

Public Housing & Climate Change: New York City

Caroline McCain

Are public housing developments located in areas impacted by climate change? To what extent?

- ▶ Housing Developments: New York City Housing Authority Developments
- ▶ Climate Change:
 - ▶ Constant Change: Sea Level Rise
 - ▶ Extreme Events: Floodplains

Data Used

- ▶ Sea Level Rise:
 - ▶ 2013 NYC Panel on Climate Change
 - ▶ Available: 10th, 25th, 50th, 75th, 90th Percentile Estimates
- ▶ Predicted Floodplain Maps (2013 NYPCC - 90th Percentile)
- ▶ Housing Developments:
 - ▶ NYCHA Map
 - ▶ Database
- ▶ Human Geography Basemap Layer in ArcGIS

Tools Used

- ▶ Project
- ▶ Table Join
- ▶ Select by Location
 - ▶ Crossed by Outline Of
 - ▶ Within
 - ▶ Boundary Touches
- ▶ Symbology

Sea Level Rise Maps

- ▶ 75th Percentile
- ▶ Permanent, Long-Term Impacts on Communities

2020s 75th Percentile Sea Level Rise

Caroline McCain

November 1, 2020

Source: NYC OpenData (<https://data.cityofnewyork.us/>)

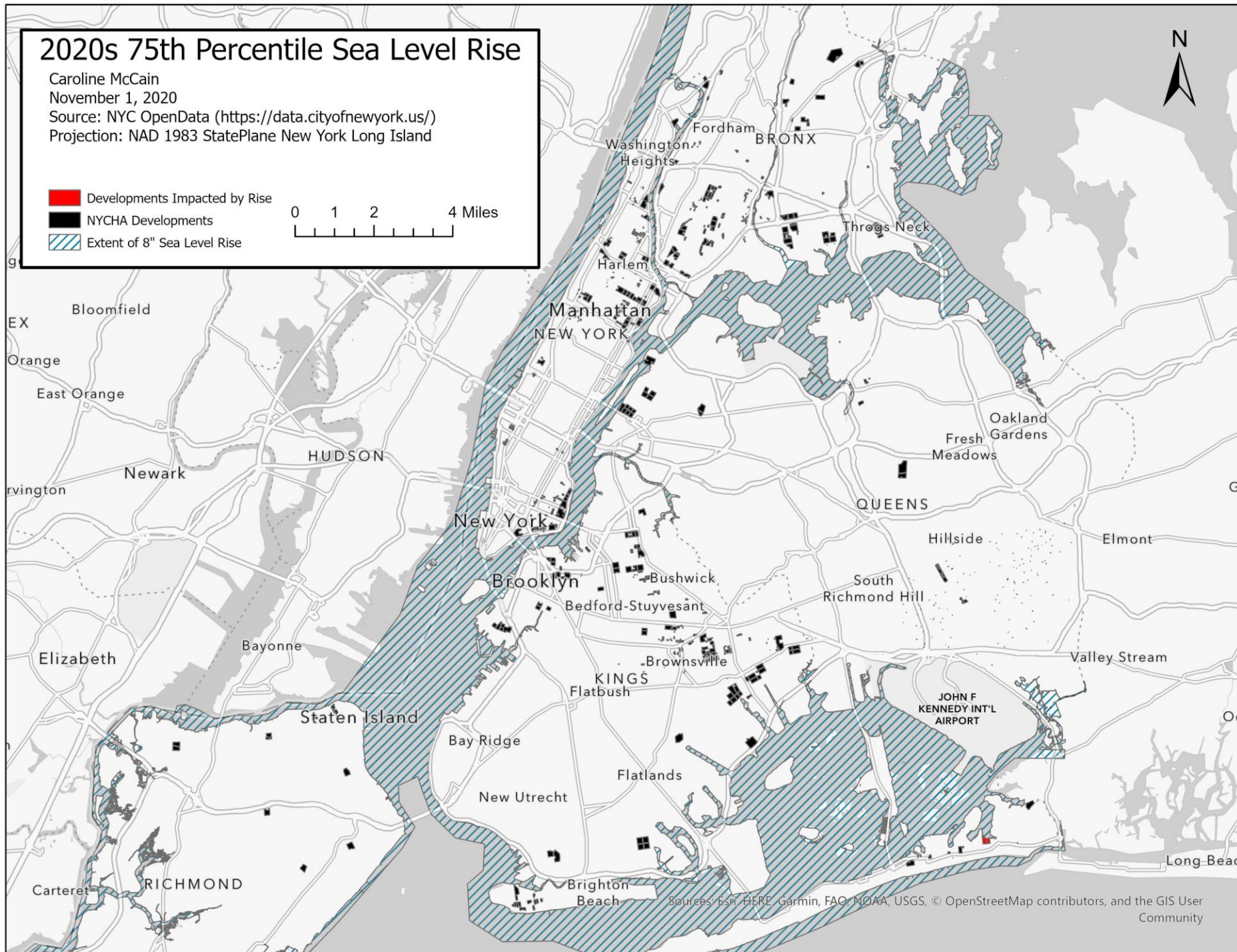
Projection: NAD 1983 StatePlane New York Long Island

