Green Infrastructure and Jersey City's Plan to Reduce Localized Flooding and Combined Sewer Overflows

Presented by Jersey City START

(Stormwater Treatment and Resiliency Team)

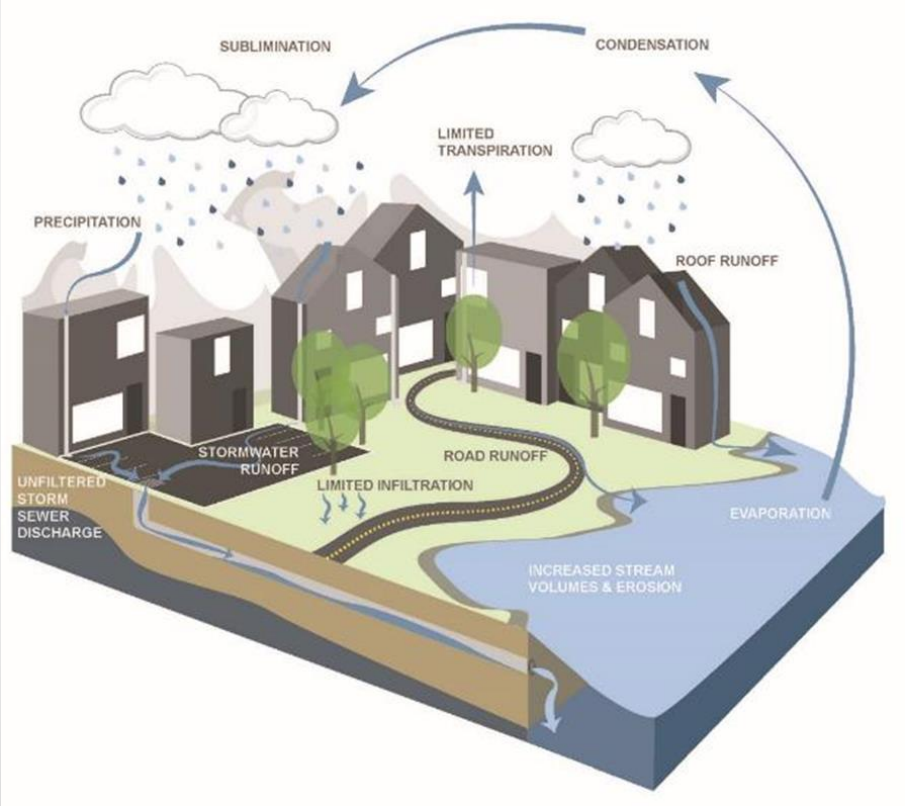
January 10, 2019

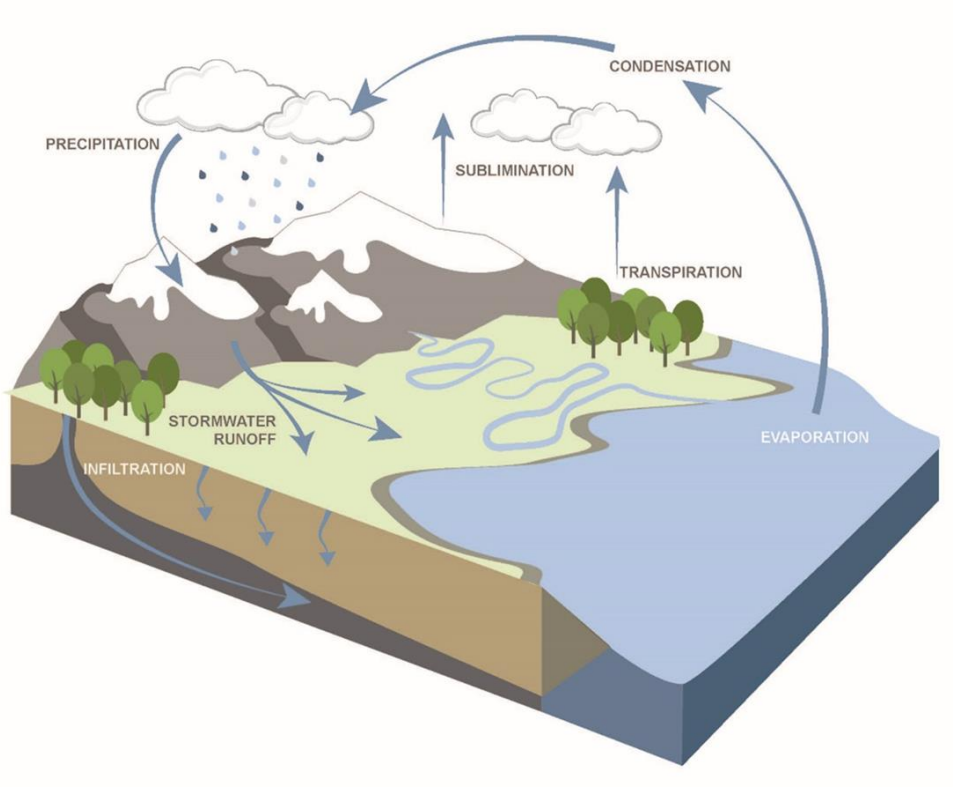
Jersey City START

- Jersey City Depts./Divisions:
  - Planning
  - Architecture
  - Engineering
  - Office of Sustainability
  - Mayor's Office
- Jersey City Municipal Utility Authority (MUA)
- Jersey City Redevelopment Agency (JCRA)
- Passaic Valley Sewerage Commission (PVSC)
- Hudson County Planning
- Rutgers University Cooperative Extension
- New Jersey Future
- New Jersey City University (NJCU)
- Sustainable Jersey City (SJC)
