Environmental Protection

# Climate Change and New York City's Sustainable Investments in Water Supply and Water Quality

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Association of Metropolitan Water Agencies

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# Comprehensive Sustainability Plan for NYC

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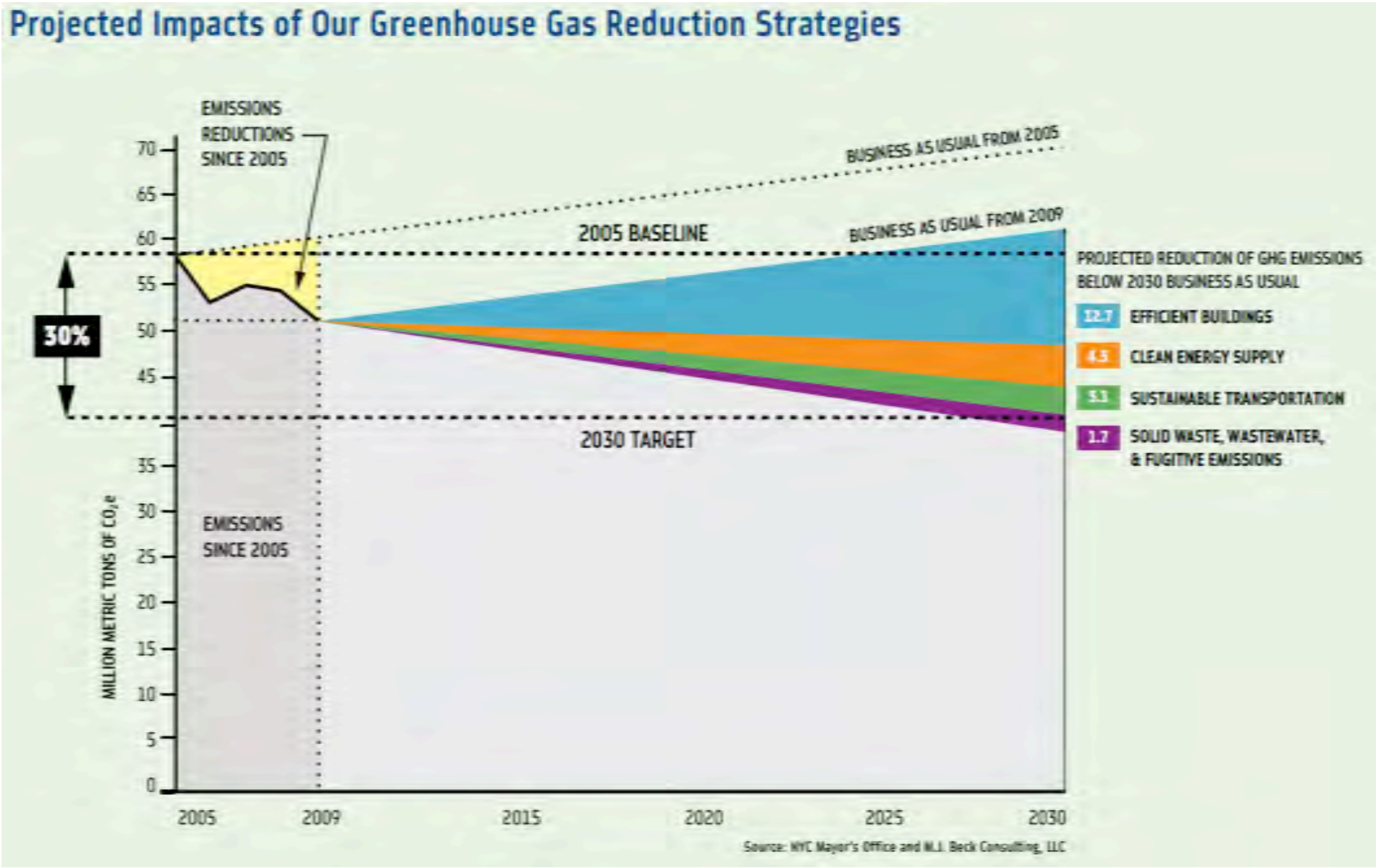
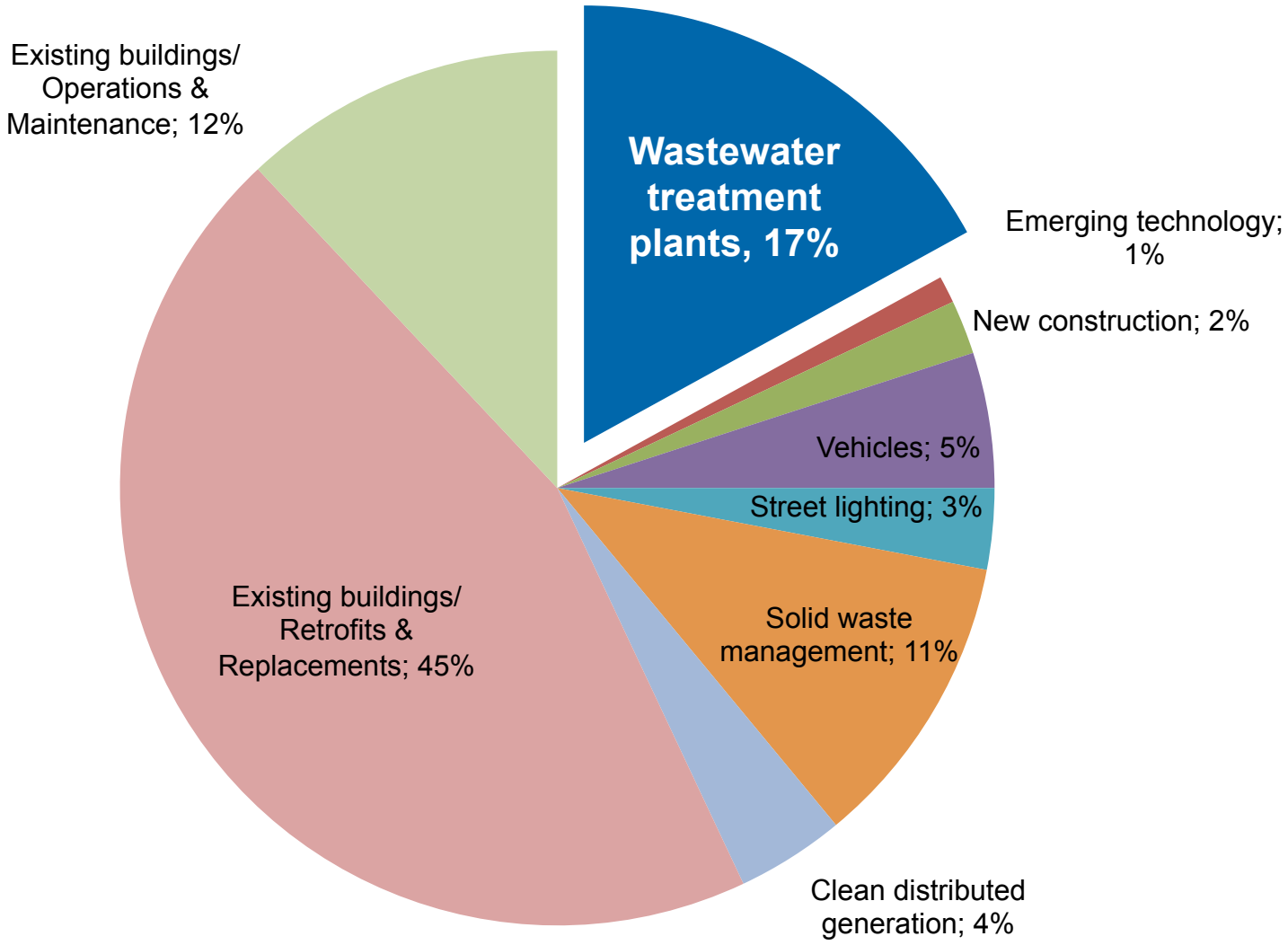
- Housing and Neighborhoods
- Parks and Public Space
- Brownfields
- Waterways
- Water Supply
- Transportation
- Energy
- Air Quality
- Solid Waste
- Climate Change

