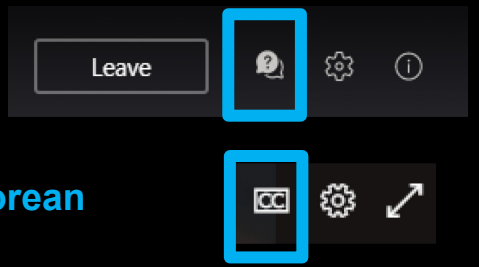
ON-LINE MEETING TECH SUPPORT

Teams Meeting Resources

+ All participants will be on mute for the meeting.

+ Question & Answer will be facilitated at the end of the meeting.
  Send us Your Questions by:
  Chat: Use the Teams Meeting Q&A.
  Click the Q&A Icon and type in Chat Window
  Email: rbd-meadowlands@dep.nj.gov



+ Click the CC for Closed Captioning in English/Spanish/Korean

Technical Troubleshooting Resources

+ Email: rbd-meadowlands@dep.nj.gov
+ View Project Information on the Website: www.rbd-meadowlands.nj.gov

REBUILDBYDESIGN

MEADOWLANDS

FINAL DESIGN MEETING

INTERNAL DRAFT FOR REVIEW

MAY 12, 2021

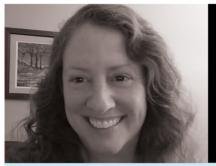
AECOM

AGENDA

1. Welcome + Introductions
2. Project History
3. Final Design
4. Moving Forward / Construction Phase
5. Project Conclusion

NJDEP TEAM

DENNIS REINKNECHT
NJDEP (presenter)



LINDA FISHER
NJDEP (presenter)

KIM MCEVOY
NJDEP

ALEXIS TAYLOR
NJDEP (presenter)

TAYLOR COPPA
NJDEP

SERGIO ABREU
NJDEP

PEG MCBRIEN
WSP BERGER

CLAYTON CARLISLE
WSP BERGER

DESIGN TEAM

CHRISTOPHER BENOSKY
Project Executive,
AECOM (presenter)

DAVE BLAIR
Project Manager,
AECOM (presenter)

ANNA HOCHHALTER
Landscape Architect,
AECOM (presenter)

STEVE BIUSO
Design Manager,
AECOM

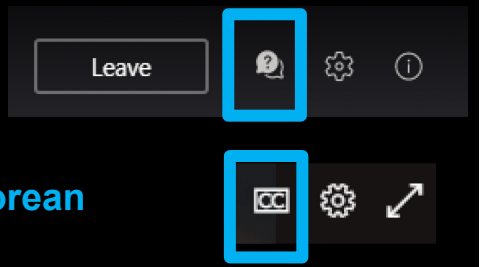
HOGAN EDELBERG
Landscape Architecture
and Urban Design, AECOM

ON-LINE MEETING TECH SUPPORT

Teams Meeting Resources

+ All participants will be on mute for the meeting.

+ Question & Answer will be facilitated at the end of the meeting.
  Send us Your Questions by:
  Chat: Use the Teams Meeting Q&A.
  Click the Q&A Icon and type in Chat Window
  Email: rbd-meadowlands@dep.nj.gov



+ Click the CC for Closed Captioning in English/Spanish/Korean

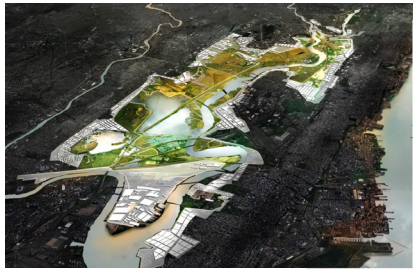
Technical Troubleshooting Resources

+ Email: rbd-meadowlands@dep.nj.gov
+ View Project Information on the Website: www.rbd-meadowlands.nj.gov

PROJECT HISTORY

CHRIS BENOSKY, AECOM

Rebuild by Design Competition + Award



REBUILD BY DESIGN COMPETITION PROPOSAL BY MIT CAU + ZUS + URBANISTEN

Rebuild by Design Meadowlands Purpose

Address flood risk

Increase resiliency of the communities and ecosystems

Reduce impacts to critical infrastructure, residences, businesses, and ecological resources

Rebuild by Design Meadowlands Need

Protect life, public health, and property

Increase **community resiliency**

Enhance water quality and protect ecological resources

Address systemic **inland flooding** & **coastal flooding** from storm surges

Integrate flood hazard risk reduction strategies with **civic, cultural, & recreational benefits**