- Jersey City Environmental Commission (JCEC)
- NJ Tree Foundation
- Other Community Groups who have been involved (Join Us!): Embankment Preservation Coalition, Hackensack Riverkeeper, Brunswick Community Garden, **Jersey City Parks Coalition**, Bayside Park Neighborhood Association
- **All community groups encouraged to join this effort.**

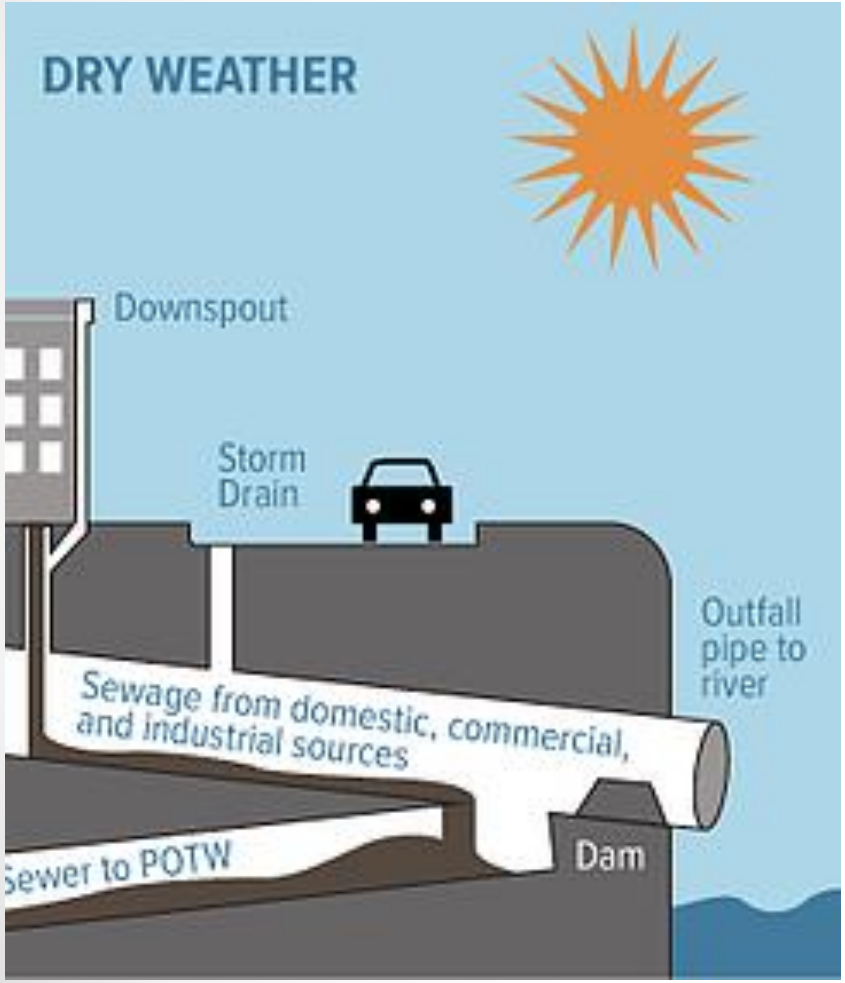
Jersey City START (Stormwater Treatment and Resiliency Team) is a collaboration of community members, city government, local and regional nonprofit organizations, and universities to make Jersey City a sustainable community that prioritizes best stormwater management practices such as green infrastructure.