Developments Impacted by Rise

NYCHA Developments

Extent of 8" Sea Level Rise

0 1 2 4 Miles



2020s

- 8" Sea Level Rise
- Two Developments Impacted
 - 1,970 people
 - 477 Fixed-Income Households

2050s 75th Percentile Sea Level Rise

Caroline McCain

November 1, 2020

Source: NYC OpenData (<https://data.cityofnewyork.us/>)

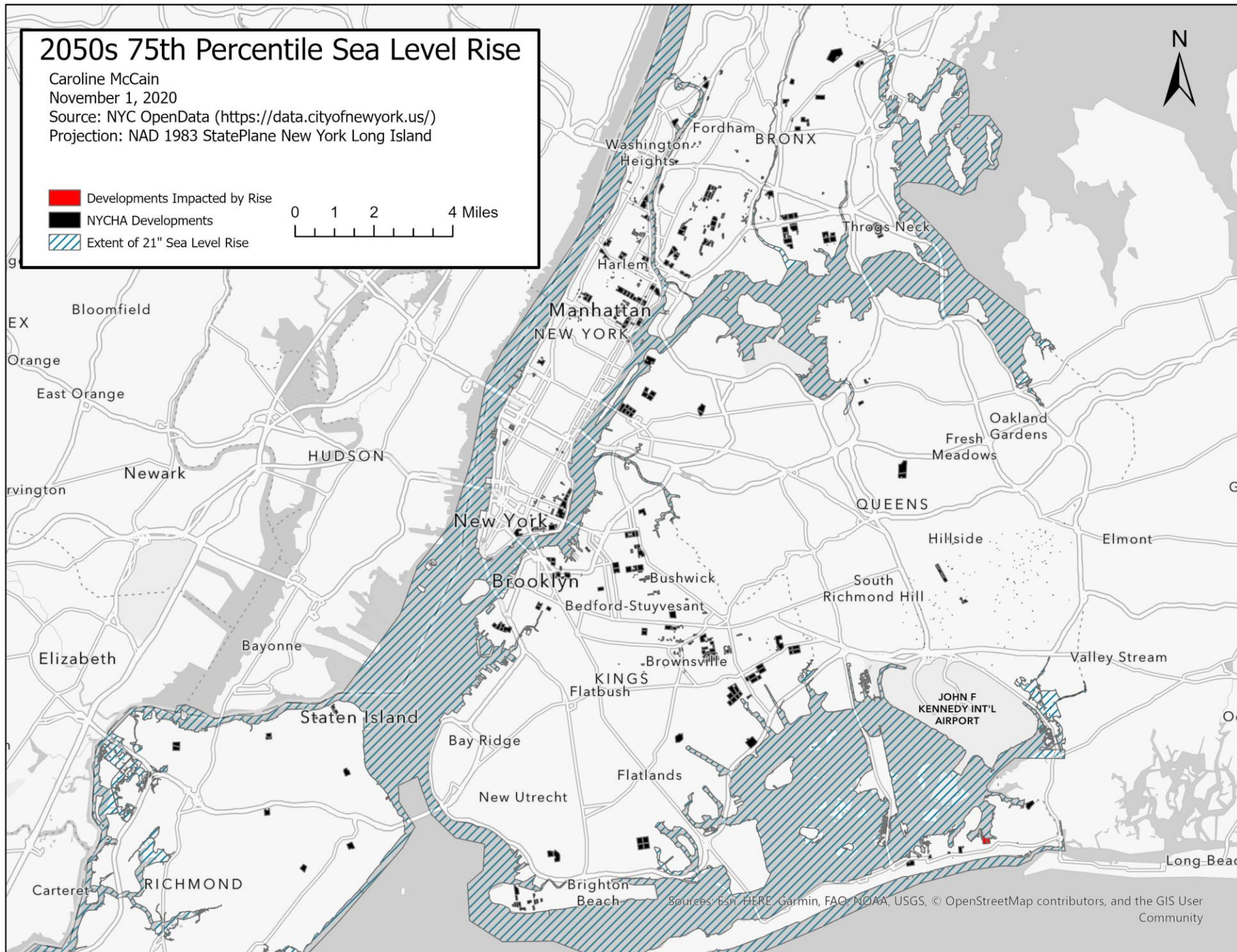
Projection: NAD 1983 StatePlane New York Long Island

