



Greening Bike Lanes

Innovative Bioswale-Protected Bike Boulevards for Gowanus



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Gowanus Needs Safer Cycling Infrastructure



The existing bike network competes with the industrial identity of Gowanus, resulting in cyclist injury hotspots along 4th Ave.

Compared to Brooklyn, Gowanus has a low share of protected bike lanes,

Bike lane type by length:



Credits to Sarah Internicola

and no East-West protected bike lanes.

Neighboring Downtown Brooklyn is an employment hub, and new population from the Gowanus Rezoning will increase the need for safe, local mobility.

Area Inflow/Outflow:

Estimates from OnTheMap 2020, LEHD

183,039

Come to the area for work, with most workers coming from the East

9,676
Live and work in the area

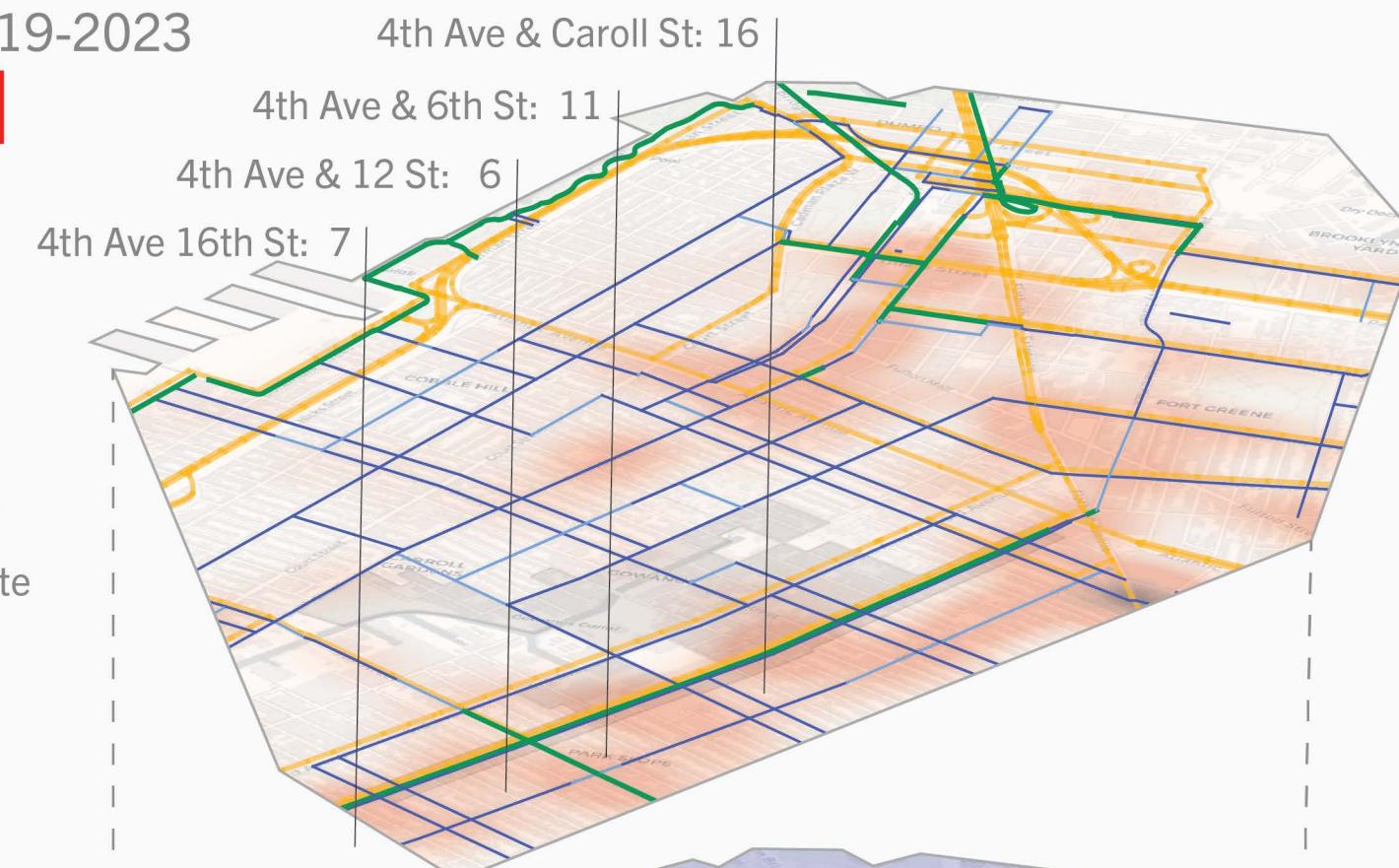
100,779
Leave the area for work

+ 20,390 Estimated New Gowanus Residents
Based on ACS 2021 average household size and 8,495 expected new housing units