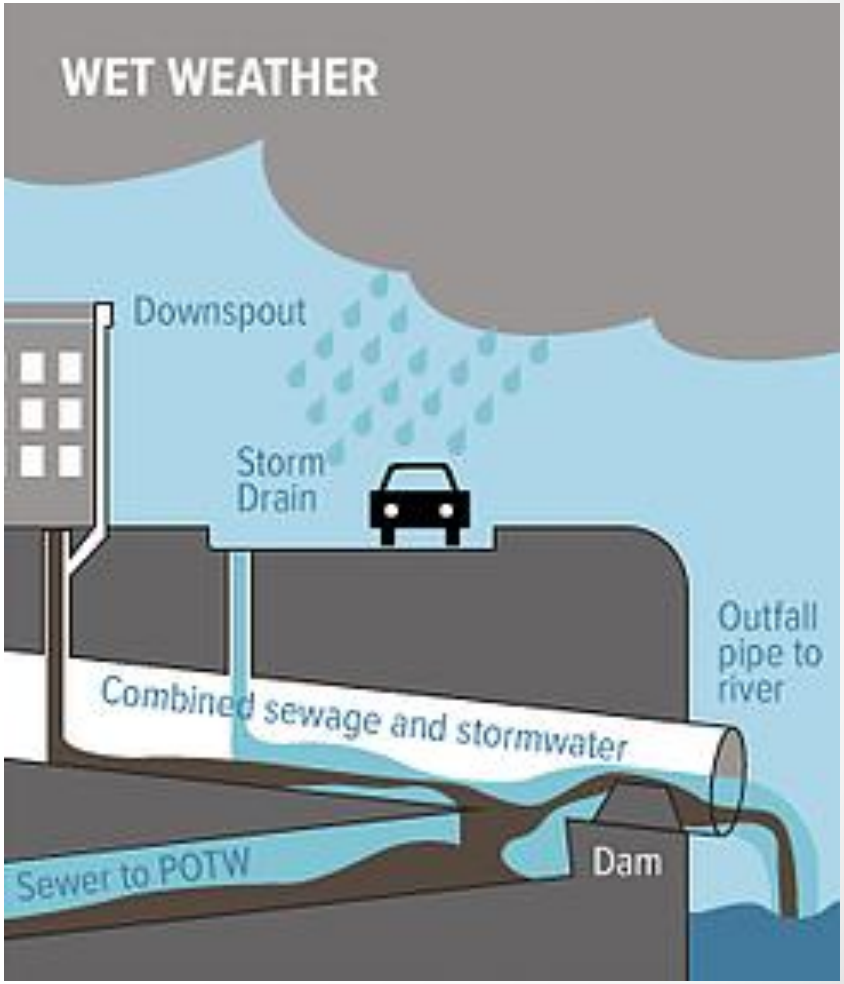
The Urban Hydrologic Cycle





Combined Sewer Overflows





Overview of JCMUA CSOs

- Population Served: 247,597 (2010) to 270,753 (2017)
- 230 miles of pipe in Combined Sewer System
- Ninety Percent of the Sewers are 88 to 131 years old
- Collection area encompasses approximately 6,209 acres
- 21 Combined Sewer Overflow (CSO) discharge points
    - ✓ 1 discharge to Penhorn Creek
    - ✓ 11 discharges to the Hackensack River, Newark Bay
    - ✓ 9 discharges to the Hudson River
    - ✓ SE 2 or SE 3 Water Classification
- Normally Pumped to PVSC

