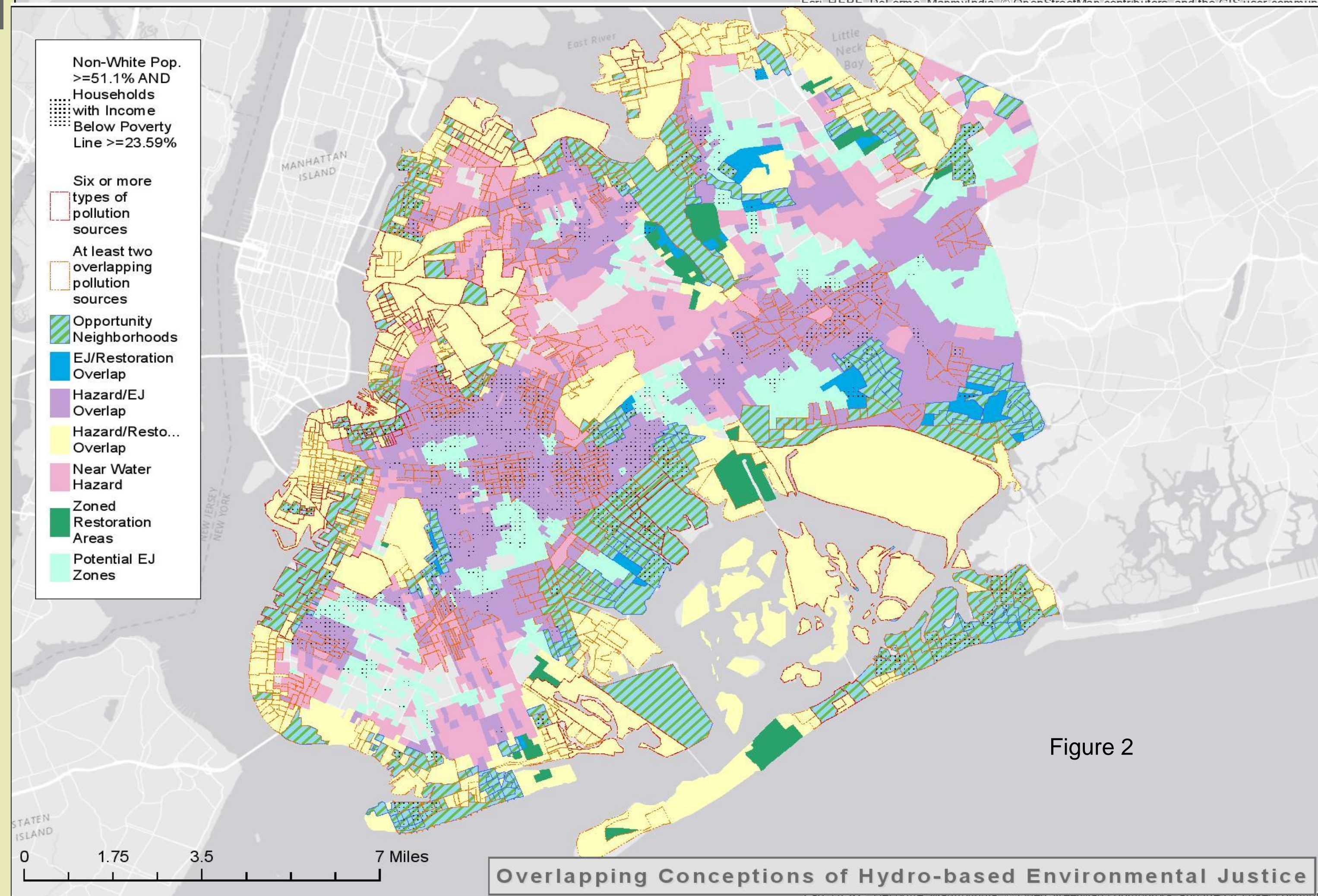
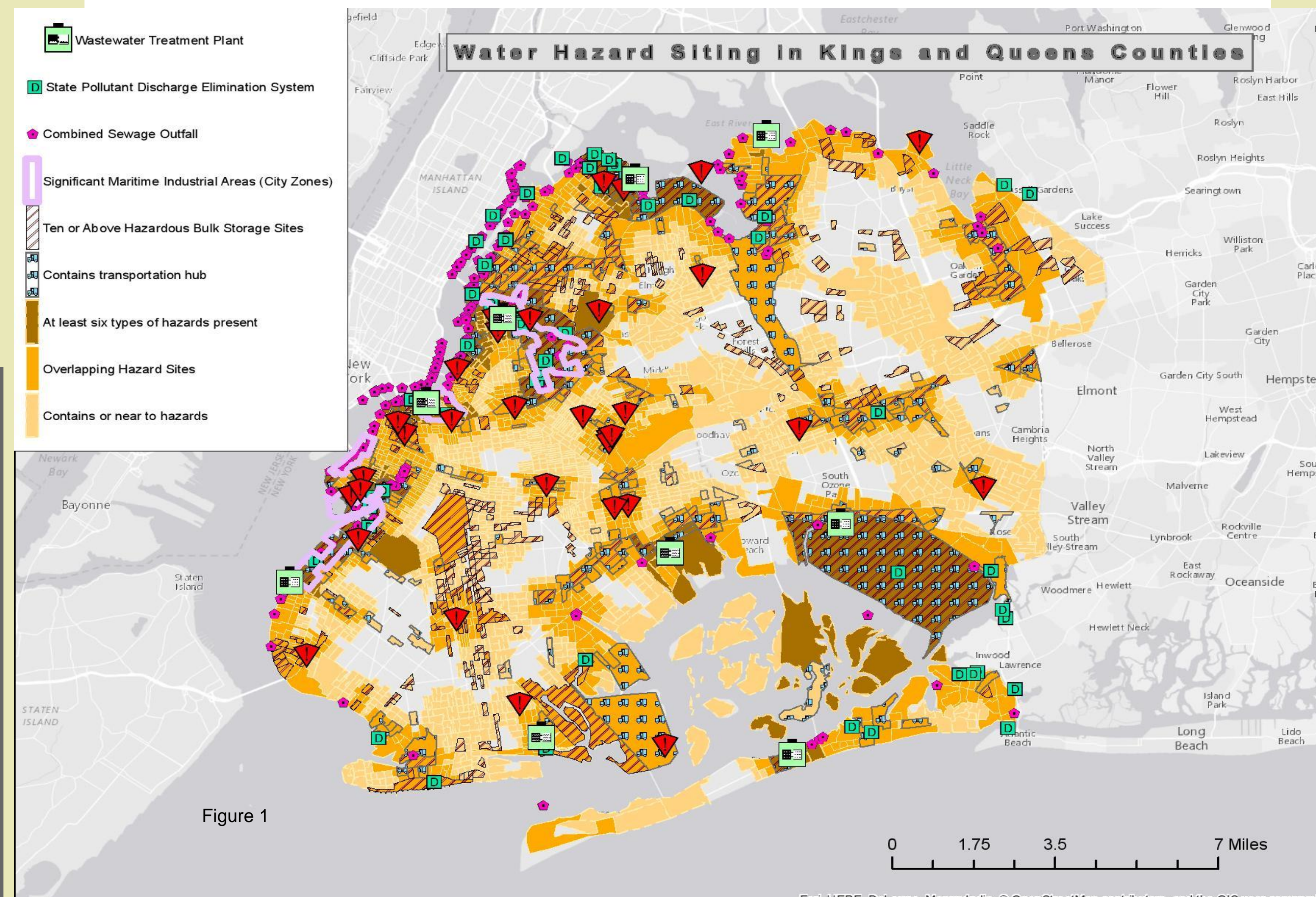
In order to provide a more nuanced definition of environmental justice work around water-related issues for policy work, I collected spatial data from on three different aspects of water issues: water hazards and pollution sources; water habitat restoration and resiliency efforts; and the state's predetermined environmental justice zones. I purposely used data either collected by the state or federal government to show that critical cartographies can be created out of even the “official” data sources already provided. Using a series of spatial joins and intersections of buffer areas, I combined data from these official sources into these three distinct categories over a map of the 2010 census blocks for Kings and Queens counties since the environmental justice zones are based on census block area, and then examined where the data intersected and in which neighborhoods. After that, I geocoded data provided by the state on environmental justice grants distributed between 2008 and 2012 in Kings and Queens and compared the sites of these grants with the sites of grants provided by the Hudson Estuary Program between 2005 and 2013, a joint conservation effort between New York State, the city, the Army Corps, and a wide variety of NGOs and educational institutions (including CUNY). Unless otherwise noted, I counted the hazard within the census block if the point or polygon from the dataset intersected with the borders of the neighborhood within a half mile (about 10 city blocks):