# NYC GHG Footprint and Role of Buildings



# Goal to Reduce City Government GHGs by 30%

**Sources of Potential GHG Emissions Reductions to reach PlaNYC Goal of 30% by 2017**



# Climate Change & DEP

Climate change affects two core components of DEP's mission

Water Supply

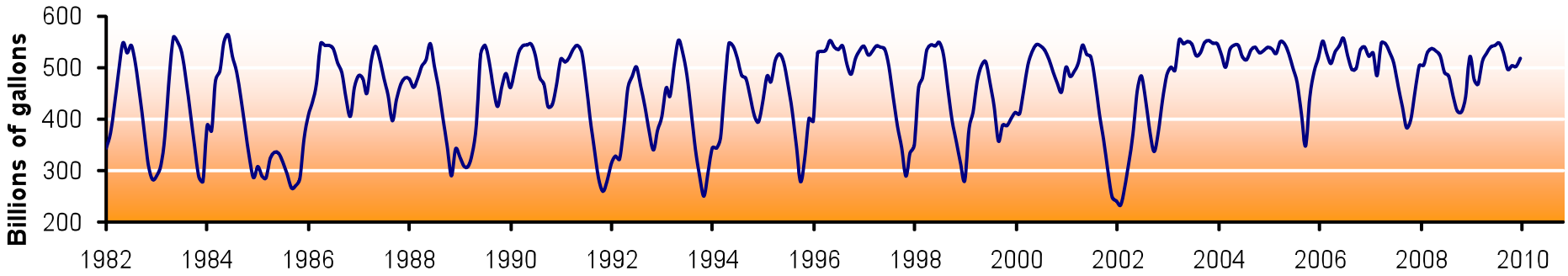
Stormwater Management

# Impacts of Climate Change on NYC

| | Baseline 1971–2000 | 2020s | 2050s | 2080s |
|---|---|---|---|---|
| Air Temperature | 55°F | + 1.5 to 3°F | + 3 to 5°F | + 4 to 7.5°F |
| Precipitation | 46.5 in | + 0 to 5% | + 0 to 10% | + 5 to 10% |
| Sea Level Rise | NA | + 2 to 5 in | + 7 to 12 in | + 12 to 23 in |
| Rapid Ice-Melt Sea Level Rise | NA | + 5 to 10 in | + 19 to 29 in | + 41 to 55 in |