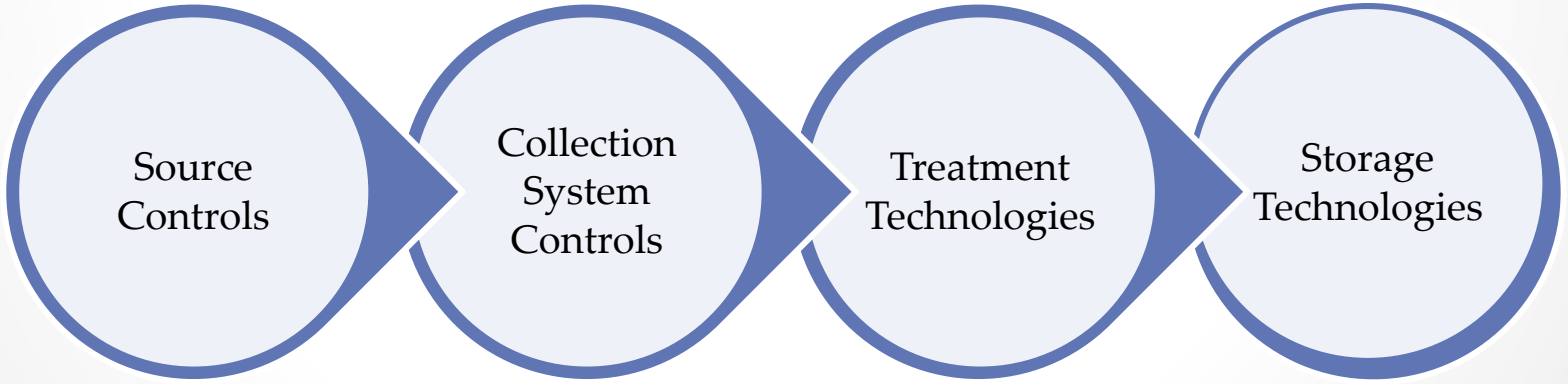
How will Jersey City Reduce Impacts of CSOs?

- NJDEP issued new CSO permits as of July 1, 2015 to develop a long term control plan
- The following are major deadlines:
  - July 1, 2018
    - System Characterization Report
    - Public Participation Process Report
    - Compliance Monitoring Program Report
    - Consideration of Sensitive Areas Plan
  - July 1, 2019
    - Development and Evaluation of Alternatives Report
  - July 1, 2020
    - Selection and Implementation of Alternatives Report in the Final LTCP

CSO Long Term Control Plan

Next steps:

- Develop Alternatives for CSO Control
- Identify CSO Control Alternatives



Alternatives that can be considered:

- Green infrastructure
- Increased storage capacity in the collection system
- Sewer Treatment Plant expansion and/or storage at the plant
- Inflow/Infiltration reduction
- Sewer separation
- CSO discharge treatment
- Ordinance changes to support stormwater management

Long Term Control Plans

Jersey City 2007 estimates costs (Total Present Worth in $ millions)

- Disinfection (separate outfall treatments) 767
- Disinfection (2 facilities) 526-723
- In-line Storage Not feasible Off-line Storage Tanks (separate outfall treatments) $1,05546
- Off-line Storage Tanks (9 grouped) 1011
- Deep Storage Tunnels (3) 491
- Complete Sewer Separation ($1766 per linear foot) 1,910

Source: Water Infrastructure in NJ CSO Communities – Dan Van Abs

- **Potential community benefits:**
  - Job creation
  - Green Infrastructure (Trees, rain gardens, green space and the associated benefits of green space like reduced heat island effect…)
  - Clean water and waterways
- **Who is going to pay for these plans?**
  - Primarily rate payers
  - A stormwater Utility Fee (Would need to be approved at the state and city level).

