

Coastal Development in Queens: Soccer Stadium and Upcoming Waterfront

Noah Quezada

School of Earth and Environmental Sciences Queens College, CUNY

Motivation

Purpose: Analyzing the long-term effects in detail is essential, especially when dealing with flooding threats. One should promote planning and development that is both community-focused and sustainable.

- Coastal communities such as Flushing, NY, face **high risks** of flooding within the next 30 years.
- Critical infrastructure** like hospitals, airports, WWTP's are also vulnerable.
- Urbanization & topographical changes increase **pollution** and **sewage** in Flushing Bay & Creek.
- The **US Army Corps of Engineers** is working to protect coastal areas from sea-level rise.

Background

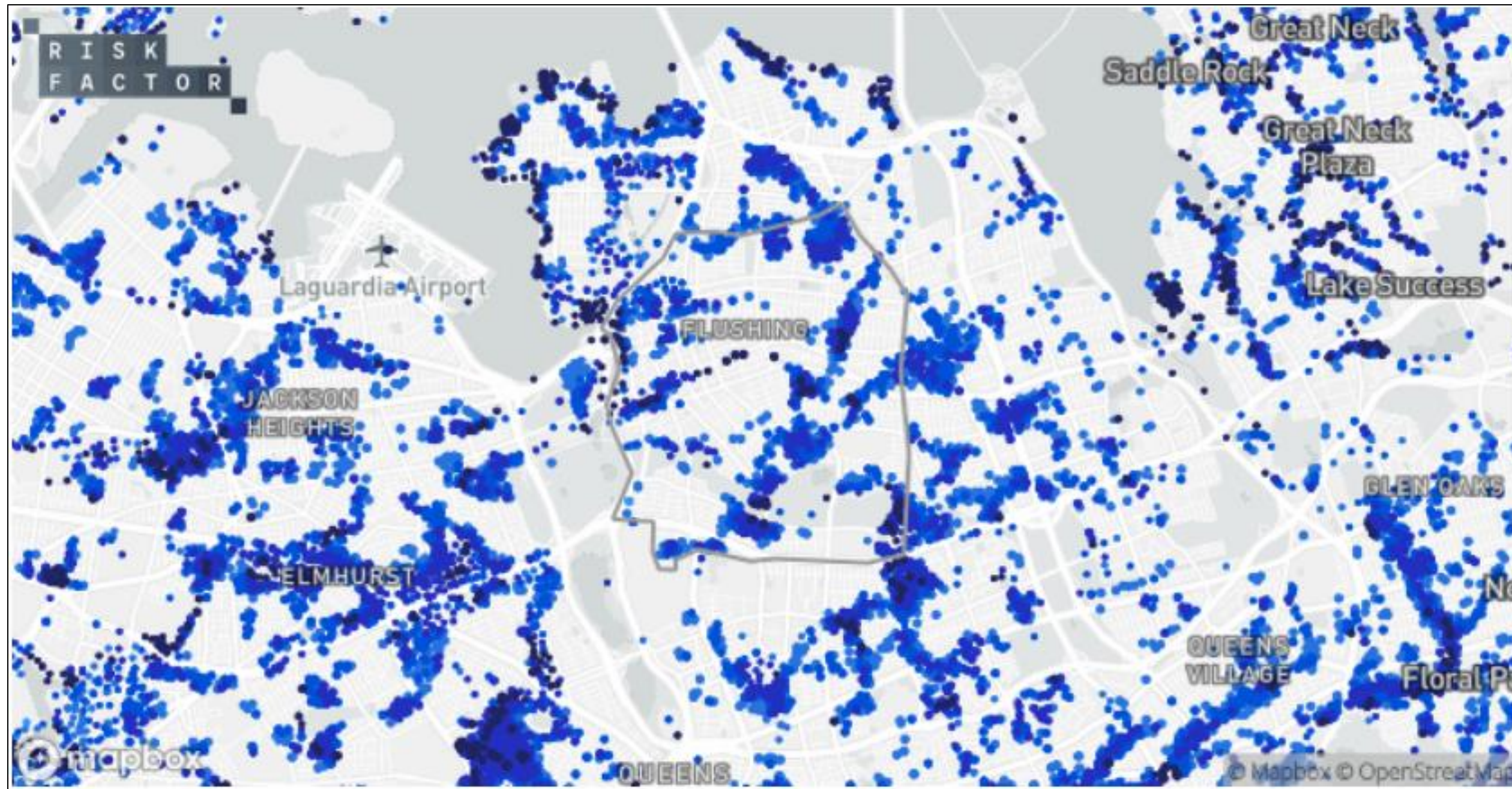


Figure 1: This map shows the major risk of flooding in Flushing. The darker hues of blue are more severe/extreme flooding impacts, while the lighter hues are less. The data used in this map is from Risk Factor, they calculate it using a nationwide flood model known as the First Street Foundation Flood Model.

- 3,000 properties are prone to get **severely affected from flooding** over the next 30 years.
- 4,500 of the 17,000** residential houses are under major flooding risk...

- 79 out of the 176 miles of roads are at major risk and **will become impassable** due to the flooding.
- About 500 of the 1,969 commercial properties are at major risk.
- 5 out of 30 infrastructure facilities are under major flooding risk.
- Out of the 289 social facilities in Flushing, about 52 are at a major flooding risk.