2 Flooding Challenges

1

Challenges from

MAJOR STORM SURGE

2

Challenges from

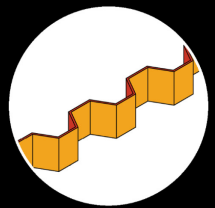
FREQUENT RAIN

2 Flooding Challenges

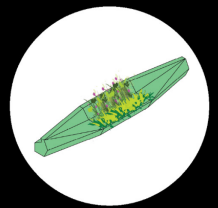
1

Challenges from

MAJOR STORM SURGE

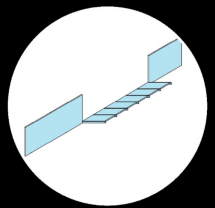


SHEET PILE WALLS



MULTIFUNCTIONAL WALLS

BERMS

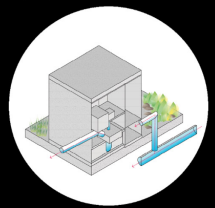


DEPLOYABLES

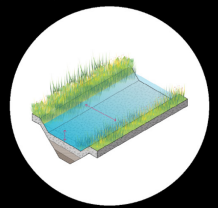
2

Challenges from

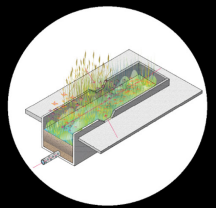
FREQUENT RAIN



GREY INFRASTRUCTURE



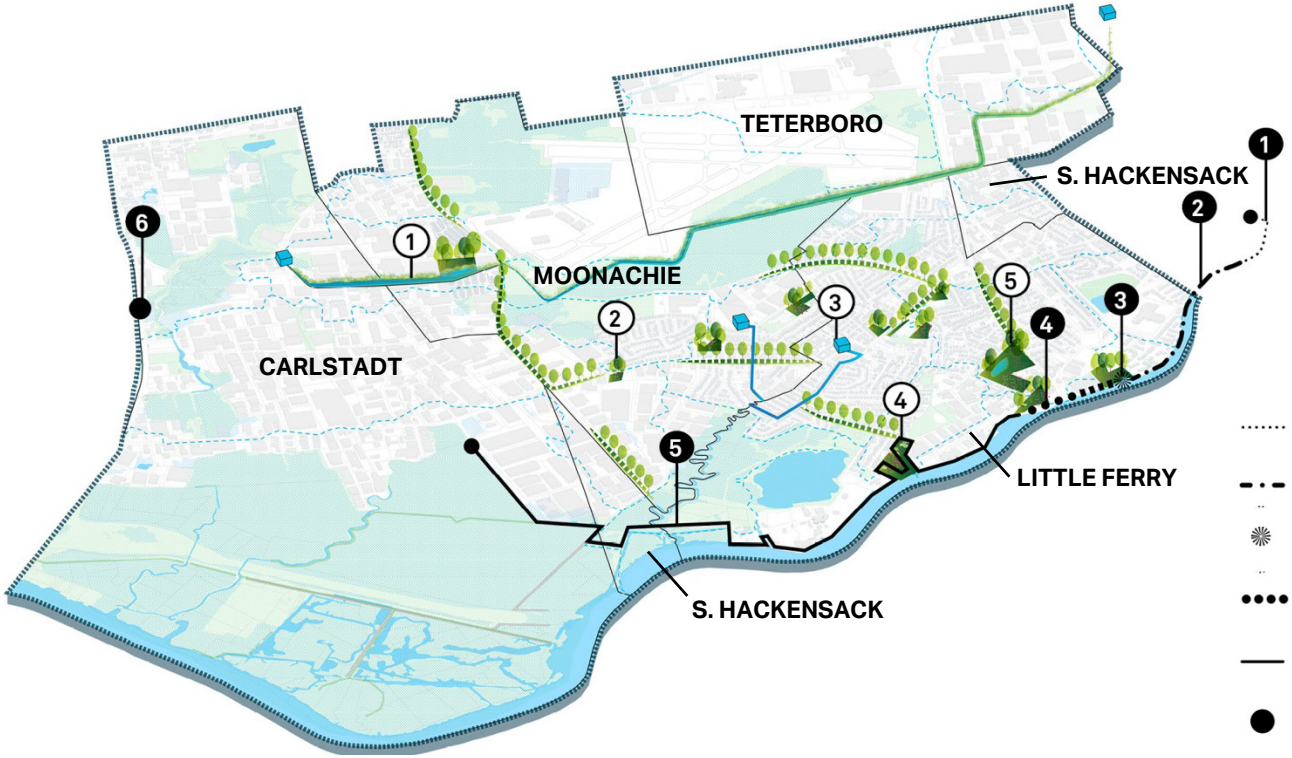
CHANNEL IMPROVEMENTS



GREEN INFRASTRUCTURE

PARKS + OPEN SPACE

The preferred plan addresses both challenges



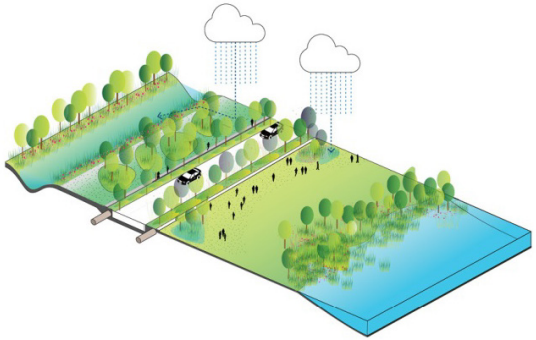
Stormwater Management

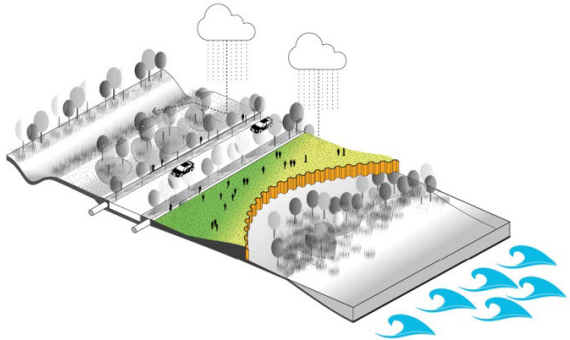
1. East Riser Channel Improvements + Enhanced Wetland Open Space
2. Green Infrastructure + Enhanced Existing Open Space
3. Force Main + Public Facility Improvements
4. Green Infrastructure + Enhanced Open Space
5. GI Improvements to Existing Park + 3 New Wetland / Open Spaces

Storm Surge Protection

1. Existing Riverwalk
2. Sheet Pile Cantilever
3. Berms at Fluvial Park
4. Cantilever Walkway
5. Sheet pile or Floodwall
6. Surge Barrier

A hybrid design – The Build + Future Plan is the Preferred Alternative

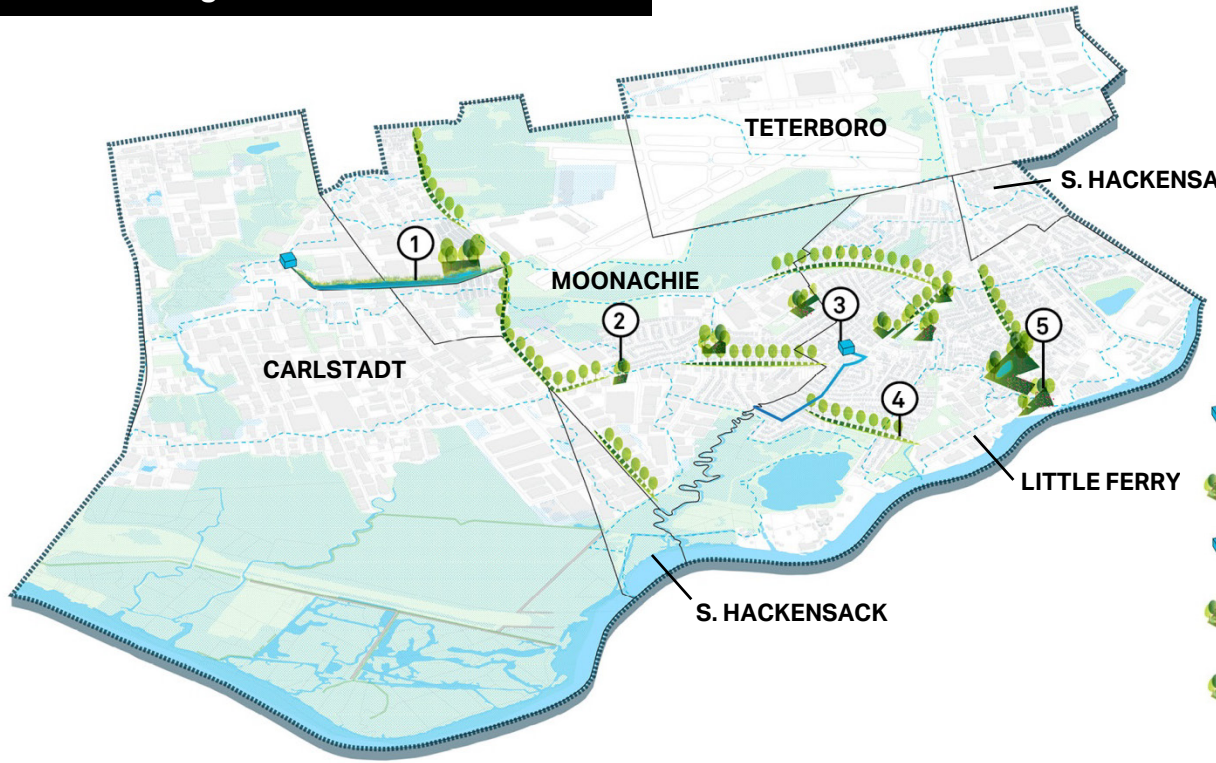




The *Build Plan* represents a feasible project that can be **constructed by 2022.** Components include flood reduction strategies to address frequent rain flooding