Jersey City Green Infrastructure - 2007 to Date

- Jersey City SWMP promotes Green Roofs, Rain Barrels, Rain Gardens/Bioswales
- GI intercepts, stores, absorbs & uses storm water runoff
- Demonstration Projects
  - City Hall
  - Riverview Park
  - St. Paul's Evangelical Lutheran Church
  - NJCU Campus

Curbside raingarden installation in Portland, Oregon.

Green Infrastructure Plans

- In 2018/2019 plan greater emphasis:
- Continue Rain Barrel/Cistern Program
- Promote green/blue roofs and on lot storage for new developments
- Retain or treat up 1.0 inch of impervious area runoff
- Maximize Rain Gardens/Bioswales with 6 to 10 foot limits for :
  - Ground Water Levels
  - Bedrock

Program Objectives
Drive Design Standards

- **New York City Program**: Manage 1” stormwater runoff from 10% of impervious surfaces in combined sewer areas system-wide, focus on high concentration in CSO priority areas

- **Philadelphia Program**: Manage runoff from ~40% of impervious surface in combined sewer areas

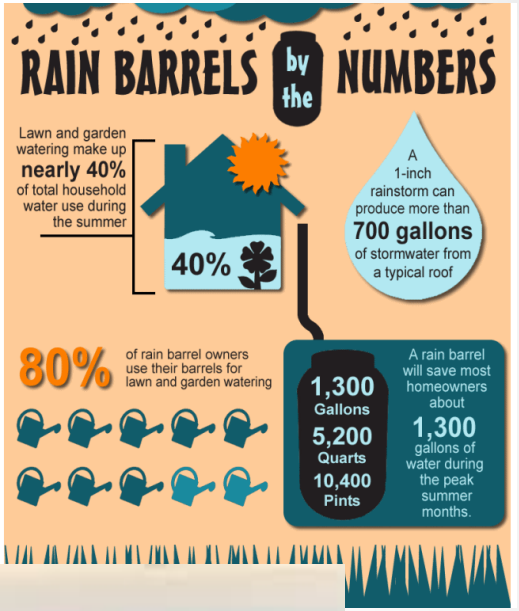
Ordinance changes to support stormwater management

Jersey City is updating it's Stormwater Management Control Ordinances to go beyond state minimum requirements to improve water quality and reduce local flood risks and NJDEP supports raising the bar.

- New retention requirements
- A lower threshold for applicability to development and redevelopment
- Additional requirements for green (vs gray) infrastructure.

What can Jersey City residents do to reduce impacts of CSOs?

- Water conservation
- Rain barrels
- Adopt a catch basins
- Keep our sewers clean
- Tree plantings – 1 mature tree can absorb up to 100 gallons of water during a storm event.
- Green infrastructure projects