Developments Impacted by Rise

NYCHA Developments

Extent of 21" Sea Level Rise

0 1 2 4 Miles



2050s

- 21" Sea Level Rise
- Two Developments Impacted (same two)
 - 1,970 people
 - 477 Fixed-Income Households

Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

2080s 75th Percentile Sea Level Rise

Caroline McCain

November 1, 2020

Source: NYC OpenData (<https://data.cityofnewyork.us/>)

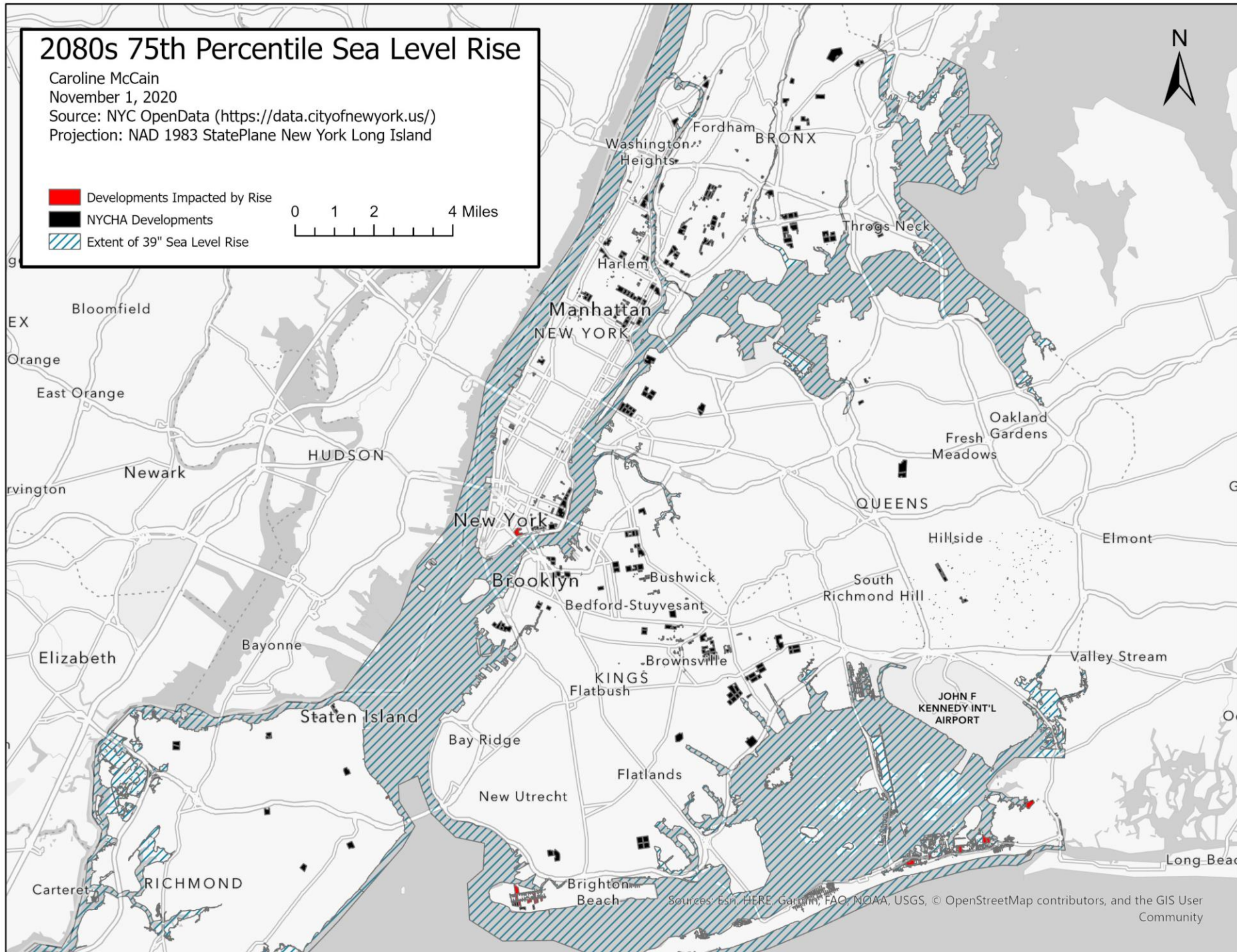
Projection: NAD 1983 StatePlane New York Long Island