Hazard Data Sets*:

- **Combined Sewage Outfall (CSO) (last updated 2014):** Location where combined stormwater and wastewater pipes empty into waterway
- **State Pollution Discharge Elimination Systems (Oct. 2011):** Location where state permits allow for the controlled discharge of pollutants into waterways
- **Wastewater Treatment Facilities (Dept. of City Planning, July 2015)**
- **State Remediation Sites (2007)**
- **EPA Superfund Sites (EPA, 2015)**
- **Bulk Storage Facilities (2015):** Private and public organizations allowed to store large quantities of hazardous chemicals (such as gas stations). In mapping, I marked neighborhoods as containing bulk storage if they had 10 or more facilities within their census block, placing them in approximately the 90th percentile for Brooklyn and Queens counties.
- **Misc. Transportation Hubs (Dept. of City Planning, July 2015):** Includes airports, large public transportation storage yards, steel and auto body workshops and other areas which would result in a high amount of traffic and storage of chemicals. In mapping, I marked the neighborhood as containing a transportation hub if it was within the borders of the census block.
- **Significant Maritime and Industrial Areas (as approved by city council in October, 2013):** zoning practice allowing for high levels of industry and transportation hubs in area
- **Restoration Data Sets:**
 - **Recognized Ecological Complexes (2013)**
 - **Special Natural Waterfront Areas (2013)**
 - **Hudson River Significant Biodiversity Areas (2002)**
 - **Natural Heritage Communities (July 13, 2013)**
 - **Regulatory Freshwater Wetlands (2002)**
- **Social Data Sets:**
 - I updated the 2000 potential environmental justice zone maps provided by NYS DEC to the 2010 census data to show census block groups that met the following criteria as established by state law in defining environmental justice (revised census data from NHGIS.org):

51.1% or greater minority population OR 23.59% or more of neighborhood's total household income below the poverty line.