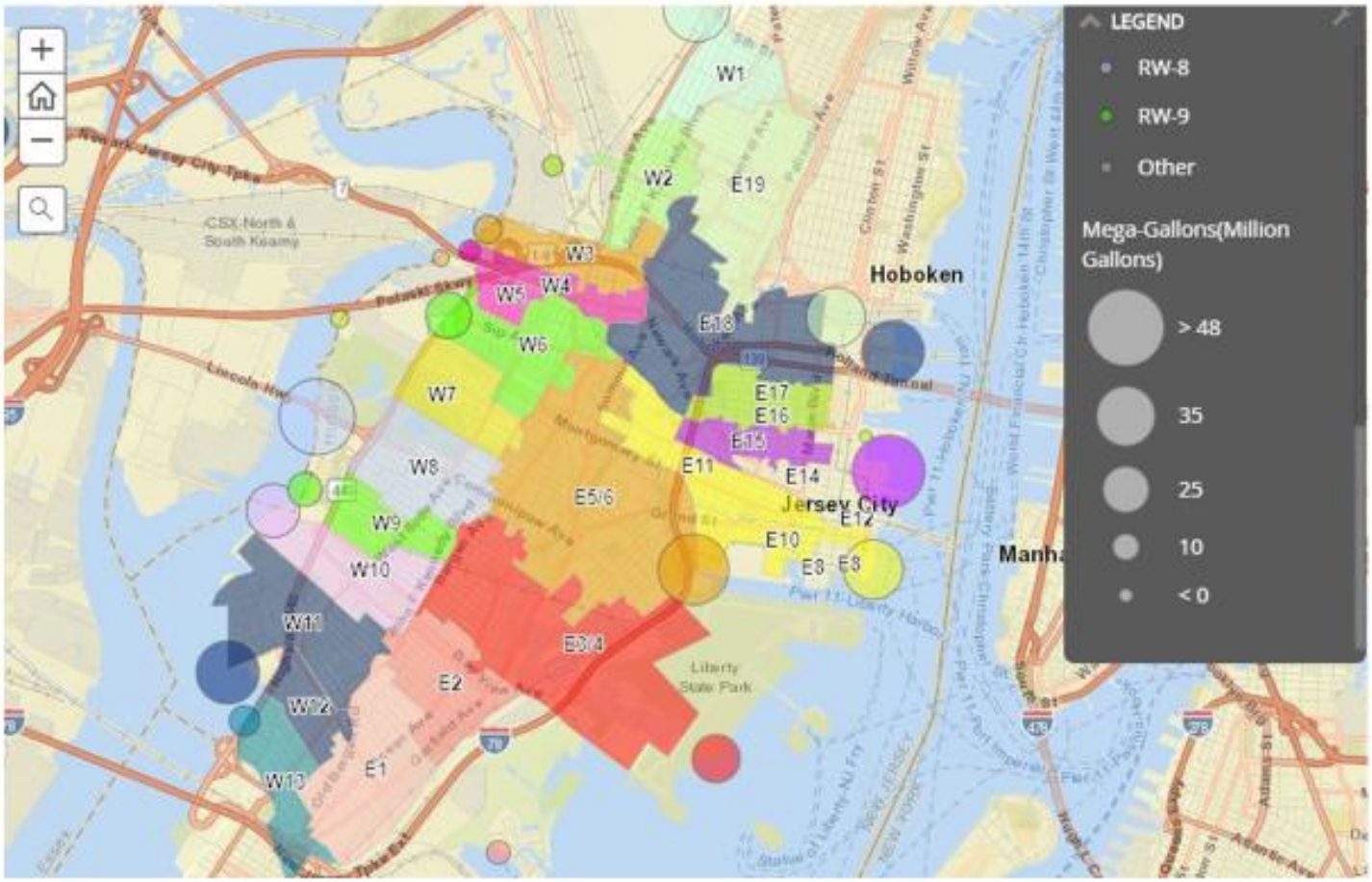
Community Outreach

- The evaluation of alternatives report is due July 2019
- The final report known as the Long Term Control Plan is due on July 2020
- Your input is needed!
- **JCMUA has committed to hold three public meetings:**
  - March 5, 12, 19 at 6:30 pm
  - City Hall, Bethune Center and PS 28