Cyclist Injuries, 2019-2023



Injuries are concentrated along the 4th Ave truck route, despite a protected bike lane:



Bike Lanes

- Conventional (Dark Blue)
- Protected/Greenway (Green)
- Sharrow/Signed Route (Light Blue)

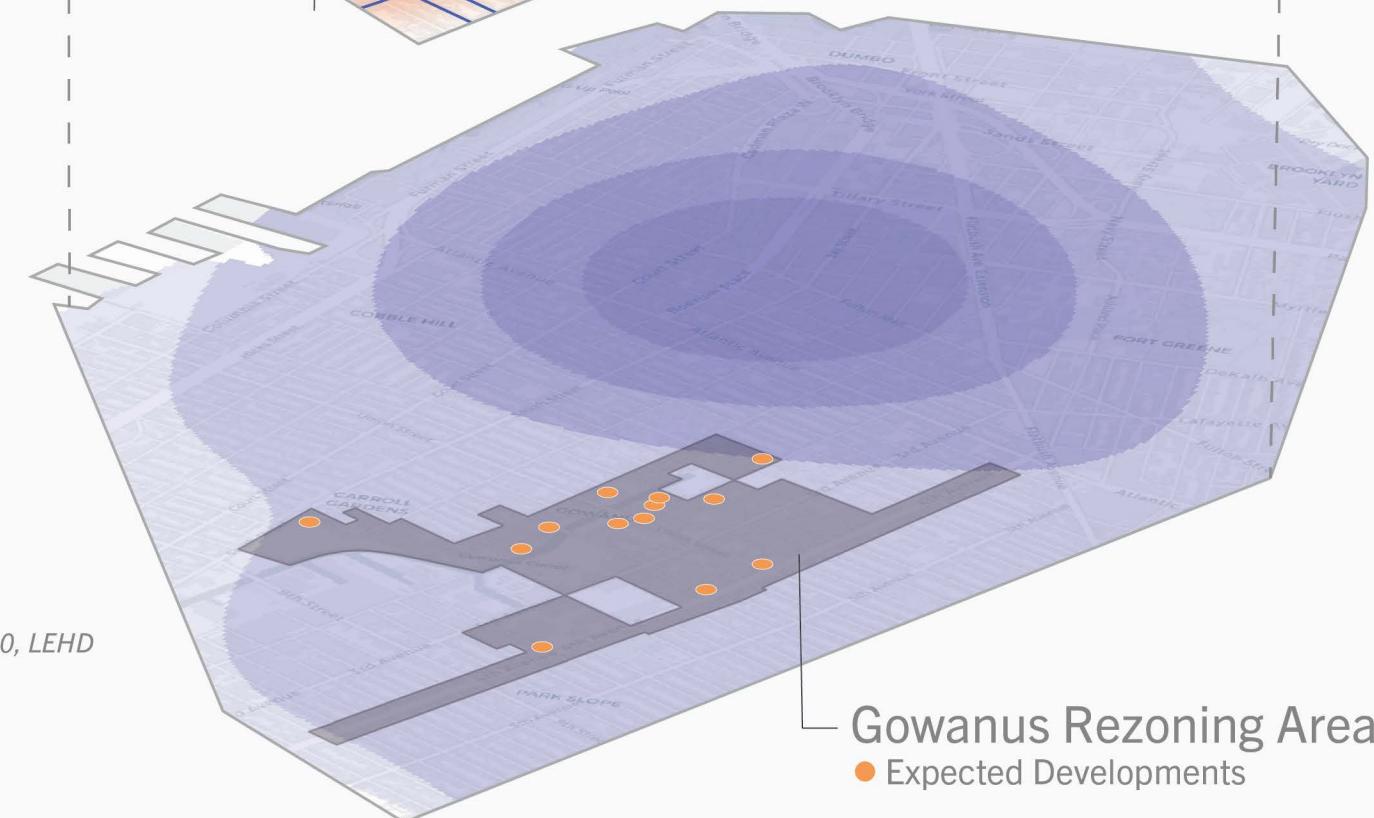
Truck Routes



Jobs per Sq. Mile:

- 5 - 9,500
- 9,500 - 38,000
- 38,000 - 85,000
- 85,000 - 152,000
- 152,000 - 237,000

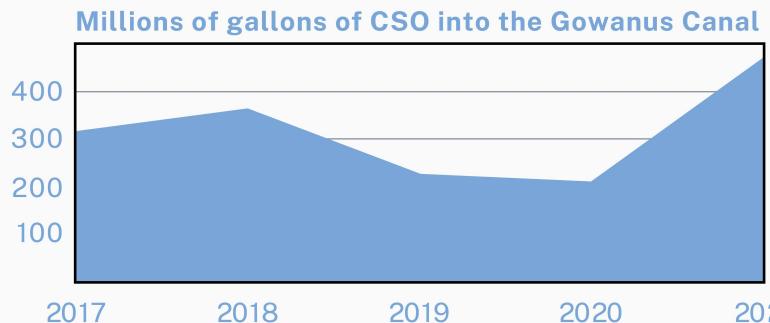
Rounded Estimates from OnTheMap 2020, LEHD



Gowanus Needs More Stormwater Retention

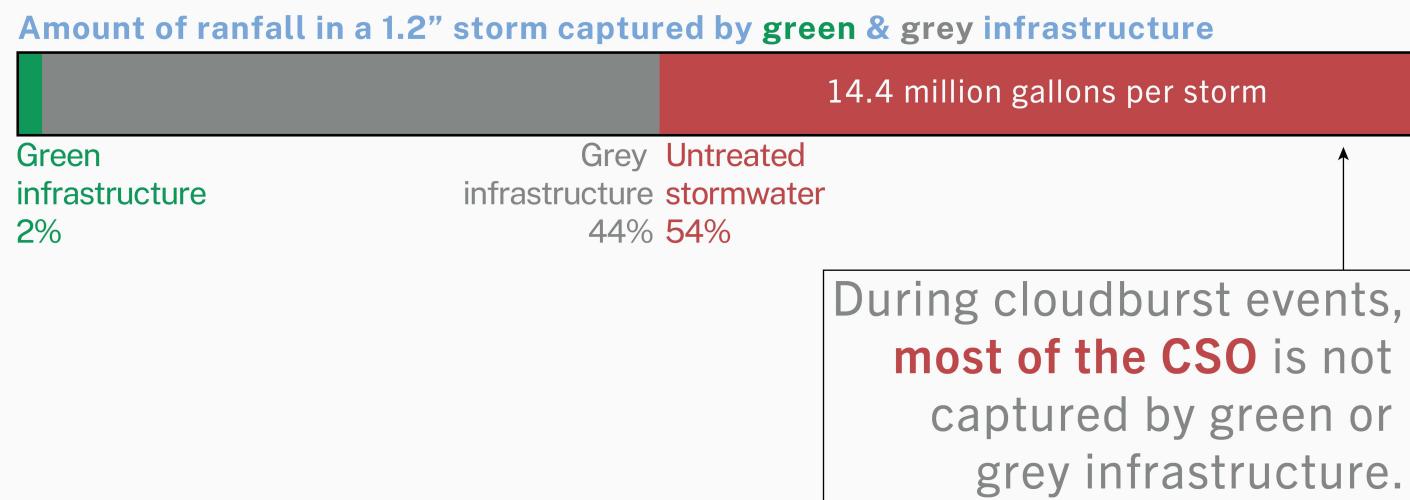


NYC DEP is responsible for stopping combined sewer overflow (CSO) into the canal, but **overflow has doubled instead of declining.**