Mapping Intersections

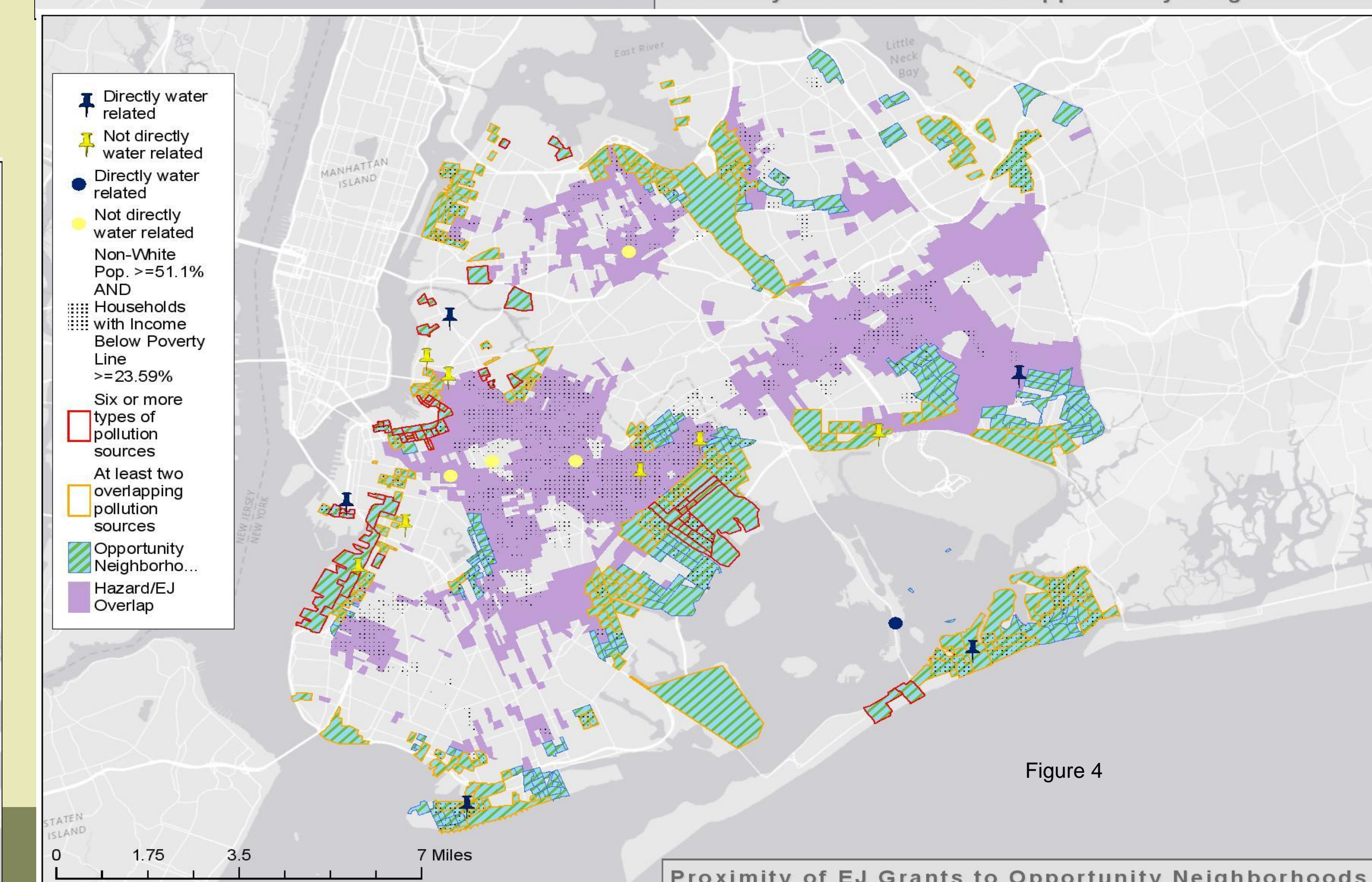
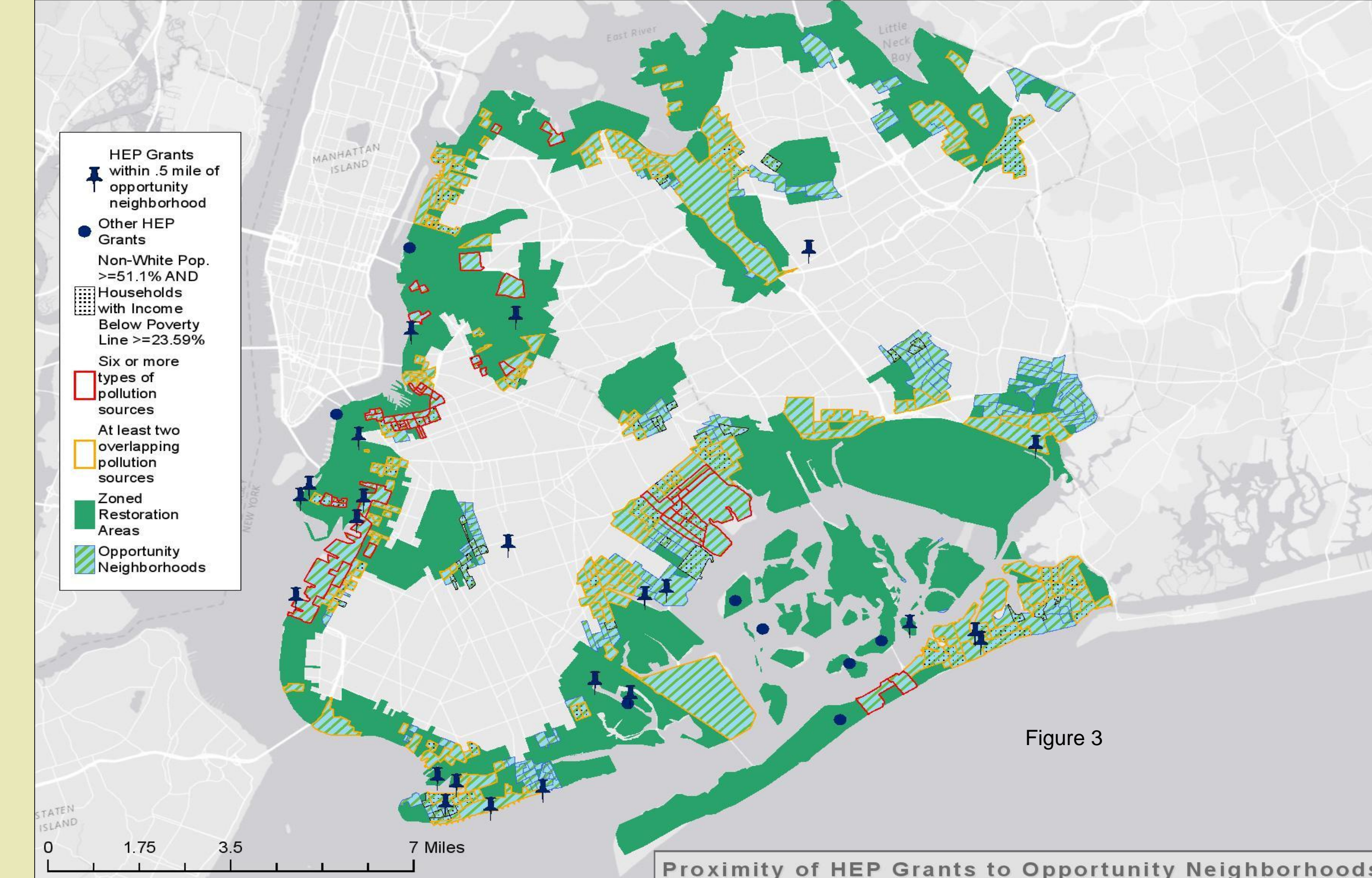