Developments Impacted by Rise

NYCHA Developments

Extent of 39" Sea Level Rise

0 1 2 4 Miles



2080s

- 39" Sea Level Rise
- 13 Developments Impacted
 - 16,455 people
 - 3,025 Fixed-Income Households

2100s 75th Percentile Sea Level Rise

Caroline McCain

November 1, 2020

Source: NYC OpenData (<https://data.cityofnewyork.us/>)

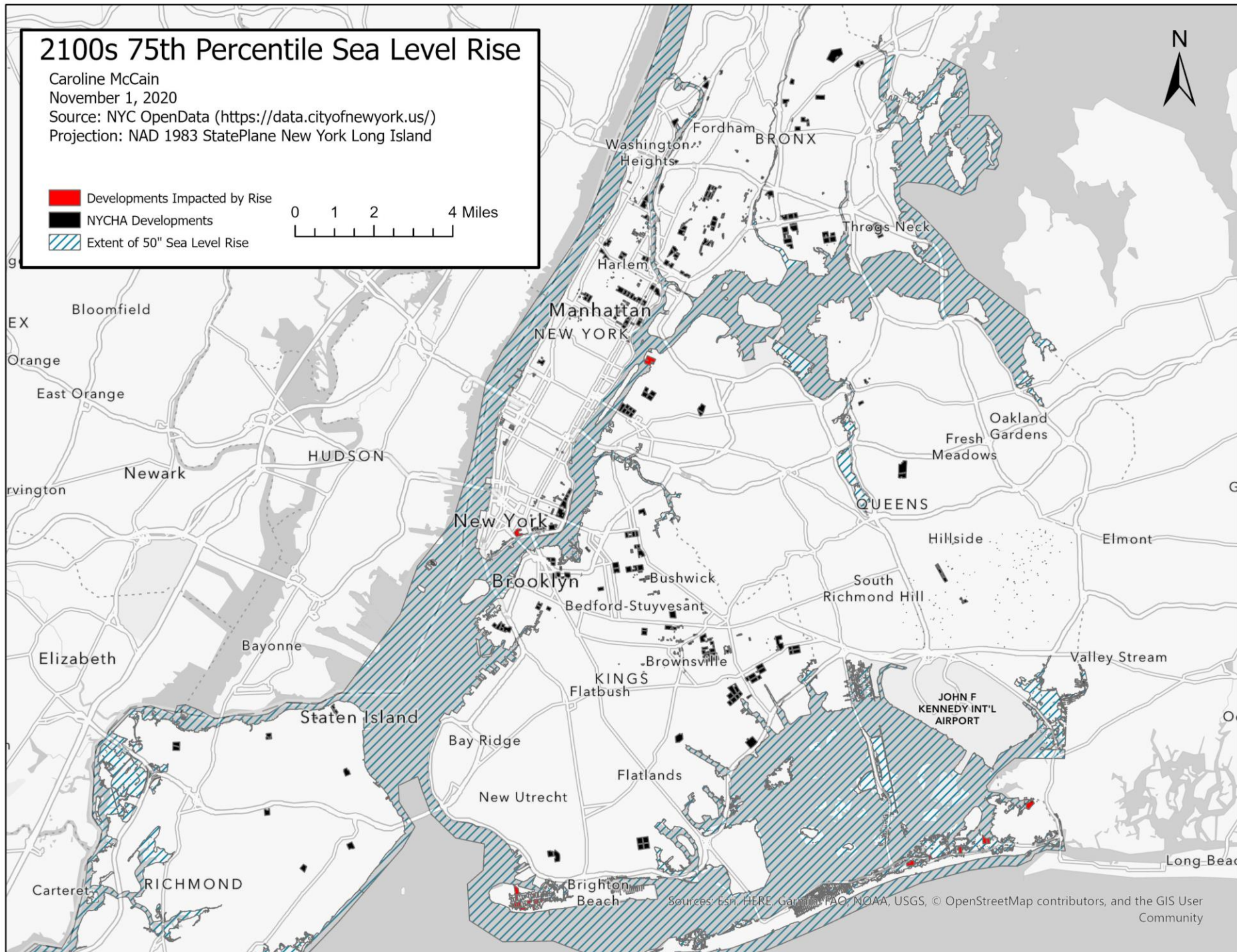
Projection: NAD 1983 StatePlane New York Long Island