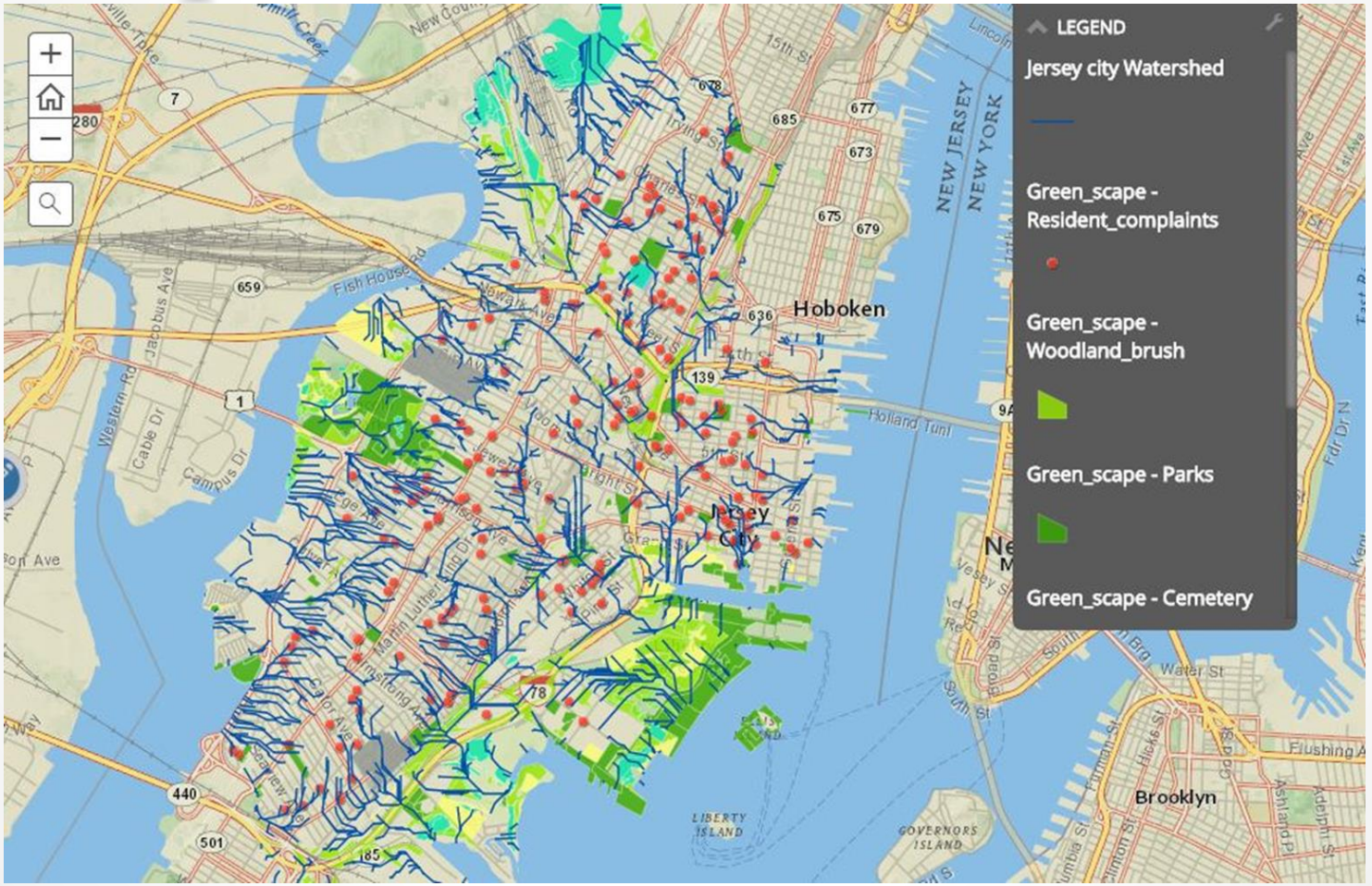
Jersey City Open Sewer Atlas (JC OSA)

- Collaboration Project between Sustainable JC and NJCU GIS Lab
- Modeled after the NYC OSA developed by the NYC Soil & Water Conservation District, advisors on this project
- Purpose is to provide data visualizations of a very complex system, using the vast amount of data in the JC MUA / Arcadis Portal and various modeling techniques, to help City Officials and The Public understand opportunities to utilize different stormwater management solutions, especially Green Infrastructure.