Components that were not selected for the *Build Plan* became elements of a *Future Plan*. These elements could **be implemented** by others **over time** as new funding sources become available

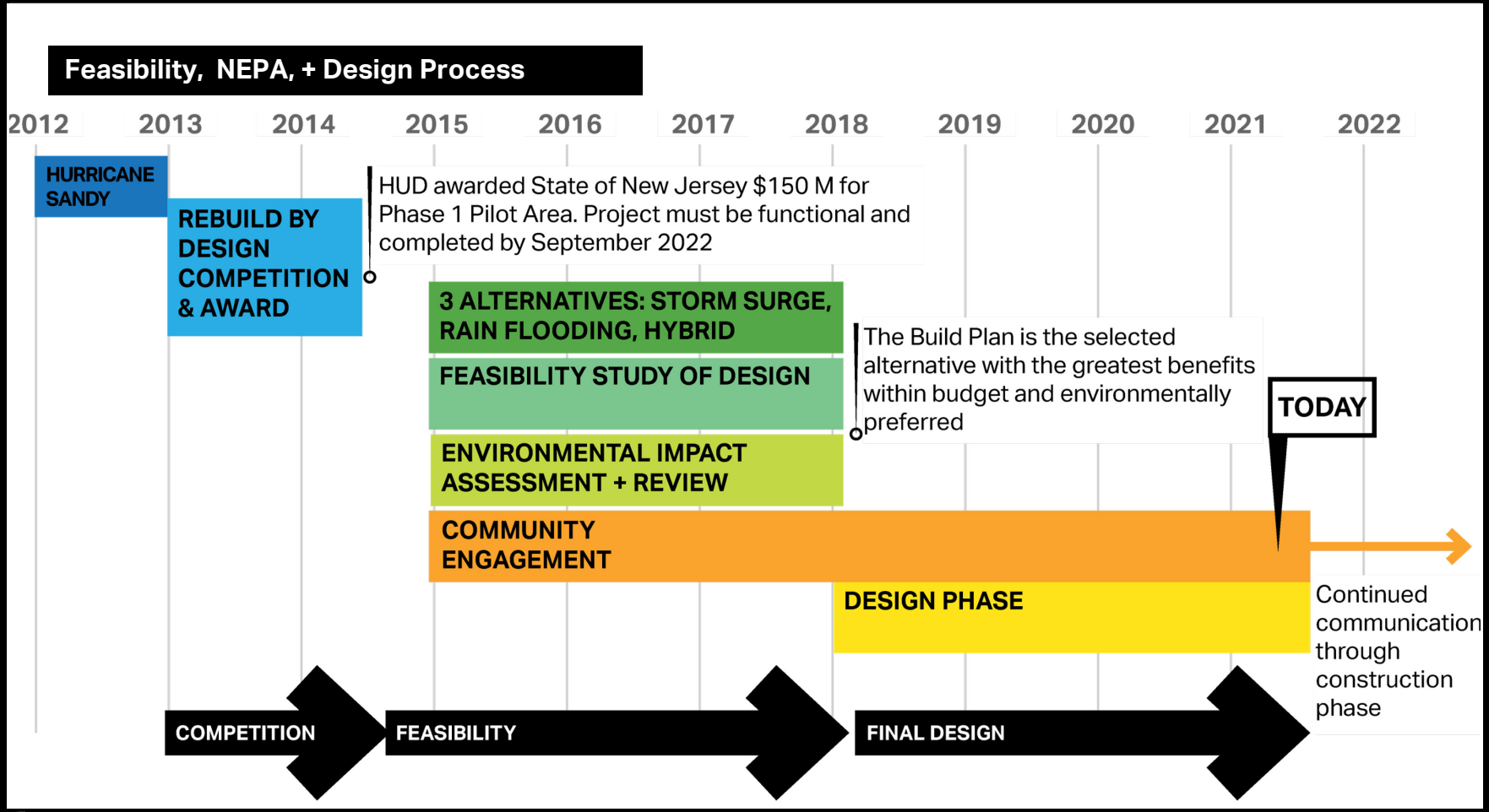
The Build Plan is the selected alternative and focuses on addressing frequent rainfall flooding



1. Pump station +Channel Improvements + New Park
2. Green Infrastructure + New Park
3. Pump Station + Force Main + Public Facility Improvements
4. Green Infrastructure
5. Park Improvements + 1 New Park + Green Infrastructure

Stormwater Management Features

1. East Riser: Channel Improvements + Enhanced Wetland Open Space
2. Avanti Park: Street Green Infrastructure + Enhanced Open Space
3. Losen Slote: Force Main + Public Facility Improvements
4. Green Infrastructure + Enhanced Wetland Open Space
5. GI Improvements to Willow Lake Park + 1 New Wetland / Open Space along Hackensack River