• As Figure 1 shows, pollution sources in Queens and Kings counties tend to be heavily clustered together. These clusters extend well beyond the borders established by city planning for Significant Maritime and Industrial Zones, showing the limitations of depending on zoning to determine policy. I therefore grouped the hazard data into three categories based on the extent that various types of hazard overlapped within a single community.

• Figure 2 shows the difficulty of complicating the conception of environmental justice for policy work: it complicates the map. However, in doing so, the intersectionality of social hierarchies with restoration work and environmental hazard emerges:

• For instance, despite accounting for only 3.4% of census block groups in Queens and Kings Counties, “opportunity neighborhoods” (where environmental justice, restoration, and hazard zones intersect) that have both high percentages of minority AND households living below the poverty line account for a little over a quarter of all opportunity neighborhoods. This relationship exemplifies the extreme systems of oppression (Ruddick, 1996) that compound upon one another in the same spaces, where extreme poverty and structural racism coincide with not only with pollution but key ecosystems. While scholars have written about this phenomenon within the Global South (see e.g. West, Igoe, & Brockington, 2006), it is rarely discussed as existing in the Global North, even though it is evident right in the backyard of Wall Street.

Impact on Grant Location



• Whereas Figures 1 and 2 display the power of GIS to reveal otherwise overlooked intersections of social and physical processes, Figures 3 and 4 display the limitations of letting maps speak for themselves in environmental justice policy work.

• On the surface, there appears to be a high correlation with both the placement of both HEP and EJ grants and opportunity neighborhoods:

- Of the 31 listed HEP grants, 23 fall within a half mile of an opportunity neighborhood.
- Of the 26 listed EJ grants, 19 (as well as six out of seven directly water related grants) fall within a half mile of an opportunity neighborhood.

• However, as the saying goes, correlation is not causation. When investigating grant recipients' websites, only a handful out of both HEP AND EJ recipients mention social hierarchies such as race and class and their connection with the grant work. In spite of environmental justice evolving as a way to address social, structural inequalities, the focus of the work—at least within sanctioned policy work in New York State—remains physical with the emphasis of most grant recipients put on clean up and environmental stewardship.

• It is therefore the hope that by providing a visual representation of the overlap of social hierarchies with both environmental hazard and rewards that policymakers consider encouraging grant recipients of both HEP and EJ grants to consider educating their communities about the interplay between social and physical processes as part of environmental justice work.

*Unless otherwise noted, all datasets came from New York State's GIS clearinghouse via the NYS Department of Environmental Conservation.