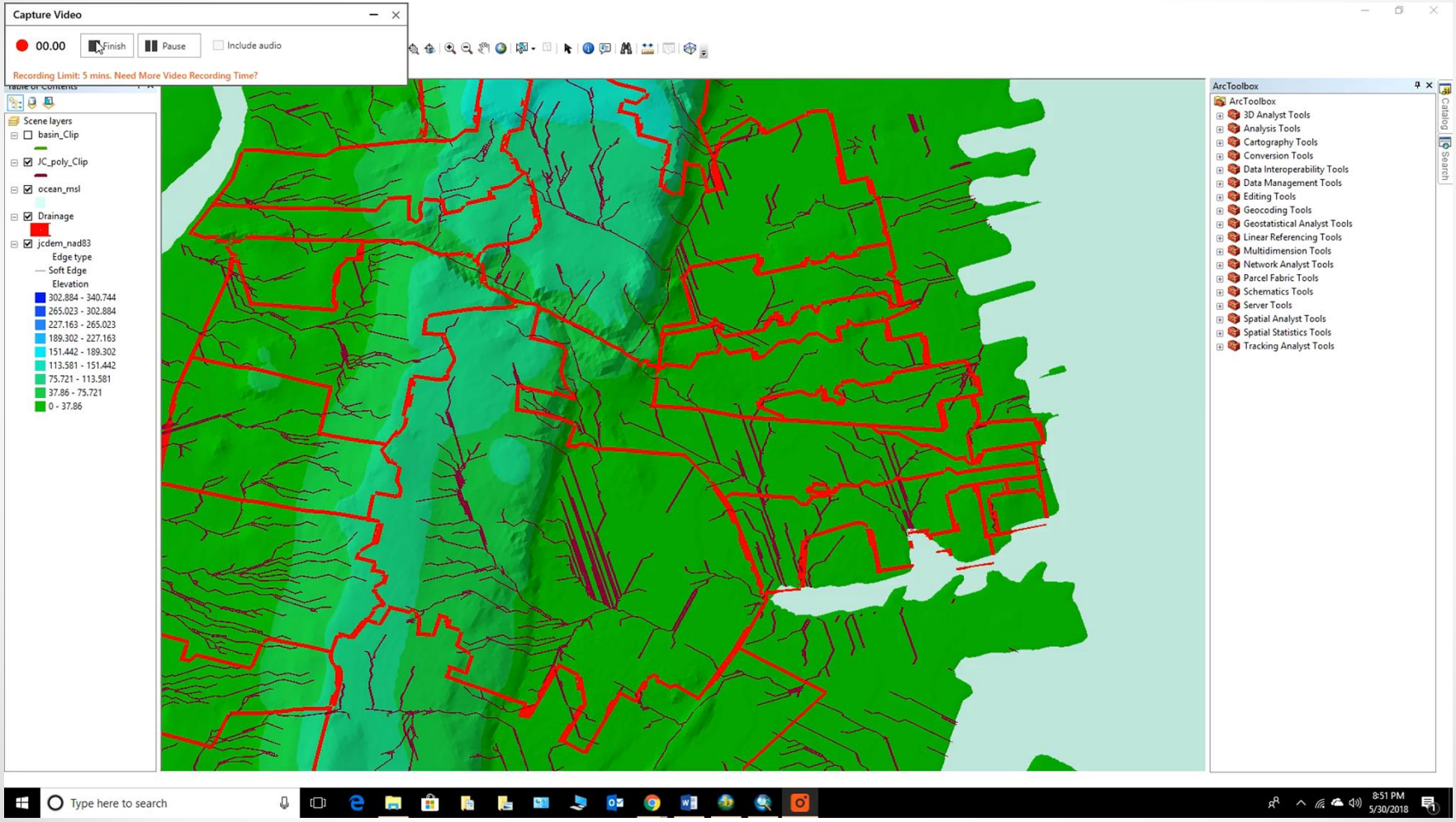
Sewer Districts & CSO Catchment Areas



Complaints, Green Spaces, Stormwater



3-D Topographical, Stormwater



Ways to Get Involved

- Join START - Contact Lindsey Sigmund at lsigmund@jcnj.org – Feb. 14
- Sewage Free Streets & Rivers Campaign
- Propose a GI green infrastructure in your park
- Look for local meetings on Green Infrastructure
  - Sustainable Jersey City's Feb. 5 meeting