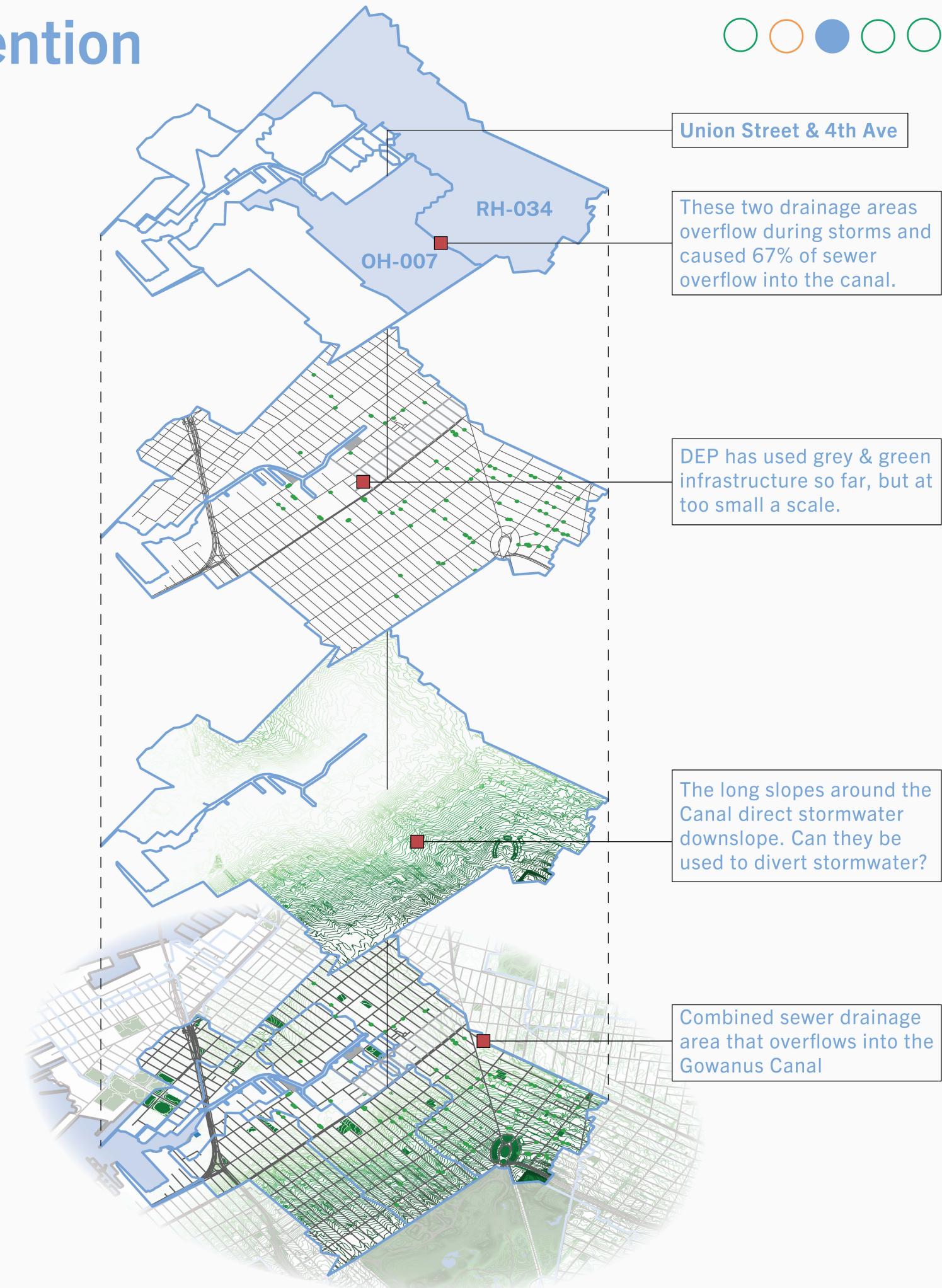


More than **470 million gallons** of CSO spilled into the Gowanus Canal in 2021

The 93 street bioswales DEC has built are small and **only divert 2%** of the CSO heading to the Canal.



The **added density** from the rezoning will increase wastewater generation and CSO into the canal, and has **not been factored into infrastructure plans for Gowanus.**



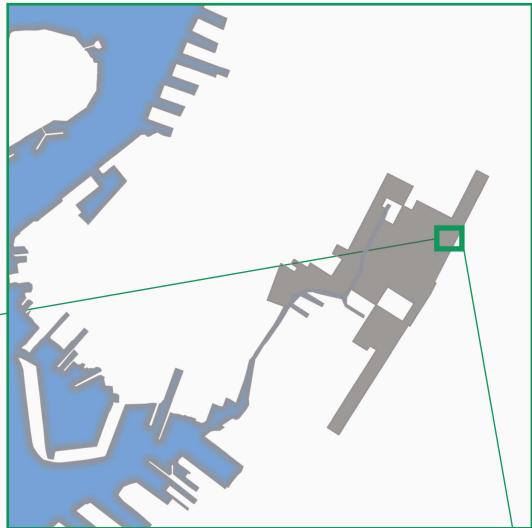


Proposal: Bioswale-Powered Bike Boulevards

NYC can address both these challenges with innovative street design that makes more space for both **cyclists** and **stormwater retention** than their street upgrades to date.