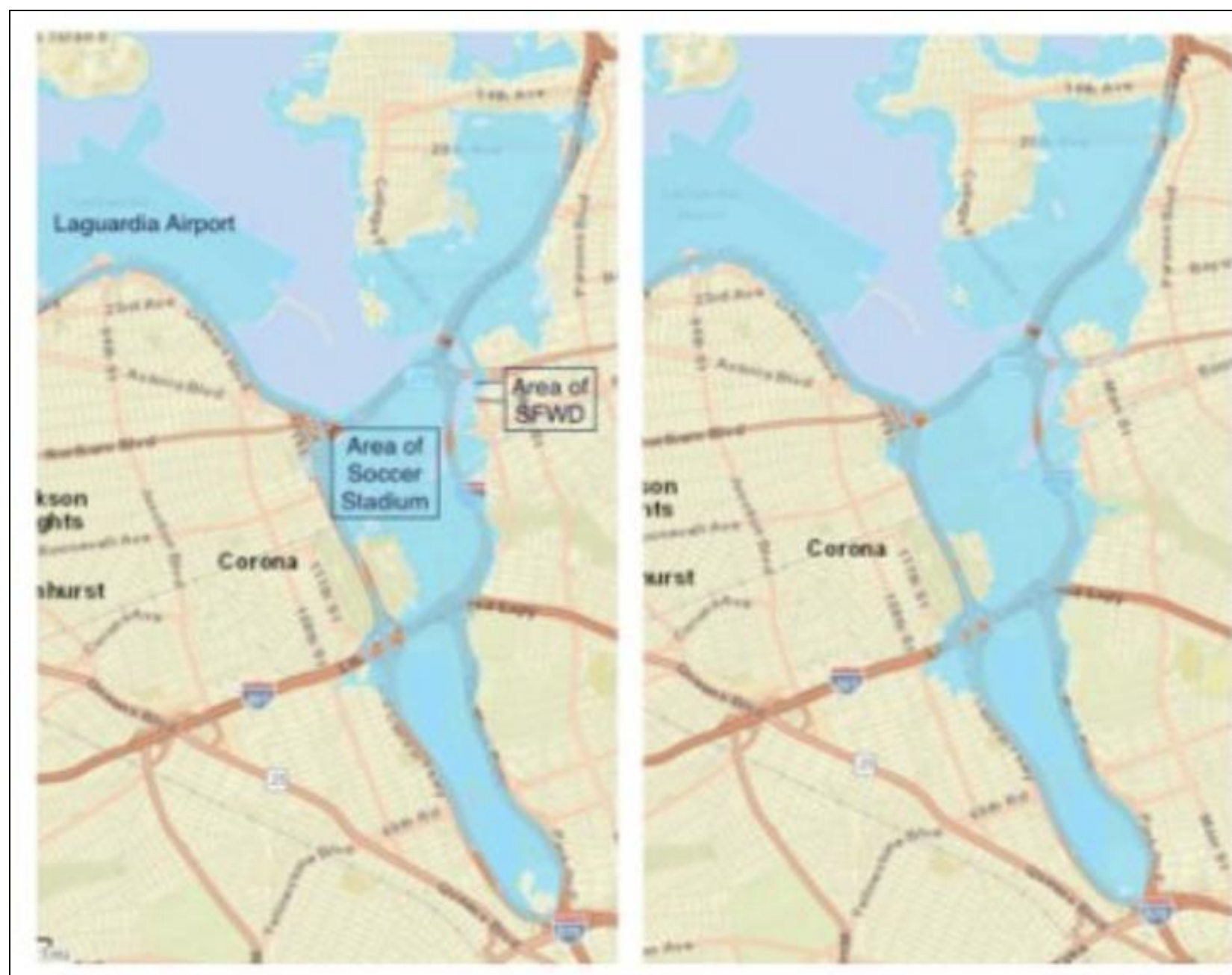


Figure 2: Coastline prediction in 2050

Figure 3: Prediction for 2100

With continuing sea level rise, it is predicted that the coastline of Flushing to increase by 2050 and increase even more by 2100 as seen in Figures 1 & 2.

Future Projects

Aim:

The **Special Flushing Waterfront District (SFWD)** project, and the **construction of a soccer stadium** are two examples of **large-scale initiatives** that have the potential to **improve infrastructure, foster community development, and boost economic growth**

Project challenges:

Two of these projects will be in areas at **risk of flooding** without any **mitigation measures**

SFWD Goal:

- Seeks to revitalize 29 acres of inactive and underutilized land
- Public benefits include:**
 - Privately funded and maintained road network
 - Waterfront that are both publicly accessible
 - Affordable housing
 - Environmental remediation
 - Extensive infrastructure upgrades (existing sewer)(drainage systems)



Figure 4: Site 1 today, Flushing Waterfront



Figure 5: Design from Flushing Creek. Illustrative Master Plan by Hill West Architects. Image by Jeff Sikeman Archite

SOCCER STADIUM IN WILLETS POINT:

A \$780 million, privately financed, 25,000-seat soccer-stadium

Goal:

- NYCFC plans to revitalize the community with 2,500 units of affordable housing near the stadium
- 40,000 square feet of public open space** in the community; a school, hotel, ground floor retail shops
- Scheduled to debut in **2027**.



Figure 6: Aerial rendering of the New York City Football Club soccer stadium in Willets Point, Queens