Developments Impacted by Rise

NYCHA Developments

Extent of 50" Sea Level Rise

0 1 2 4 Miles



2100s

- 50" Sea Level Rise
- 17 Developments Impacted
 - 22,333 people
 - 4,291 Fixed-Income Households

Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Flood Plain Maps

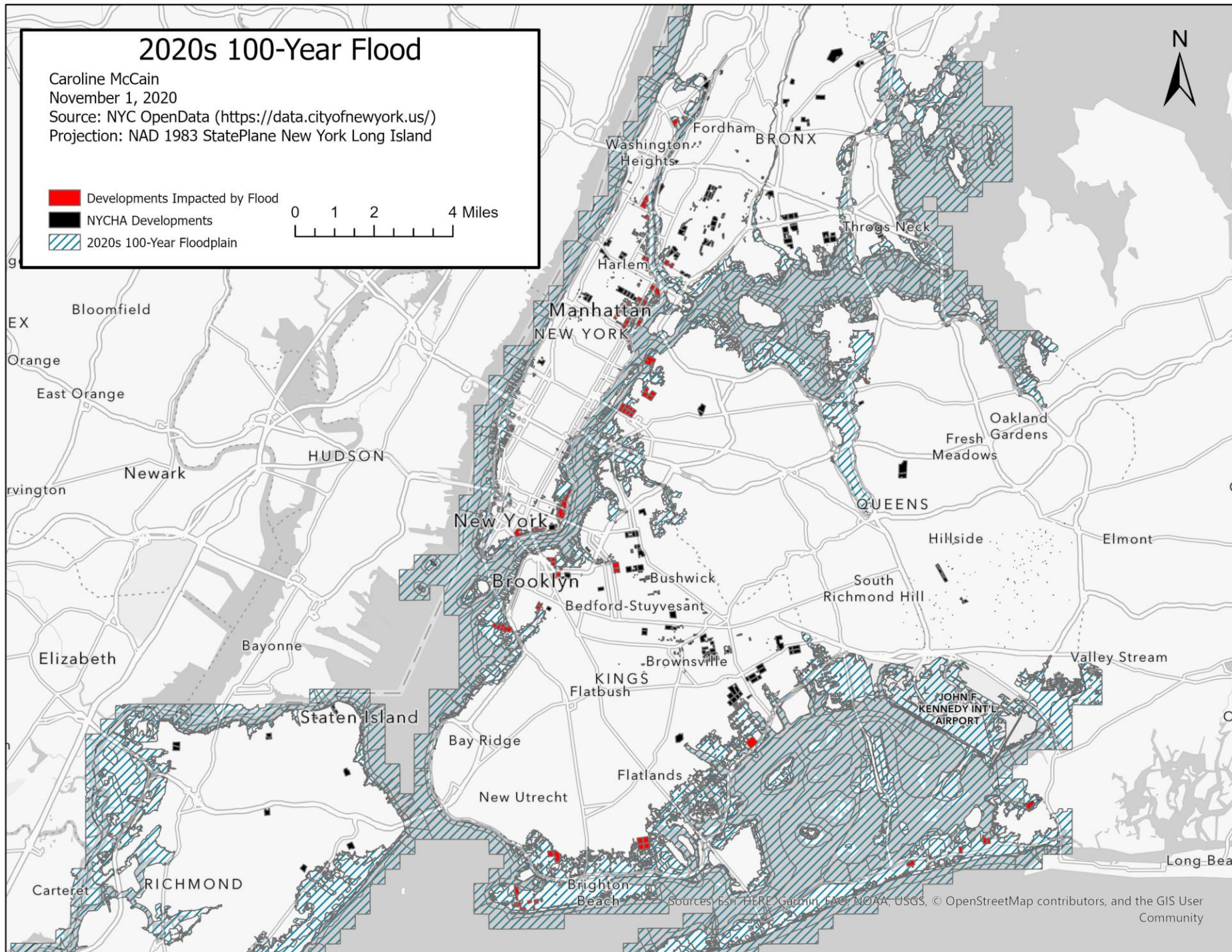
- ▶ 100-Year Flood: 1% chance of being met/exceeded in a year
- ▶ 500-Year Flood: .2% chance of being met/exceeded in a year
- ▶ Based on **90th Percentile Estimates**