Source: New York City Panel on Climate Change

# Drought & Competing Demands

# Increased Turbidity

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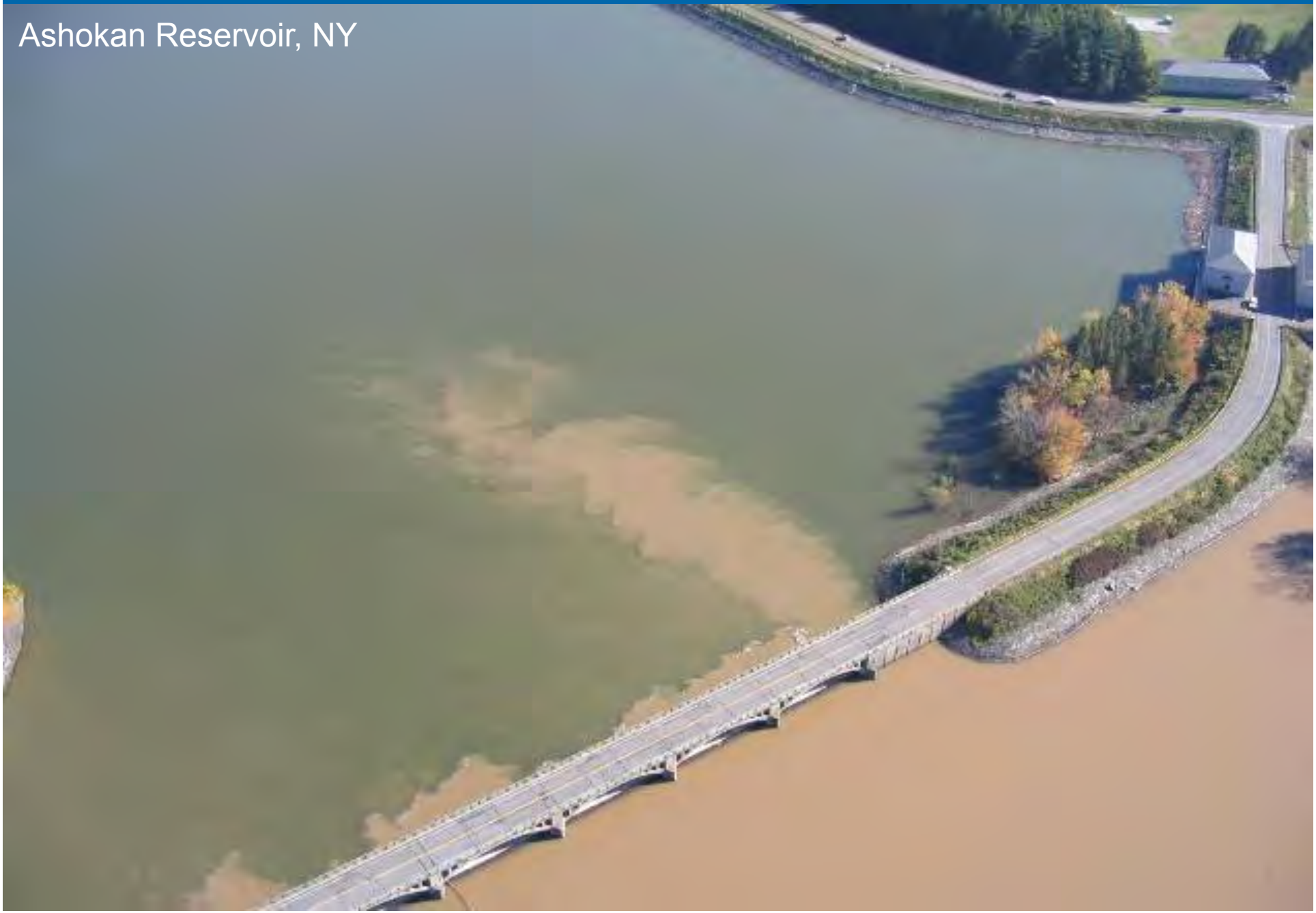

# Watershed Protection Mitigates Risks


## Source Water Protection Program

- 2,000 square mile watershed
- Catskill/Delaware is 10% farmland, 78% forest, 1% developed
- 580 billion gallon capacity; supplies ~ 1.1 billion gallons/day to 9 million people
- Filtration plant (>$10 billion) avoided for Cat/Del system
- Sustainable watershed protection endorsed in 10 year FAD (2007 to 2017)
- $1.5 billion spent to date
- 109,000+ acres acquired DEP will allocate an additional $241 million for land acquisition, $175 Million for other FAD programs (over 5 years)

# Land Acquisition Program

- Willing seller/willing buyer only – fee or easement
- DEP pays fair market value based on appraisal and pays property taxes
- City manages all lands and allows recreational uses where consistent with water quality protection and public safety
- 120,000 acres purchased to date
- Received permit to continue program for 15 years in December 2010

# Stream and Forest Management Programs

**Stream Management Program**

- Stabilizes failing stream beds and banks to prevent erosion
- Series of Management Plans and Demonstration Projects underway
- 50 restoration projects complete
- 5 Stream Management Plans complete
- Promotes sound stream protection practices with local partners; community participation key to program success

**Forestry Program**

- Forest Management Plan for city-owned lands
- 100,000+ privately-owned acres with Forest Management Plans
- Nearly 2,000 acres covered by riparian plans
- BMP Implementation
- Logger Training

# Watershed Agricultural Program

**Before**


**One year later**

- Nearly 85% of all large farms in watershed are in Delaware County
- 96% of farms signed up for this voluntary program
- Approximately 5,000 BMPs implemented
- More than 62,000 acres managed under WFPs in 3 basins
- 1,978 acres of stream buffers protected through CREP
- New initiatives on small farms and EOH farms