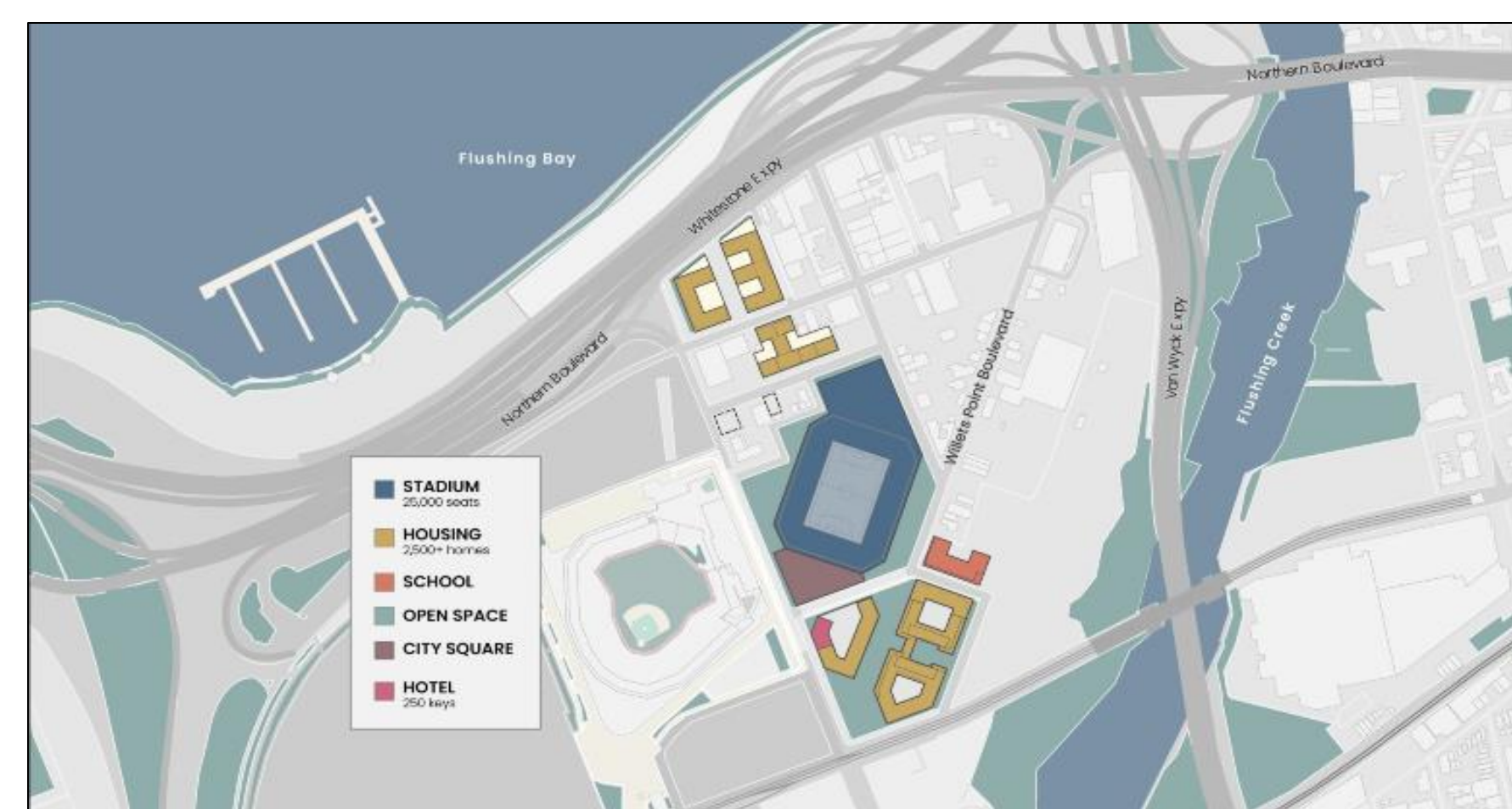


Figure 7: The proposed soccer stadium would sit adjacent to Citi Field and new buildings still being planned as part of a redevelopment project in the Willets Point section of Queens.

Concerns:

- Sewage overflow in the coastal location.
- Potential health risks from **CSOs**, including pathogenic bacteria and antibiotic-resistant strains.
- Increased traffic/urbanization **may impact air and water quality**.

Cost Benefit Analysis

- An area in Europe that is prone to flooding can be seen as a useful example for the flood-prone region of Flushing Bay (Figure 8).
- A **positive correlation** is found between the Coastal Flood Exceedance Probability and the damage costs of floods to real estate (Botzen et al., 2017).