Gowanus can benefit from **bike boulevards** that safely connect the neighborhood to its new waterfront parks, job opportunities downtown, and to the larger Brooklyn bike network.

These lanes can serve as **linear stormwater barriers**, diverting stormwater away from the canal and the sewer system.



Total Estimated Impact

34%

Risk reduction for cyclists

50%

Increase in ridership

310

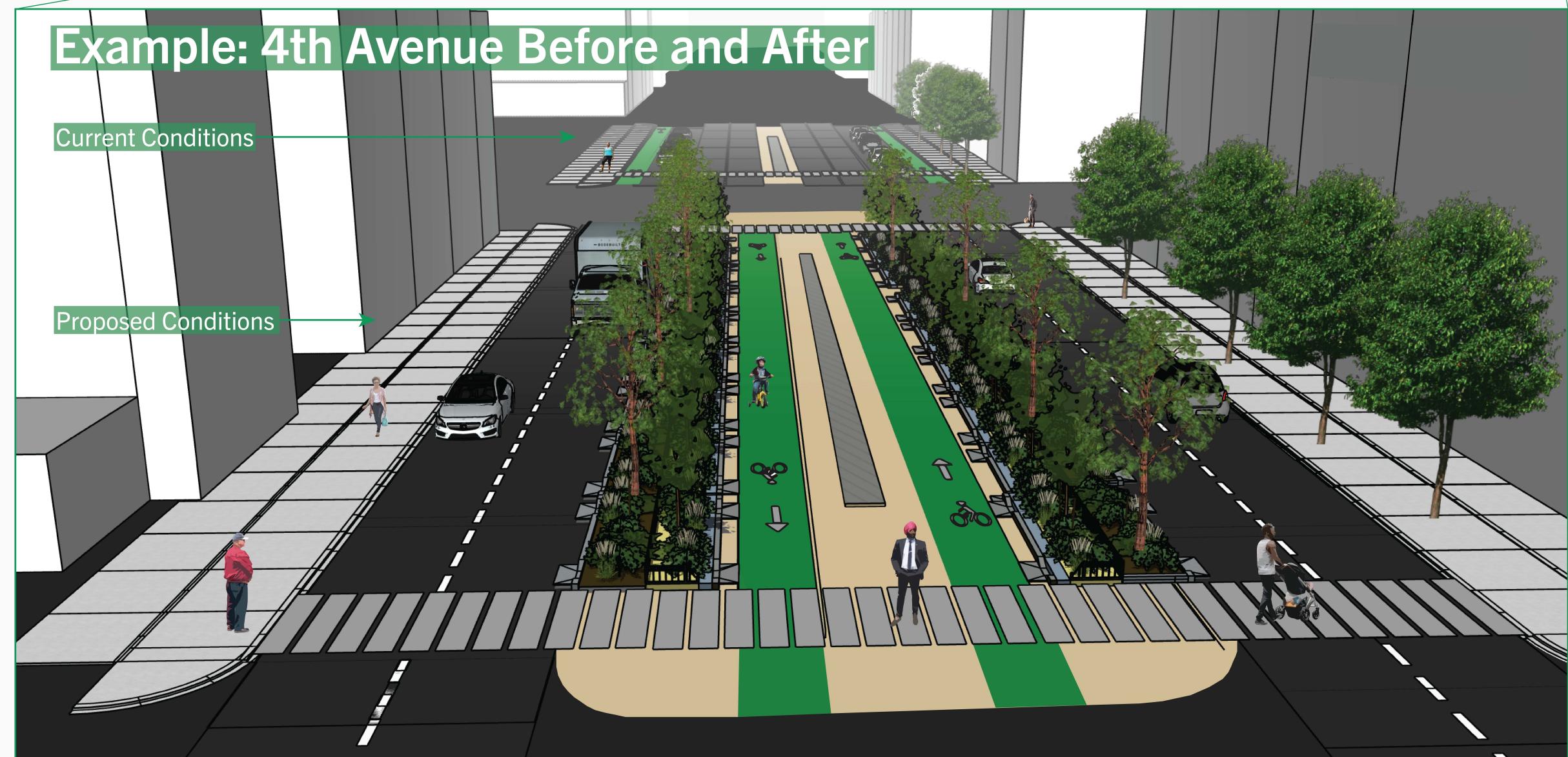
Parking spaces eliminated,
mostly on 4th Avenue

2.57 Mgal

Total stormwater captured by
bioswales (millions of gallons)

18%

Diversion of 2021 stormwater
overflow into the Gowanus Canal



Using the assumption of a 20'x5' bioswale capturing 2,200 gallons in a storm incident.