# Staten Island Bluebelts

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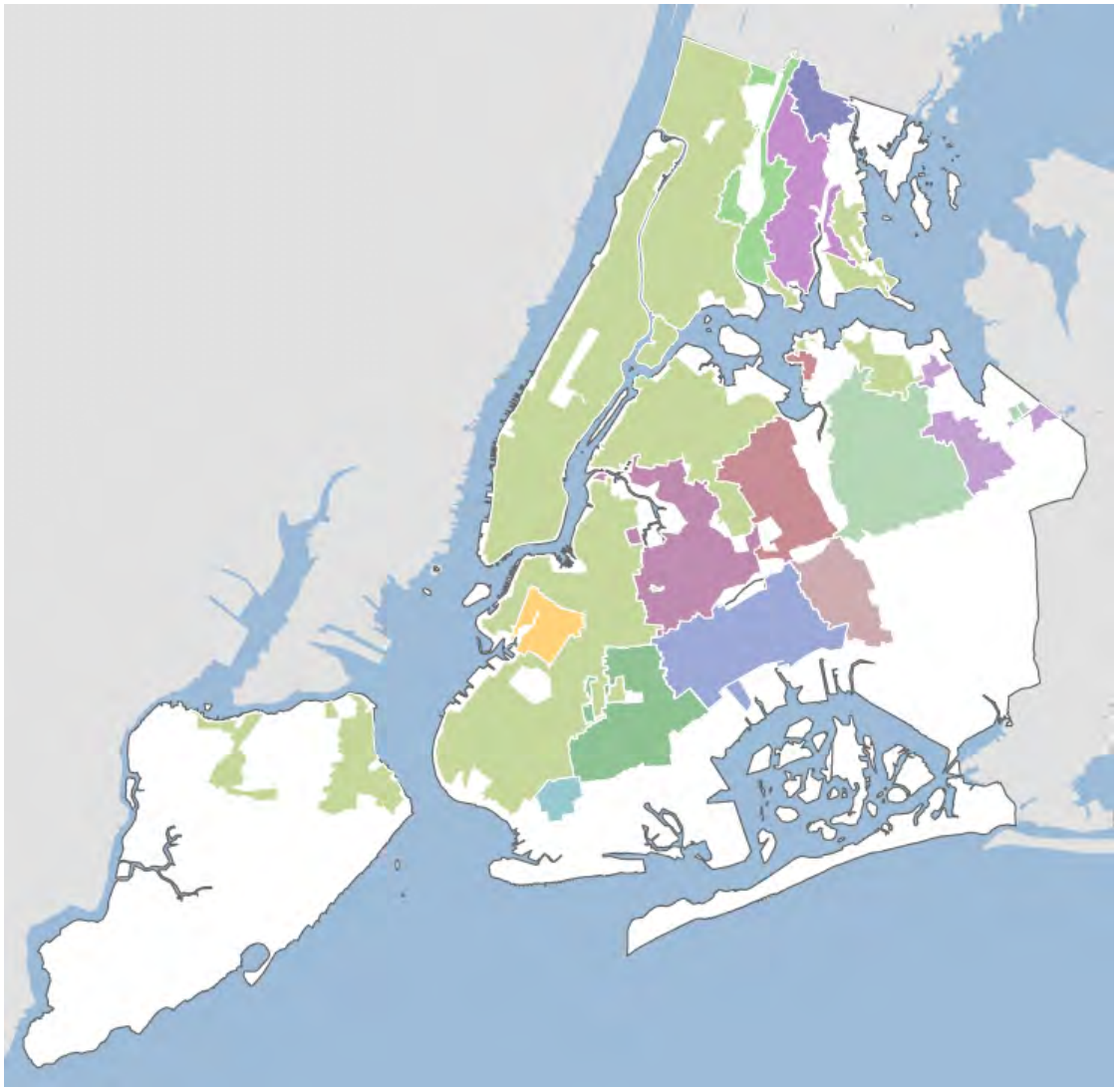
# Water Quality & Combined Sewer Overflows

- 13 different CSO drainage areas that service two-thirds of New York City
- 423 CSO outfalls
- New York City already experiences **30 billion gallons** of CSO per year
- Increased and more intense rainfall may lead to a higher volume of CSO in the New York Harbor
- 93% of Harbor meets standards for fishing and boating