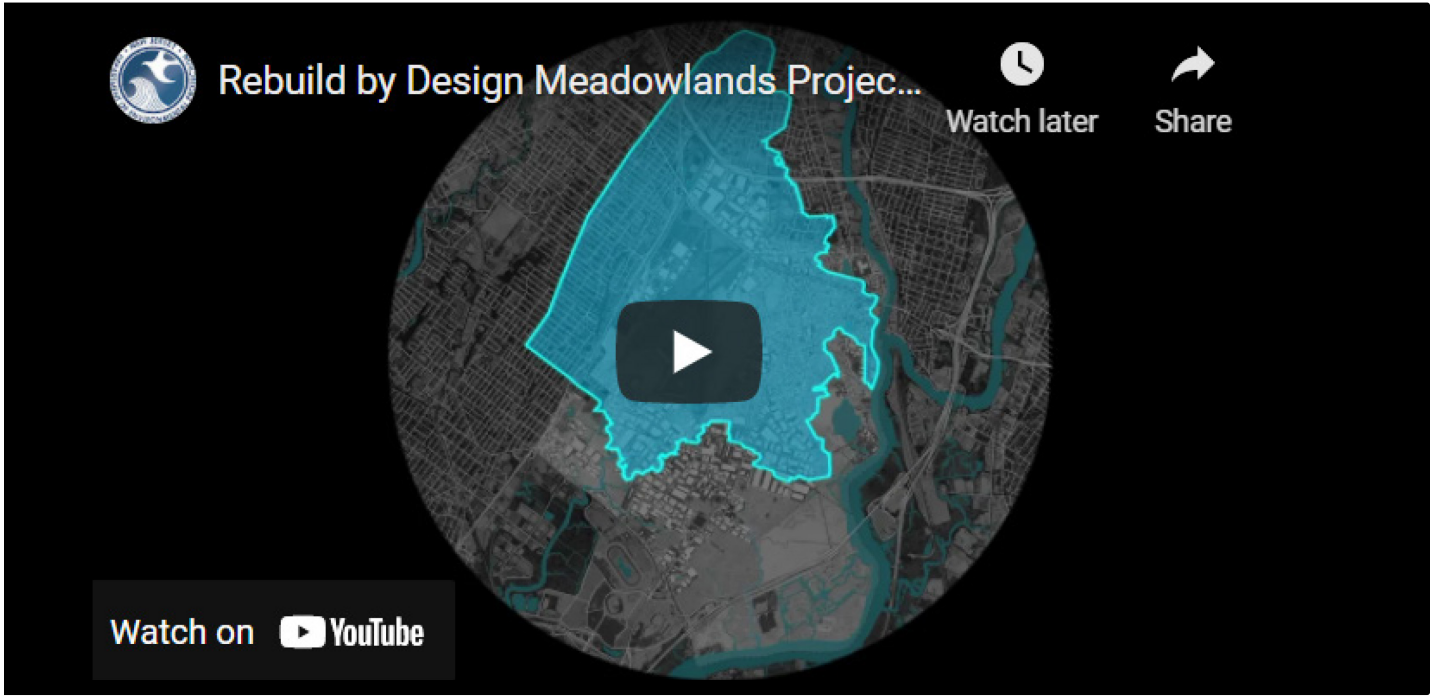

Feasibility, NEPA, + Design Process
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
HURRICANE SANDY
REBUILD BY DESIGN COMPETITION & AWARD
HUD awarded State of New Jersey $150 M for Phase 1 Pilot Area. Project must be functional and completed by September 2022
3 ALTERNATIVES: STORM SURGE, RAIN FLOODING, HYBRID
FEASIBILITY STUDY OF DESIGN
The Build Plan is the selected alternative with the greatest benefits within budget and environmentally preferred
TODAY
ENVIRONMENTAL IMPACT ASSESSMENT + REVIEW
COMMUNITY ENGAGEMENT
DESIGN PHASE
Continued communication through construction phase
COMPETITION
FEASIBILITY
FINAL DESIGN

Multi-year Design Process Overview

EDUCATE

ENGAGE

LEVERAGE

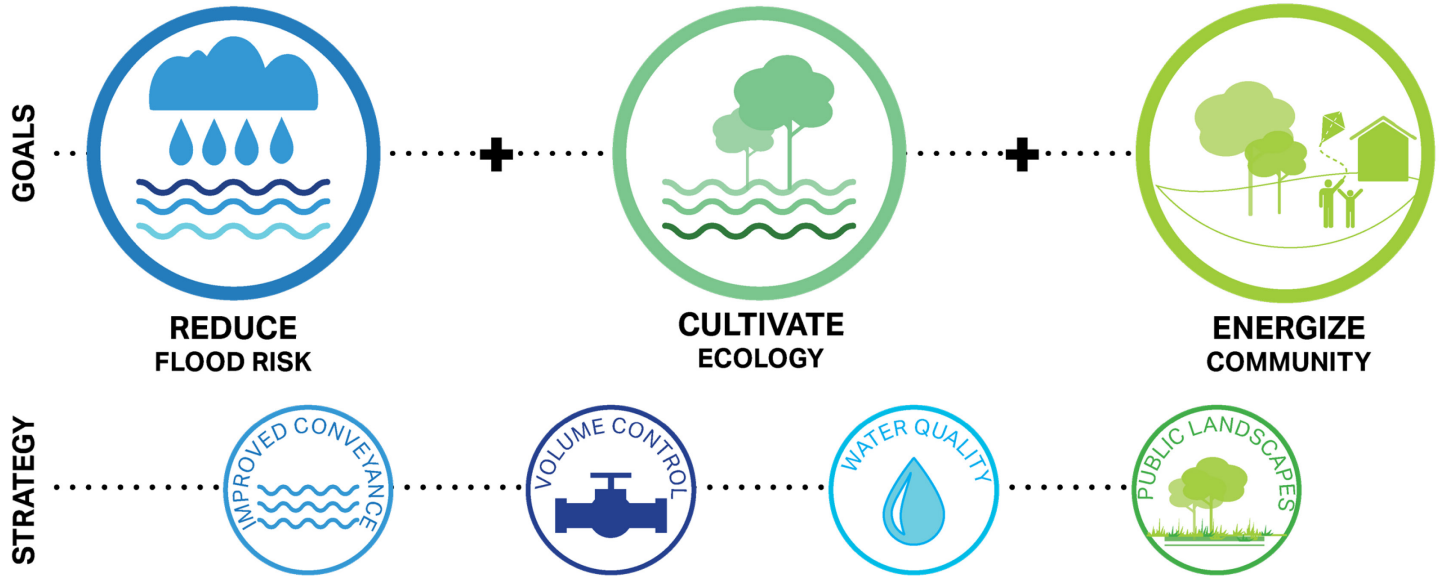


View and share the project animation on YouTube:
https://www.youtube.com/watch?v=Q3X5U4CTIxo&t=2s