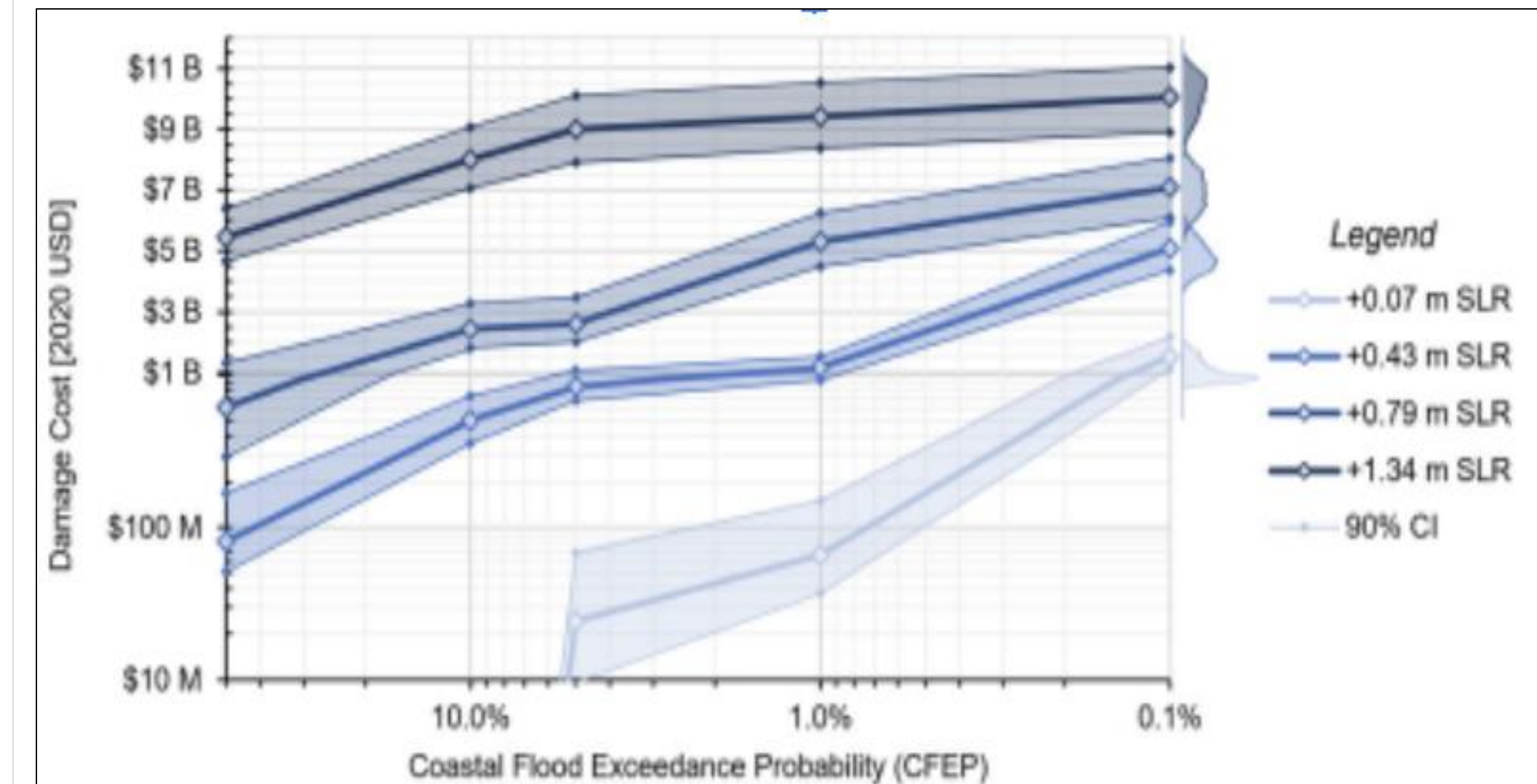


Figure 8: This graph demonstrates a positive correlation between damage cost and the probability of future flooding incidents (Botzen et al.)

- 1 inch of water flooding someone's home can **cause \$25,000 of damage** (FEMA).

Isolated Solution vs Integrated Solution: Impacted Flood Area in Flushing



Figure 9: projection of savings in Flushing area using only GI.

- Cost repair saving per sq with isolation alone is less, with integrated solution saving is 100% in 2080s (Figure 10).**
- Implementing isolated GI projects may initially save costs on flood damage repair.
- However, as sea levels continue to rise, the effectiveness of these projects diminishes over time (Figure 9).