New York City's 13 CSO Drainage Areas

# Green Infrastructure

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Green Roof

Blue Roof

Streetside Bioswale

Porous Pavement

# New Right of Way Bioswale

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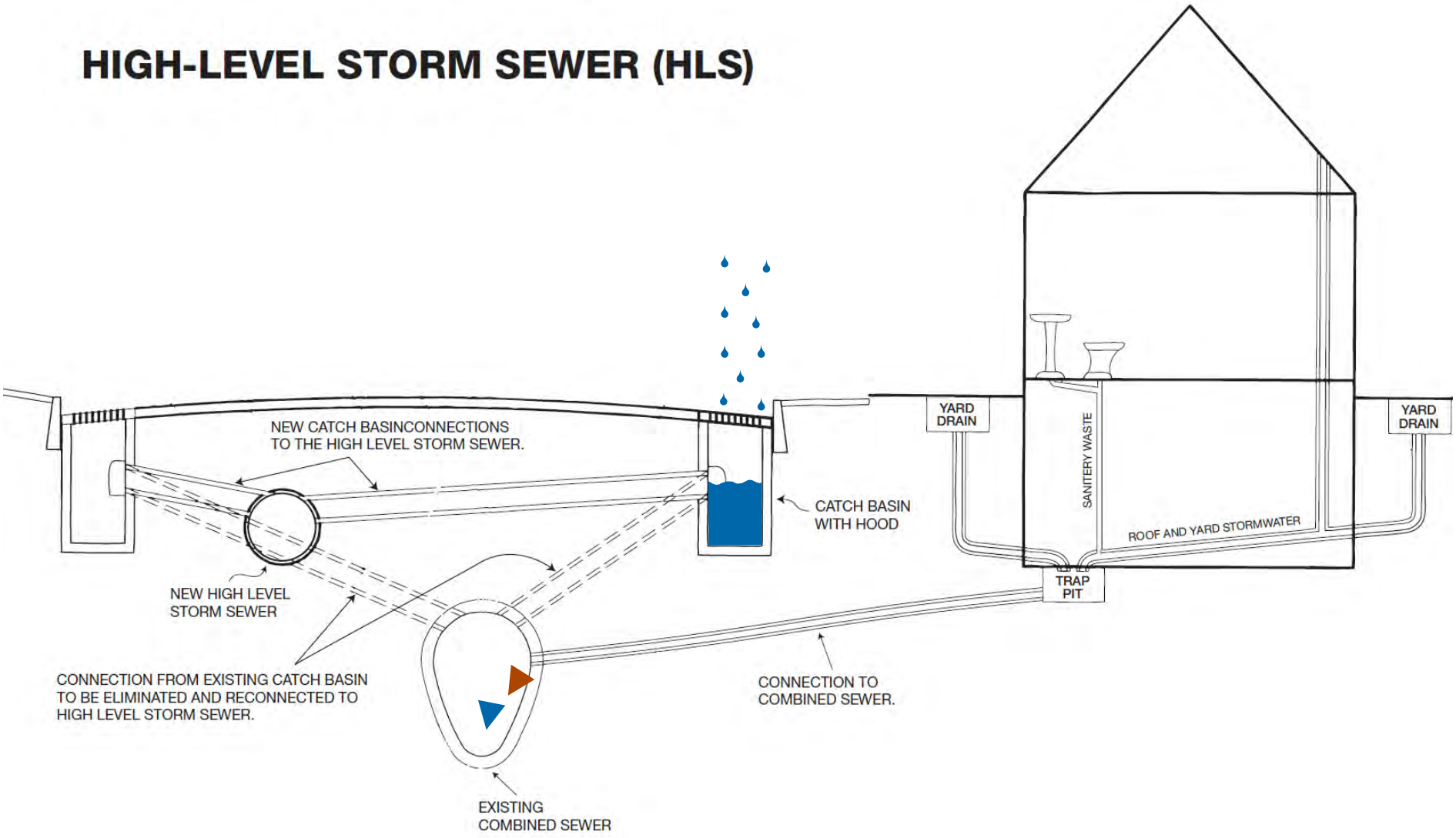
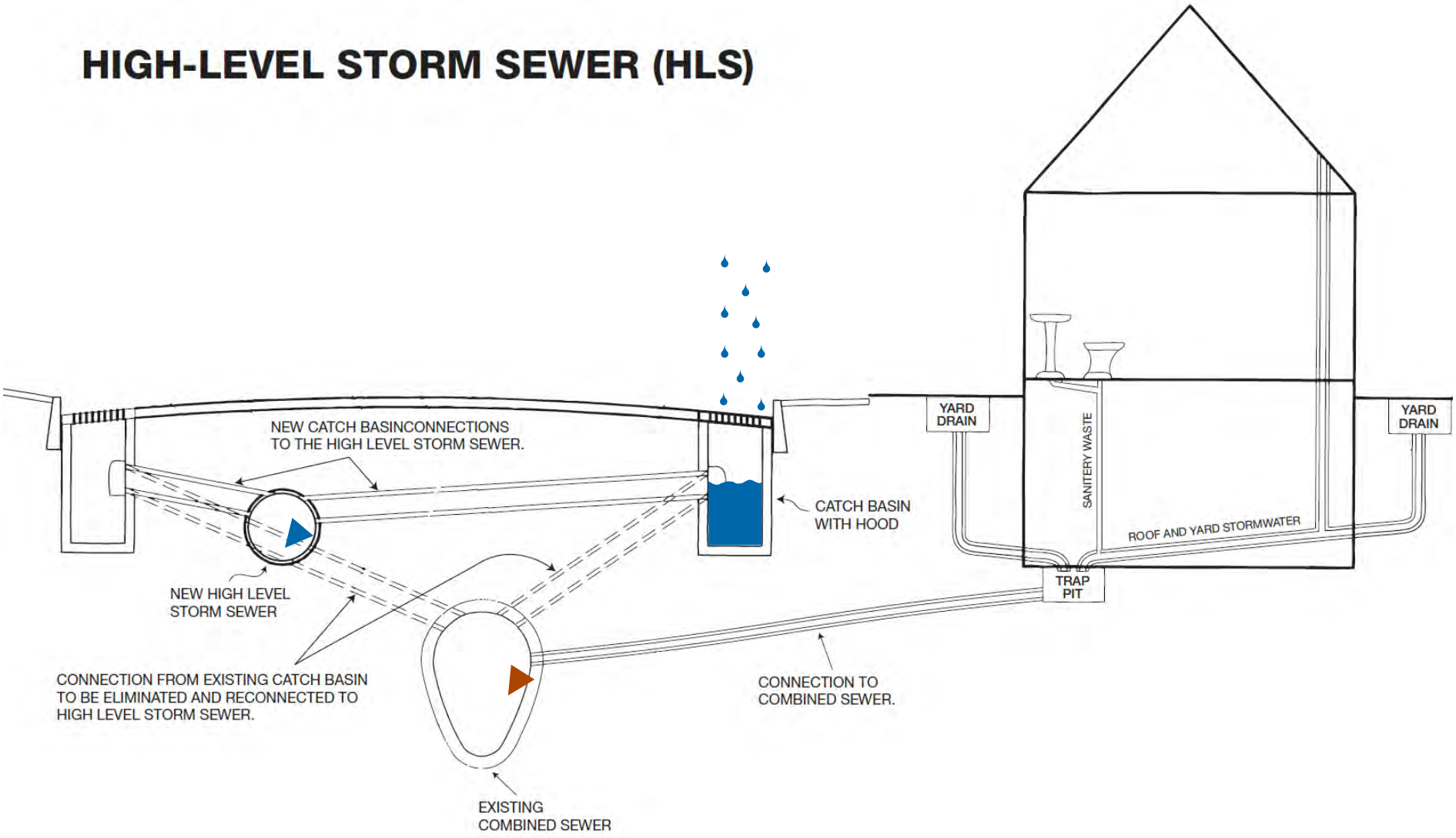
# High-Level Storm Sewers