2020s 100-Year Flood

Caroline McCain
November 1, 2020
Source: NYC OpenData (<https://data.cityofnewyork.us/>)
Projection: NAD 1983 StatePlane New York Long Island

■ Developments Impacted by Flood
■ NYCHA Developments
▨ 2020s 100-Year Floodplain

0 1 2 4 Miles




2020s 100-Year Flood

- 66 Developments Impacted
 - 129,729 people
 - 23,829 Fixed-Income Households

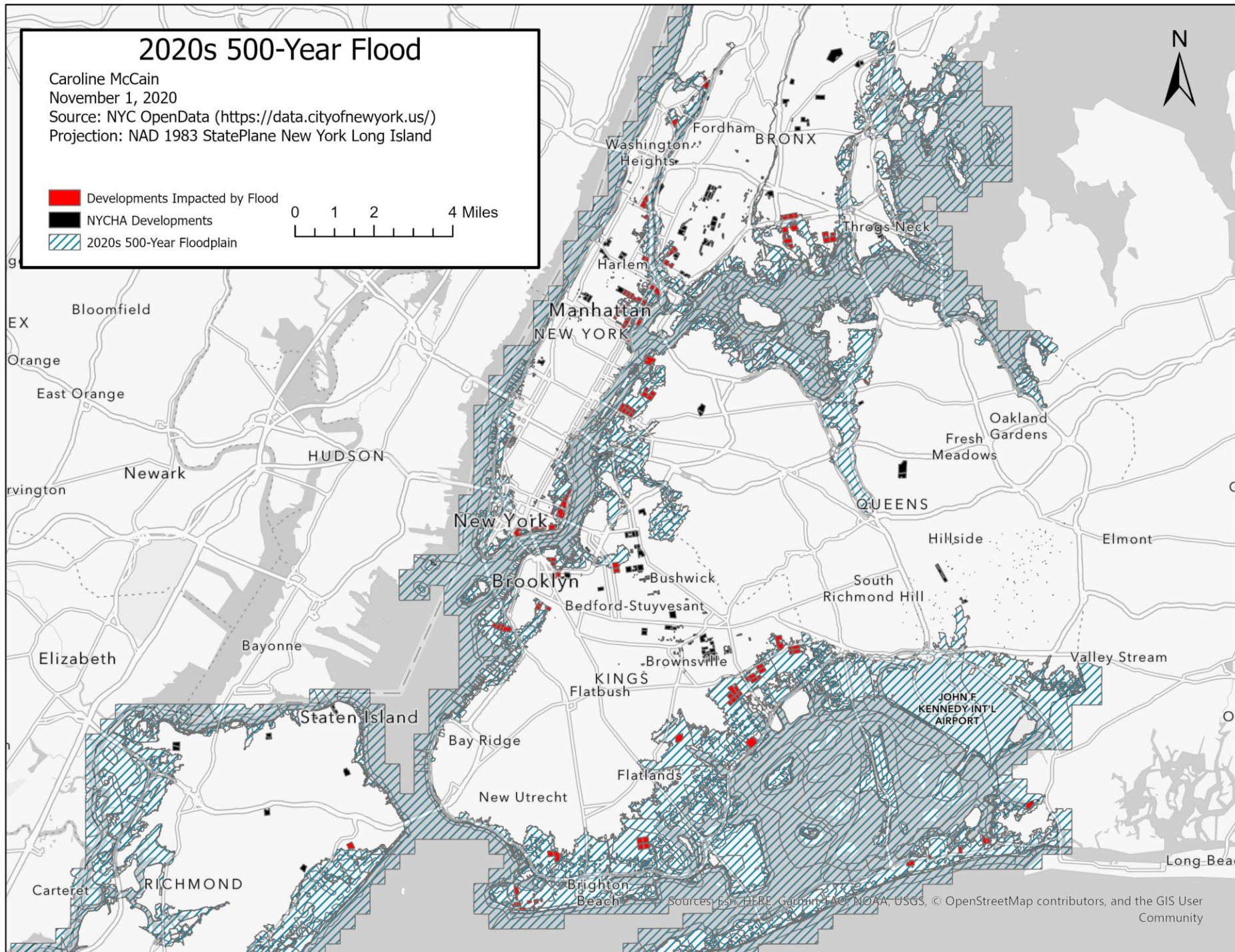
Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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November 1, 2020
Source: NYC OpenData (<https://data.cityofnewyork.us/>)
Projection: NAD 1983 StatePlane New York Long Island