FINAL DESIGN

ANNA HOCHHALTER, AECOM
DAVID BLAIR, AECOM

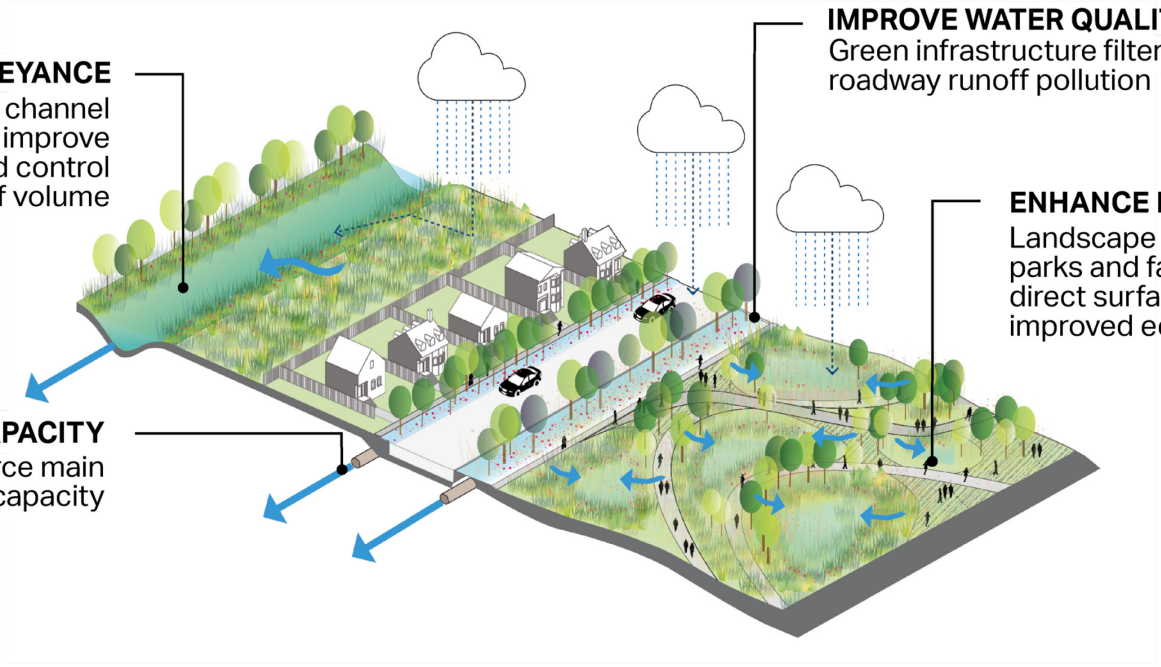
The RBDM project meets the Community Development Block Group Disaster Recovery program goals



Large infrastructure + landscape improvements reduce flood risk + provide ecological and social benefits

IMPROVE CONVEYANCE
Pump stations and channel improvements improve conveyance and control runoff volume

INCREASE CAPACITY
New force main increases capacity



IMPROVE WATER QUALITY
Green infrastructure filters roadway runoff pollution

ENHANCE PUBLIC REALM
Landscape improvements to parks and facilities filter and direct surface flow and provide improved ecology and recreation

Flood Risk Reduction Strategy


Submersible Pump

PUMP STATIONS
Provide additional force to stormwater conveyance

STORMWATER FORCE MAIN
Increases capacity for conveyance

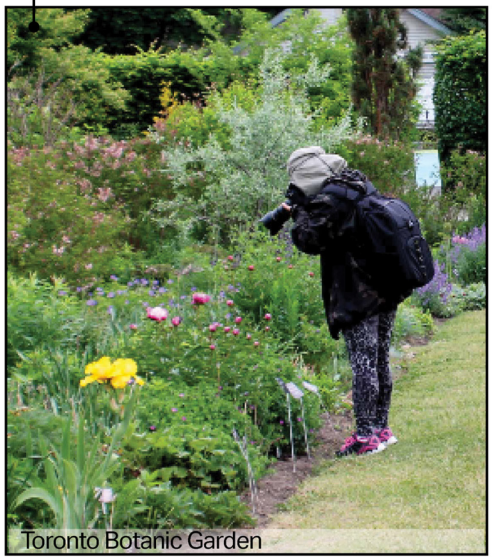

Miami, FL

CHANNEL IMPROVEMENTS
Dredging + widening to improve conveyance


Andre Brook, Tarrytown, NY

Landscape + Public Realm Strategy

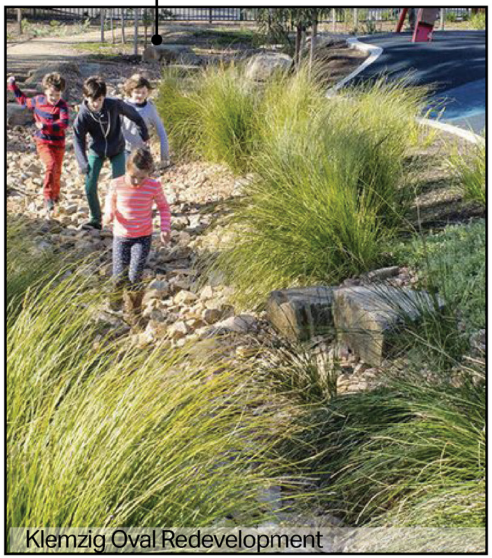
NATIVE PLANTING
Planting native species improves ecological biodiversity and improves rainwater uptake


Toronto Botanic Garden

GREEN INFRASTRUCTURE
Filtering and slowing stormwater to improve water quality + reduce the burden on the drainage system

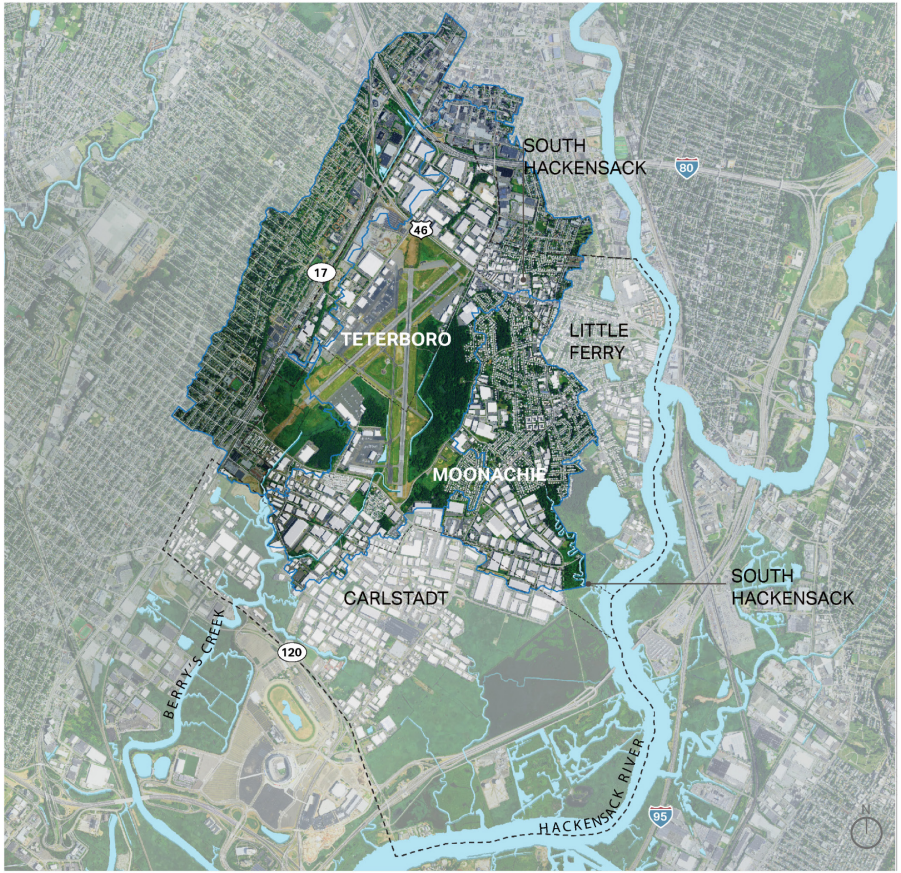

Portland, OR

IMPROVED + NEW PARKS
Designing ecological, community + recreational benefits


Klemzig Oval Redevelopment

Modeling to verify flood-risk reduction

- 6 Drainage Basins: 4,400 acres of drainage area and 69 miles of stormwater pipes
- Cross-Basin Flow: During large rain events, water from some watersheds cross into others further compounding the drainage challenge
- Existing Wetlands: 35% of the project area is protected existing wetlands