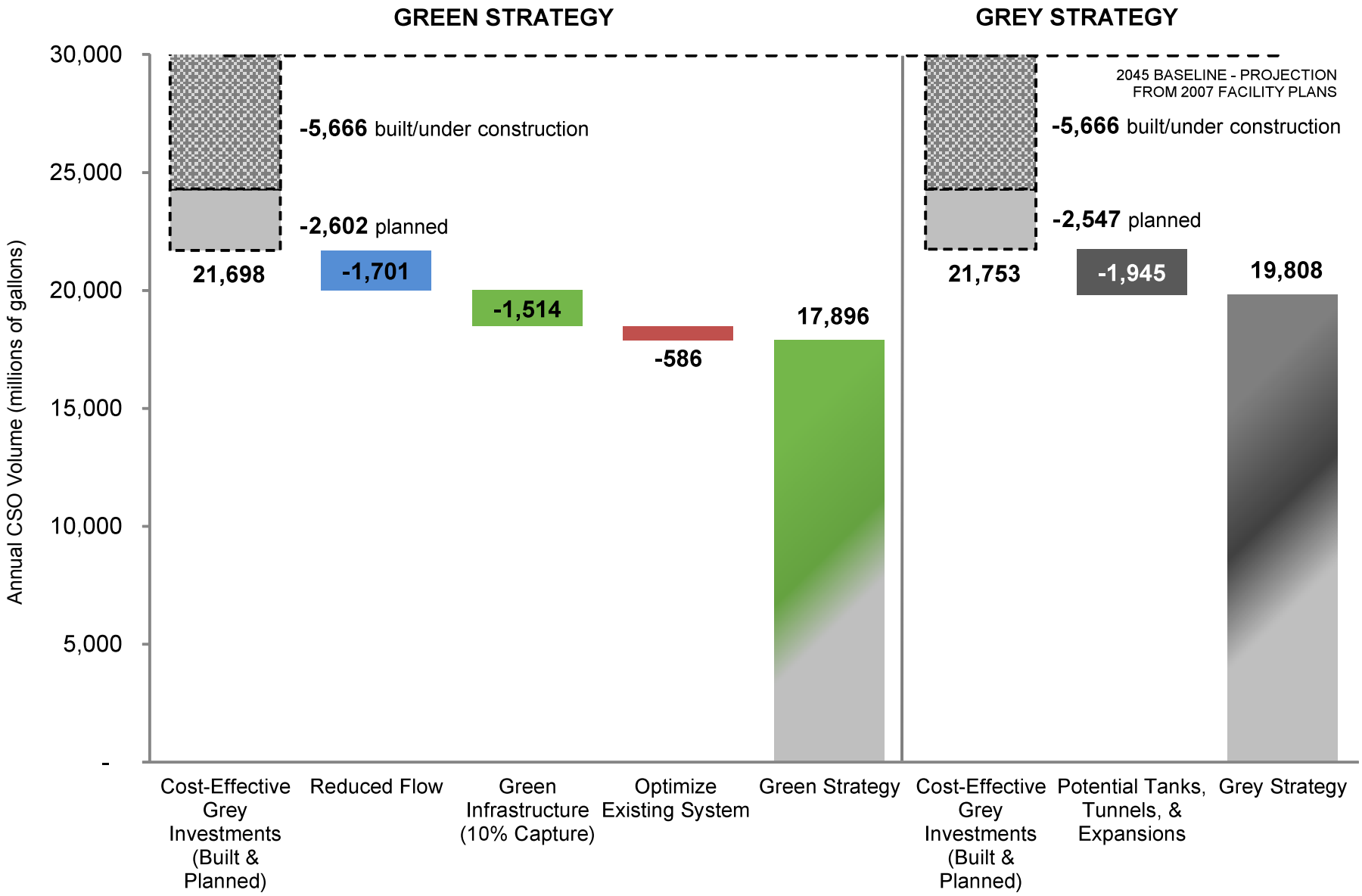
# High-Level Storm Sewers



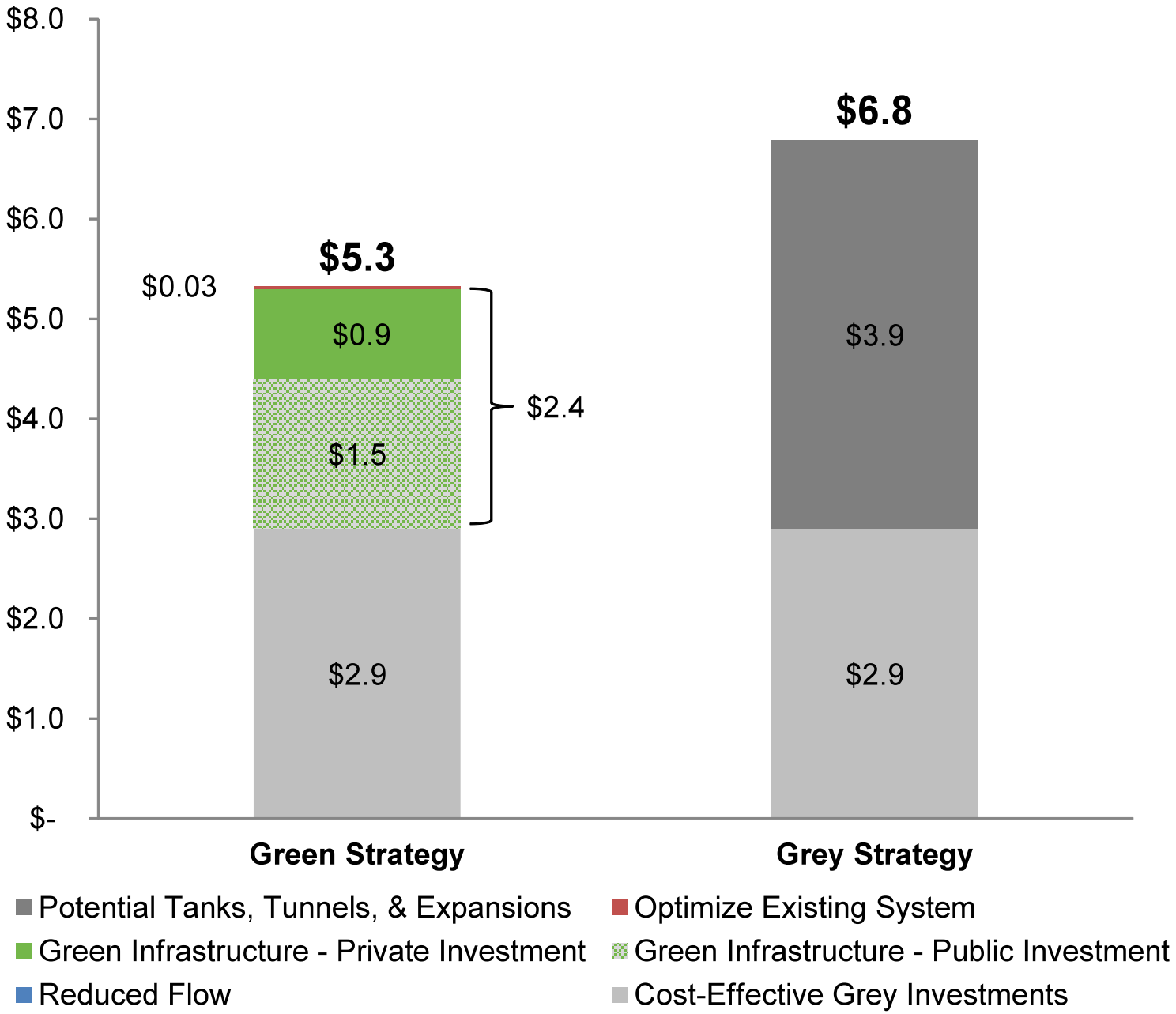
# NYC Green Infrastructure Plan


1. Build cost-effective grey infrastructure
2. Optimize the existing wastewater system
3. Control runoff from 10% of impervious surfaces through green infrastructure and other source controls
4. Institutionalize adaptive management, model impacts, measure CSOs, and monitor water quality
5. Sustained stakeholder engagement