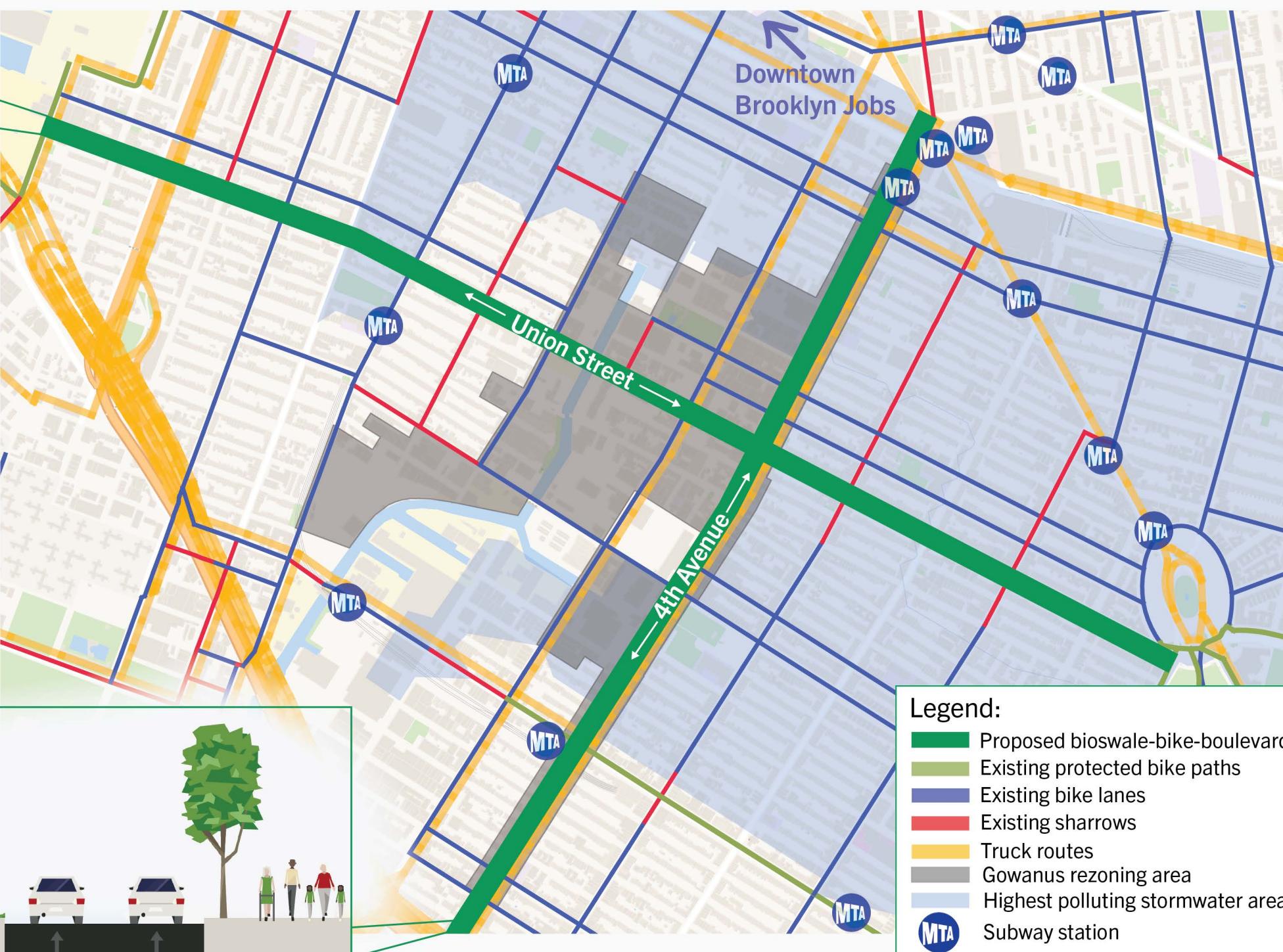
Envisioning a Network of Bioswale-Bike-Boulevards