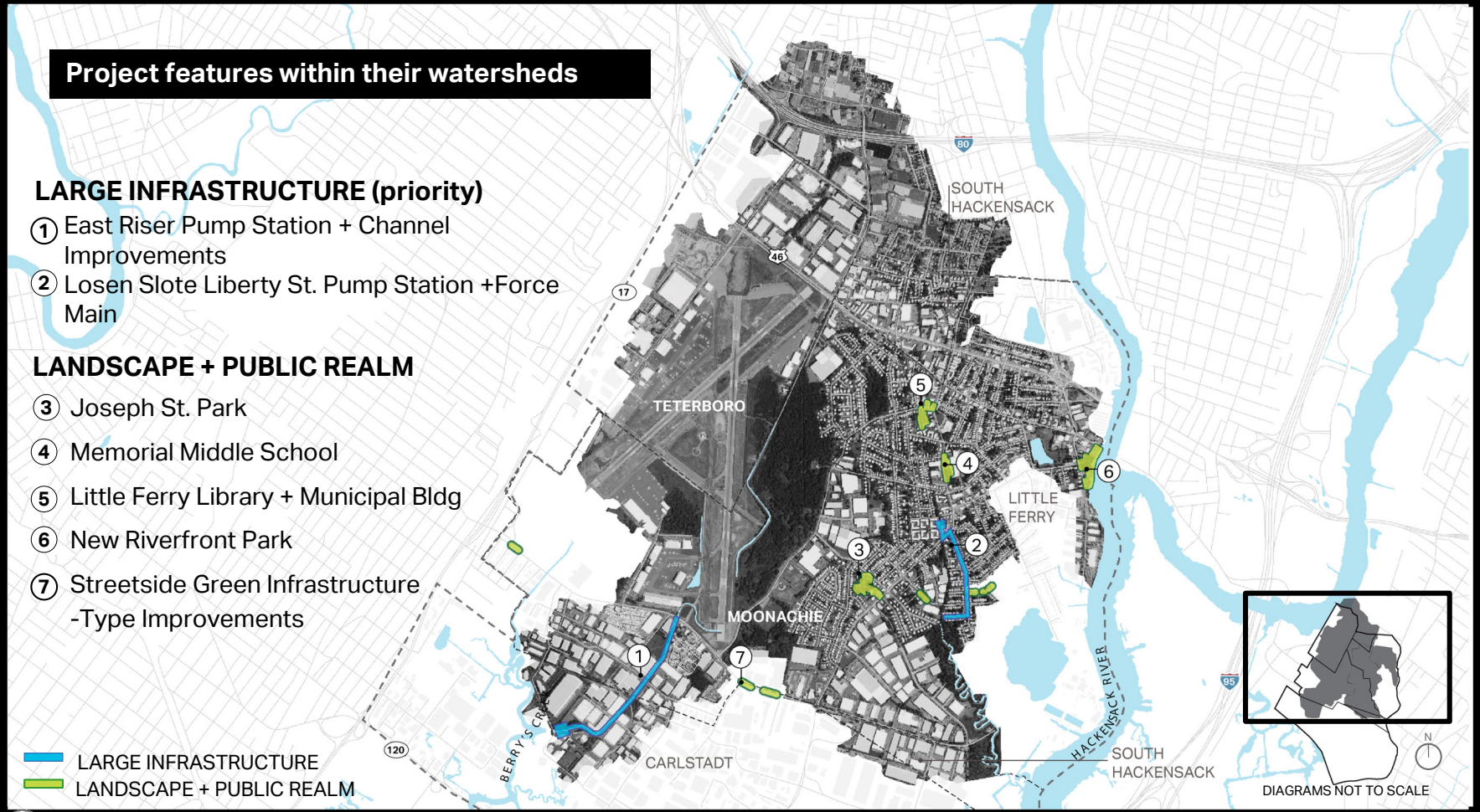
Project features within their watersheds

LARGE INFRASTRUCTURE (priority)

1. East Riser Pump Station + Channel Improvements
2. Losen Slote Liberty St. Pump Station +Force Main

LANDSCAPE + PUBLIC REALM

3. Joseph St. Park
4. Memorial Middle School
5. Little Ferry Library + Municipal Bldg
6. New Riverfront Park
7. Streetside Green Infrastructure -Type Improvements