# Green Infrastructure Performance



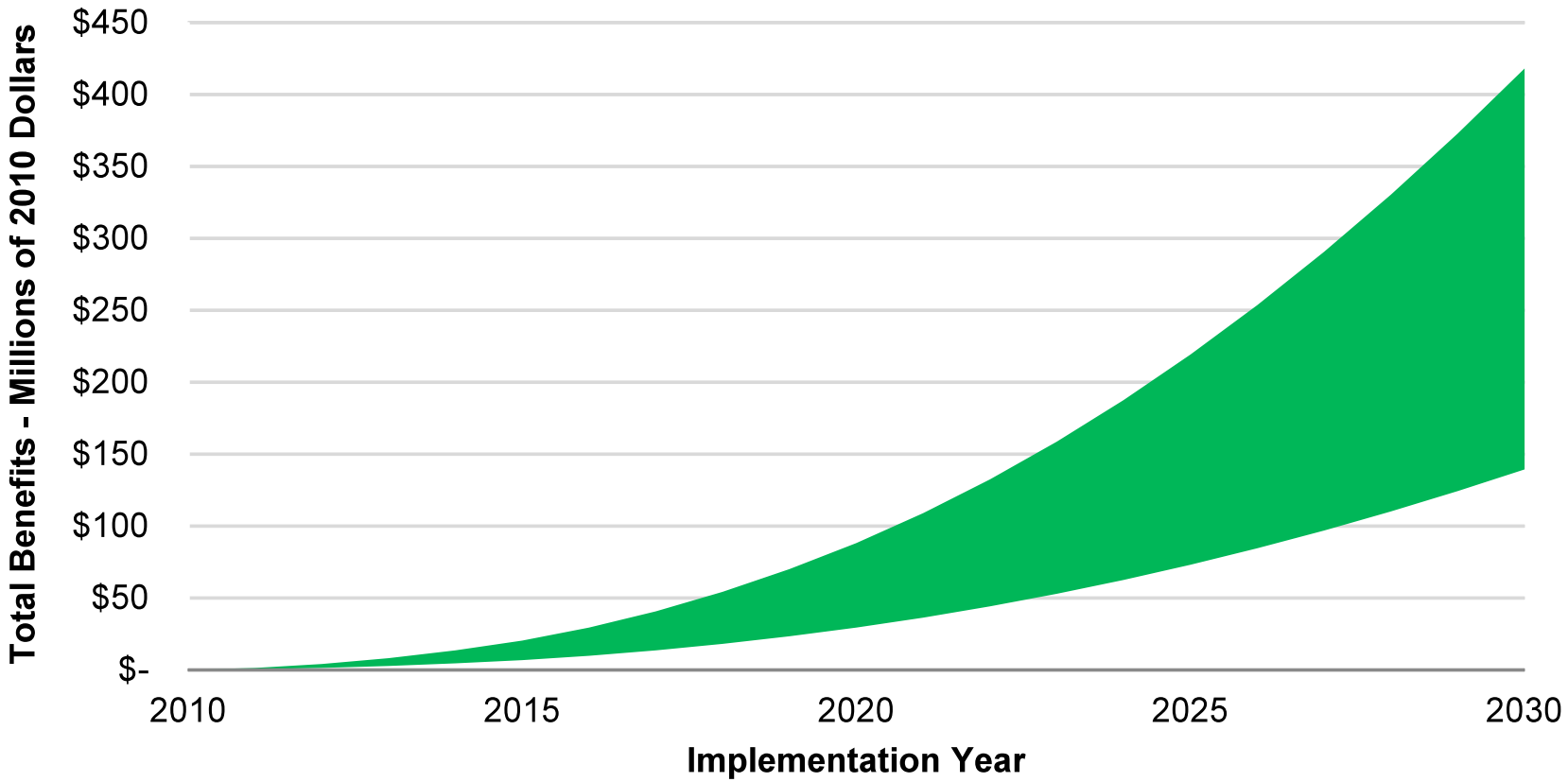
# Green Infrastructure Costs



# Additional Benefits

| Annual benefits of green infrastructure per acre | |
|---|---|
| Reduced energy demand: | $5,513 |
| Reduced carbon dioxide: | $117 |
| Improved air quality: | $759 |
| Increased property value: | $4,725 |

| Acres of planted green infrastructure in 2030 | |