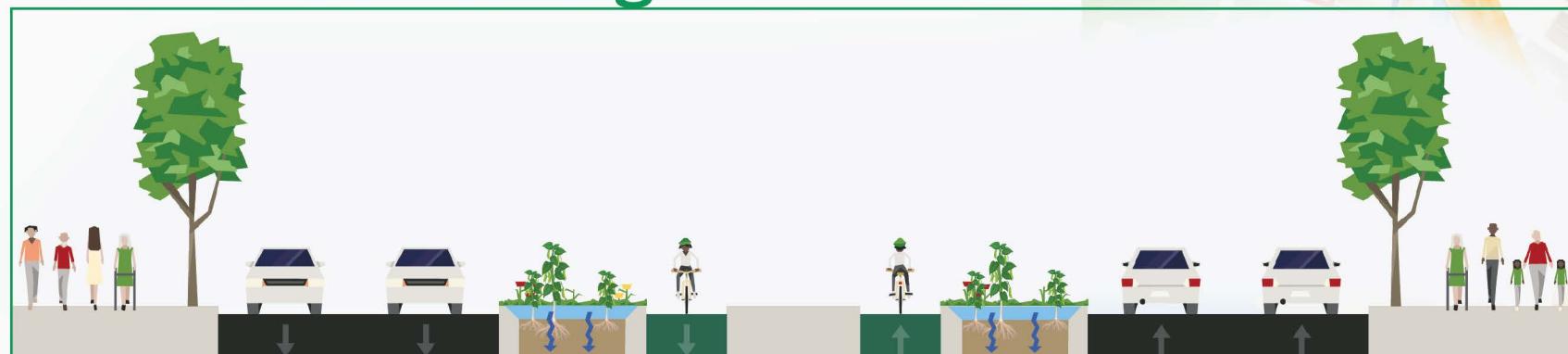
Union Street Addition:



Adds an east-west protected bike lane, connects waterfront developments with transit at Grand Army Plaza, and captures **136,000 gal** of stormwater per block.



4th Avenue Redesign:



Protects cyclists along the injury-prone 4th Ave truck route, connects the growing population to jobs in Downtown Brooklyn, and captures **88,000 gal** of stormwater per block.

Partners:
DCP / DOT / DEP / NYC Parks /
Gowanus Canal Conservancy /
Transportation Alternatives

Credits

Panel 1

Image: Google Earth

Icons created by Henry Kanengiser, based on images from:

- VIShopper
- Nonscandinavia

Panel 2

Map layers:

- New York City Bike Routes, NYC Open Data
- New York City Truck Routes, NYC Open Data
- Motor Vehicle Collisions - Crashes, NYC Open Data (courtesy of Sarah Internicola)
- Zoning GIS Data: Shapefile, NYC Open Data (courtesy of Karen Yao)

Area Inflow/Outflow and Job Density:

- On the Map 2020, LEHD
- ACS 2021 5-Year Estimates

Panel 3

Icon source: the Noun Project

Map layers:

- NYC Hydrography, NYC Open Data
- LION Single Line Street Base Map, DCP
- Gowanus Canal Sewershed, Open Sewer Atlas & Gowanus Canal Conservancy
- NYC Combined Sewer Outfall Drainage Areas, Open Sewer Atlas & Gowanus Canal Conservancy
- Street Tree Census, NYC Open Data
- Green Spaces, NYC Open Data
- DEP Green Infrastructure, NYC Open Data
- Grey Infrastructure in Gowanus, Gowanus Canal Conservancy, DEP press statements, and the Gowanus Lowlands Plan

Other data:

- Combined Sewer Overflow by Outfall, NYC DEP CSO 2021 and 2019 reports.

Panel 4

Images in 3-D model: Sketchup

People in 3-D model: Nonscandinavia

Data in Key Map:

- Zoning GIS Data: Shapefile, NYC Open Data (courtesy of Karen Yao)
- NYC Hydrology, US Census Bureau Tiger Shapefiles
- NYC Political and Administrative Districts, NYC DCP
- NJDEP Coastline of New Jersey, New Jersey DEP

Panel 5

- Map layers: see Panel 2 credits
- Stormwater capture: see Panel 3 credits
- Plant image by brgfx, Freepik
- Street cross-sections by Streetmix
- MTA logo by Wikimedia Commons

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