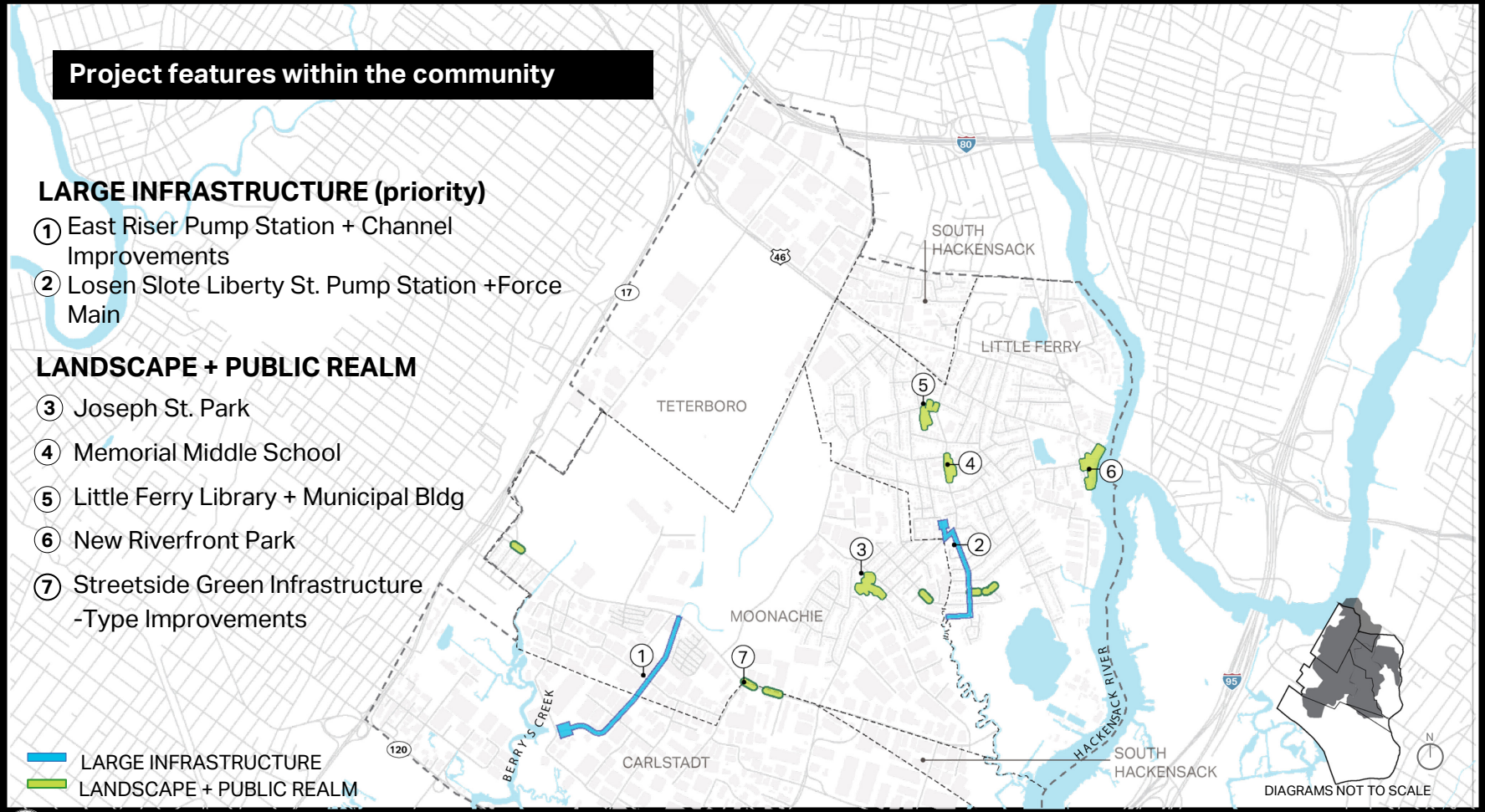
Project features within the community

LARGE INFRASTRUCTURE (priority)

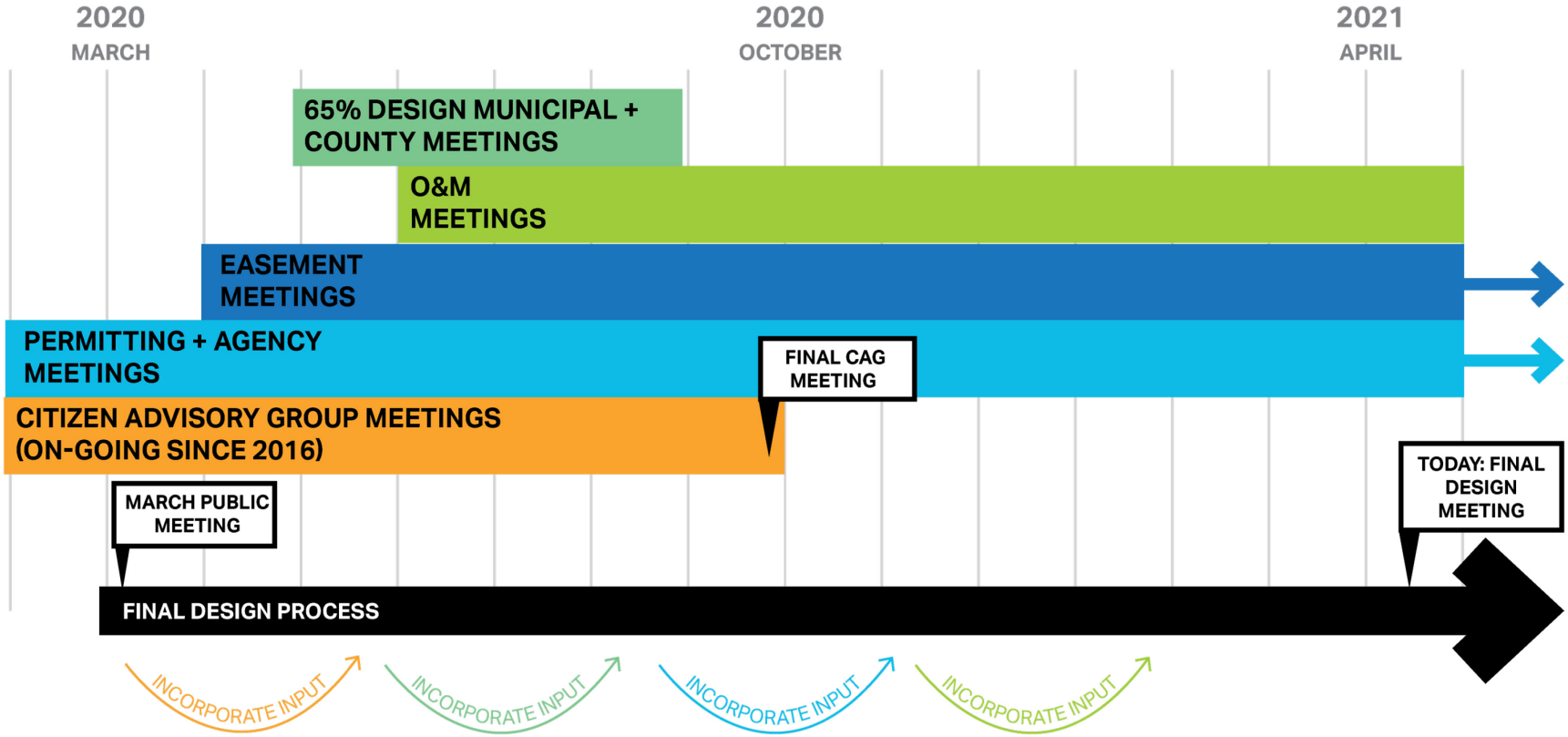
1. East Riser Pump Station + Channel Improvements
2. Losen Slote Liberty St. Pump Station +Force Main

LANDSCAPE + PUBLIC REALM

3. Joseph St. Park
4. Memorial Middle School
5. Little Ferry Library + Municipal Bldg
6. New Riverfront Park
7. Streetside Green Infrastructure -Type Improvements