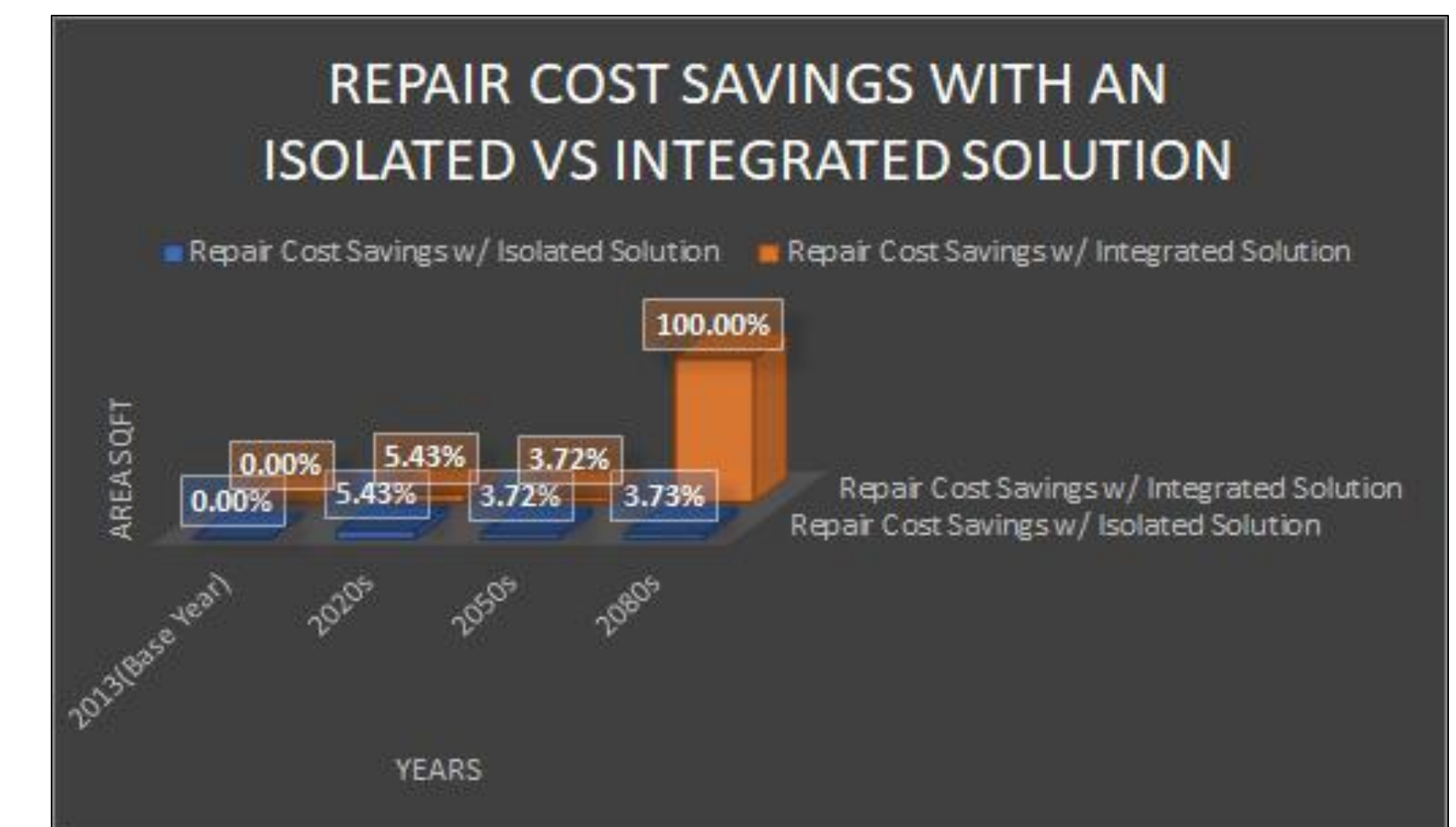


Figure 10: integrated savings when GI as well as barriers are implemented

- By combining GI with the USACE Barrier project, a financially sensible solution is achieved.**
- Initially, installing GI helps in gradually saving money, but by 2050, implementing barriers leads to larger savings (Figure 10).

Conclusion

- The **SFWD** project and the soccer stadium are examples of ambitious projects.
- However, these **projects also face significant challenges**, such as the need to balance the interests of the local population, worries about gentrification and zoning, and the risks posed by coastal erosion and floods.
- With careful planning, community engagement, and a dedication to resolving the issues of urban coastal development in the face of climate change, Queens can **move toward a sustainable, resilient, and affluent future**.
- Future Suggestions:** A **coastal barrier** is a possibility in the future to help with this issue of sea level rise, but it is happening on a much slower timeline than some major developments happening currently.