|---|---|
| 25% planted green infrastructure | 1,085 acres |
| 75% planted green infrastructure | 3,255 acres |



# Watershed Planning in the Bronx River

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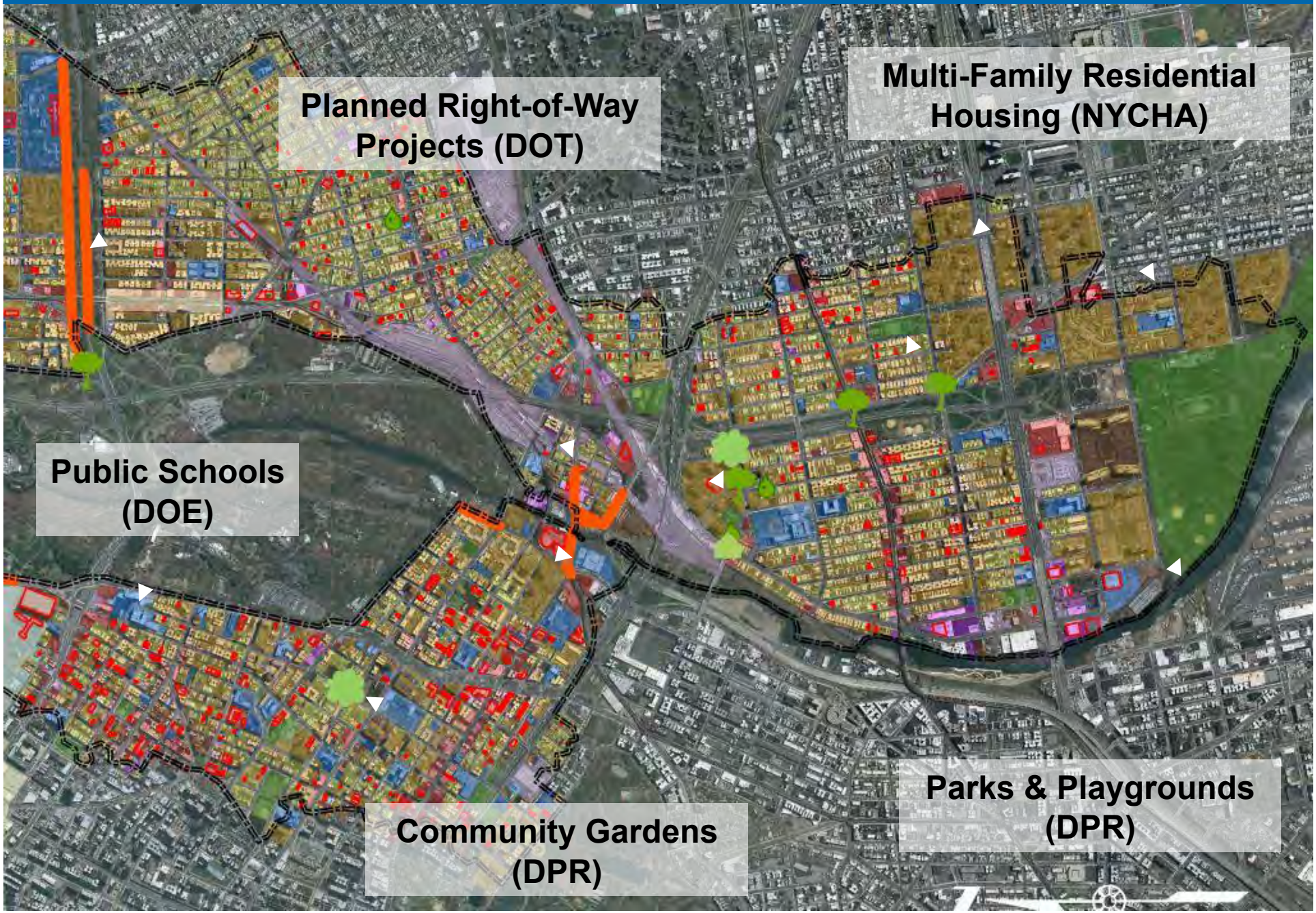

For more information visit www.nyc.gov/dep

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