Projection: NAD 1983 StatePlane New York Long Island

 2020s 500-Year Floodplain

- 98 Developments Impacted
 - 187,800 people
 - 34,235 Fixed-Income Households

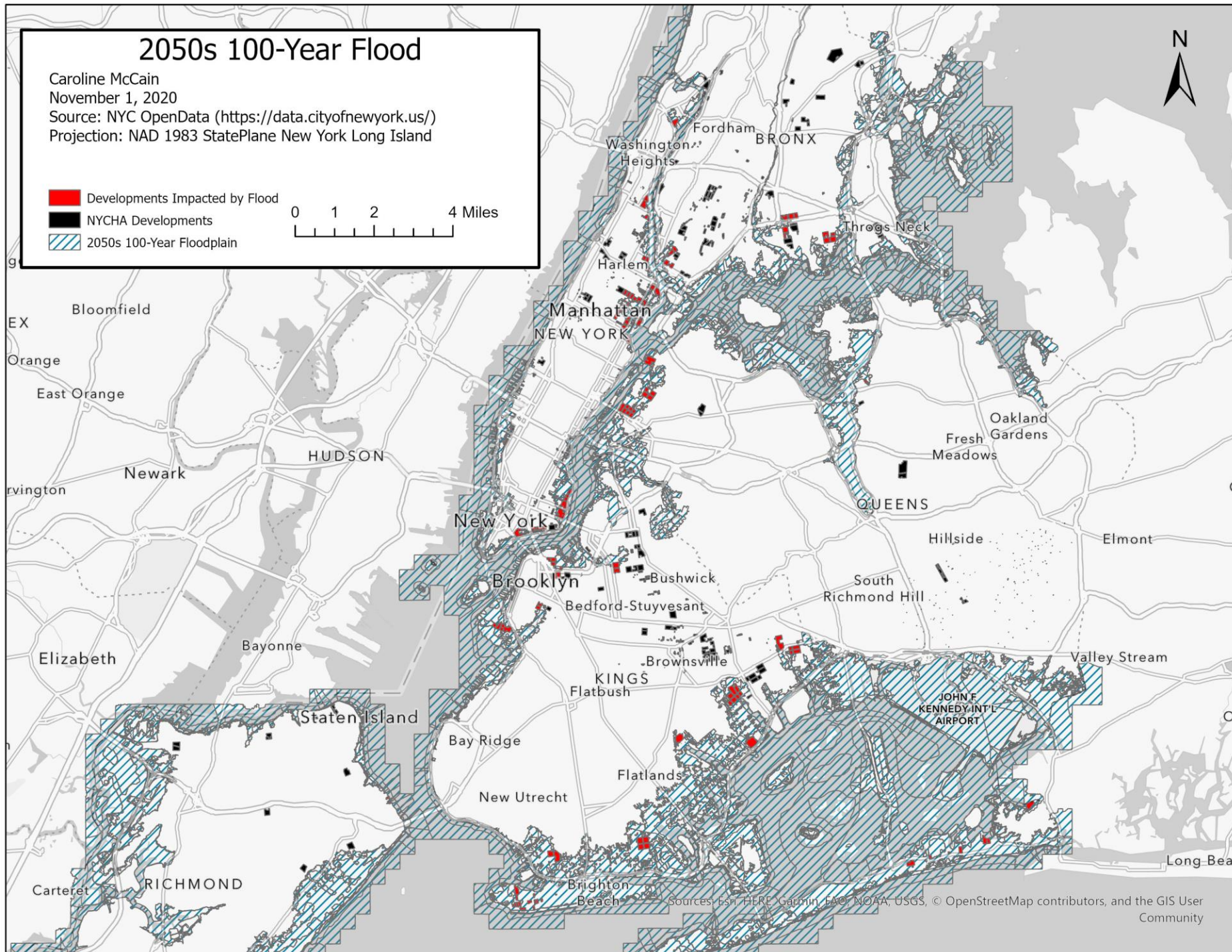


2050s 100-Year Flood

Caroline McCain
November 1, 2020
Source: NYC OpenData (<https://data.cityofnewyork.us/>)
Projection: NAD 1983 StatePlane New York Long Island

■ Developments Impacted by Flood
■ NYCHA Developments
▨ 2050s 100-Year Floodplain

0 1 2 4 Miles



2050s 100-Year Flood

- 84 Developments Impacted
 - 164,776 people
 - 29,521 Fixed-Income Households

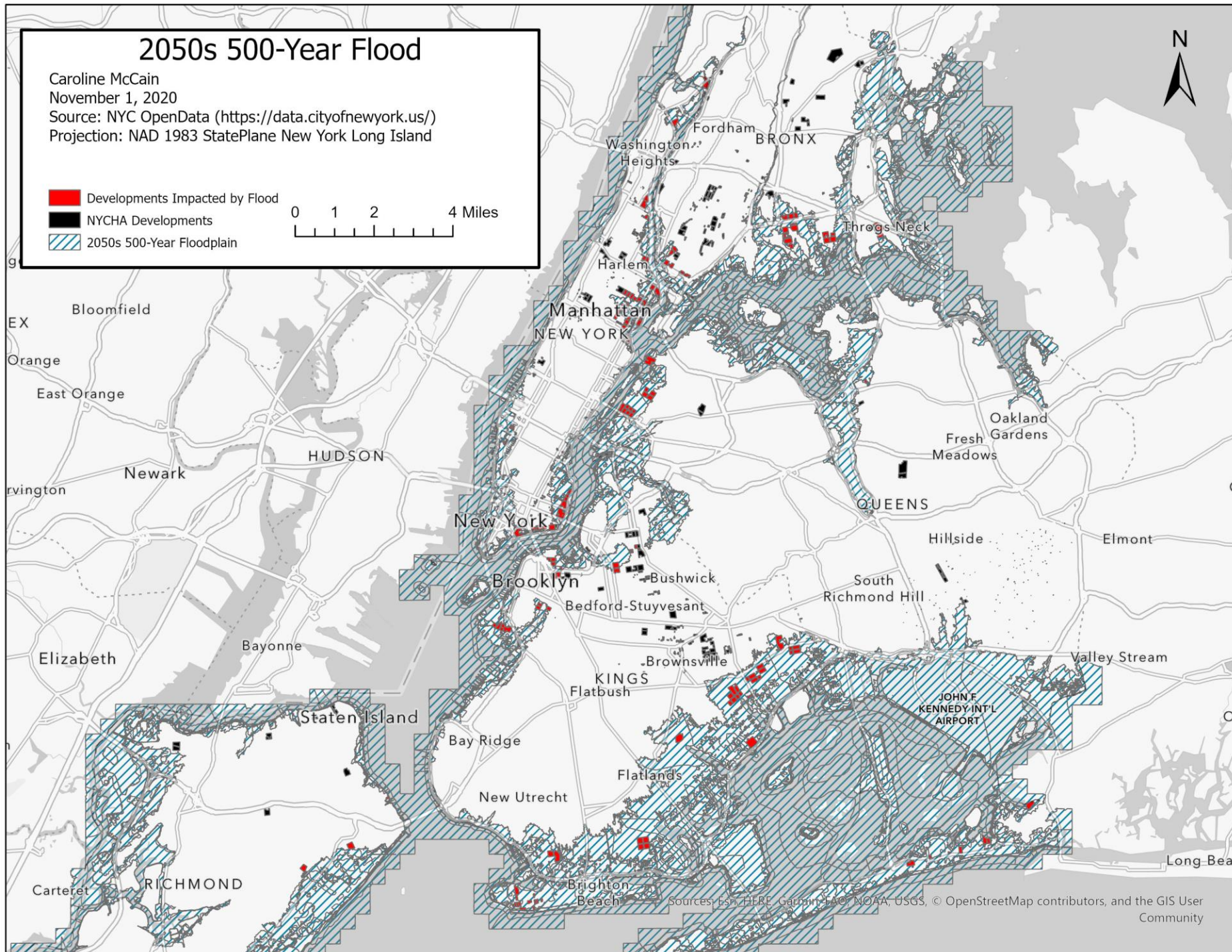
Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

2050s 500-Year Flood

Caroline McCain
November 1, 2020
Source: NYC OpenData (<https://data.cityofnewyork.us/>)
Projection: NAD 1983 StatePlane New York Long Island

■ Developments Impacted by Flood
■ NYCHA Developments
▨ 2050s 500-Year Floodplain

0 1 2 4 Miles



Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

2050s 500-Year Flood

- 103 Developments Impacted
 - 196,612 people
 - 35,893 Fixed-Income Households

Conclusions & Next Steps

- ▶ Impact
- ▶ Further Research
- ▶ Actions