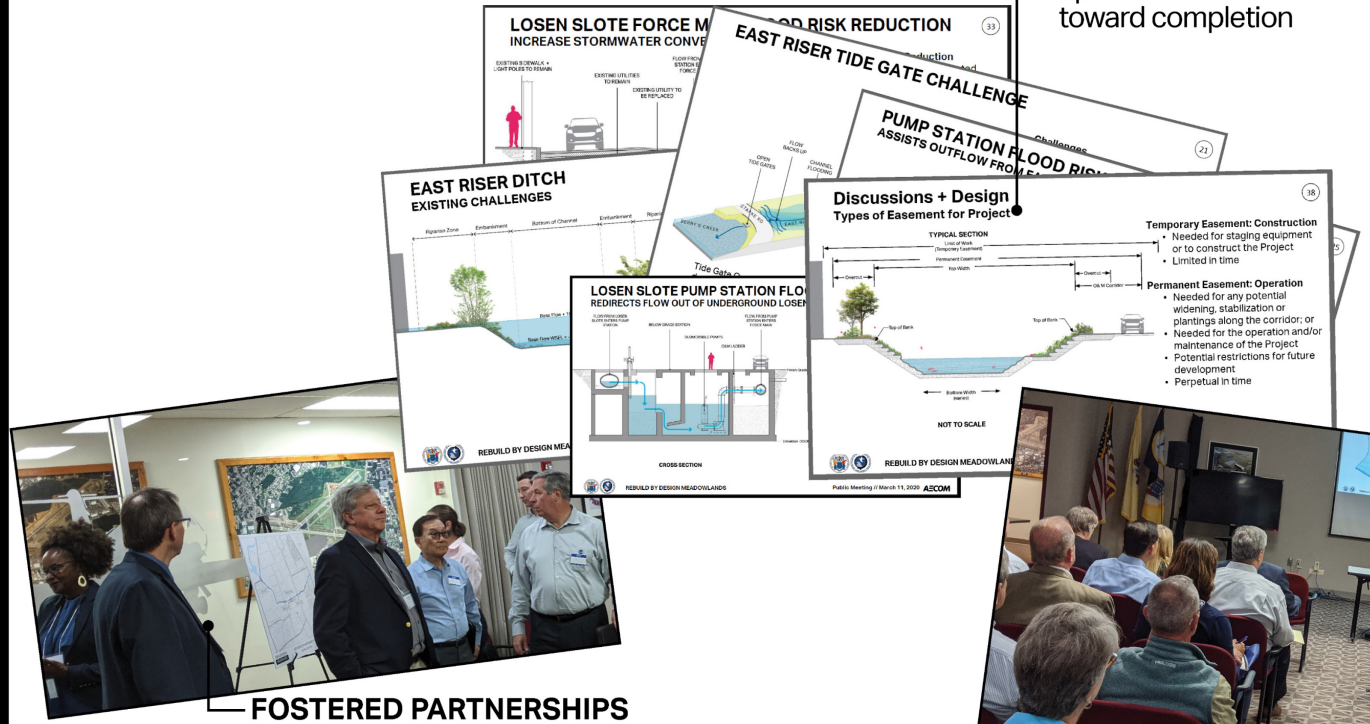


Updates since last Public Meeting



Flood-risk reduction community discussions

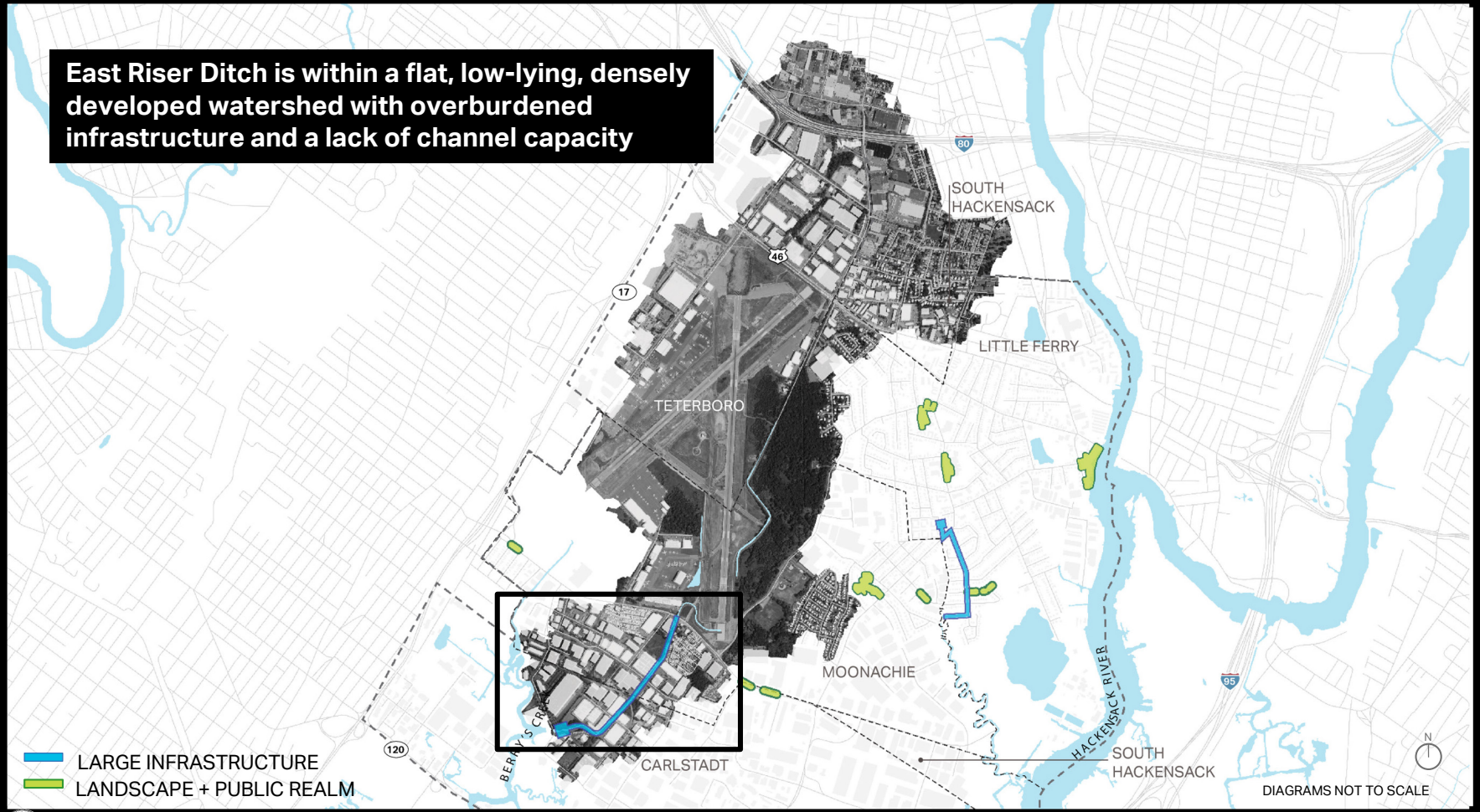
CONTINUED THE CONVERSATION
Frequent meetings provided project updates and discussions on best steps toward completion

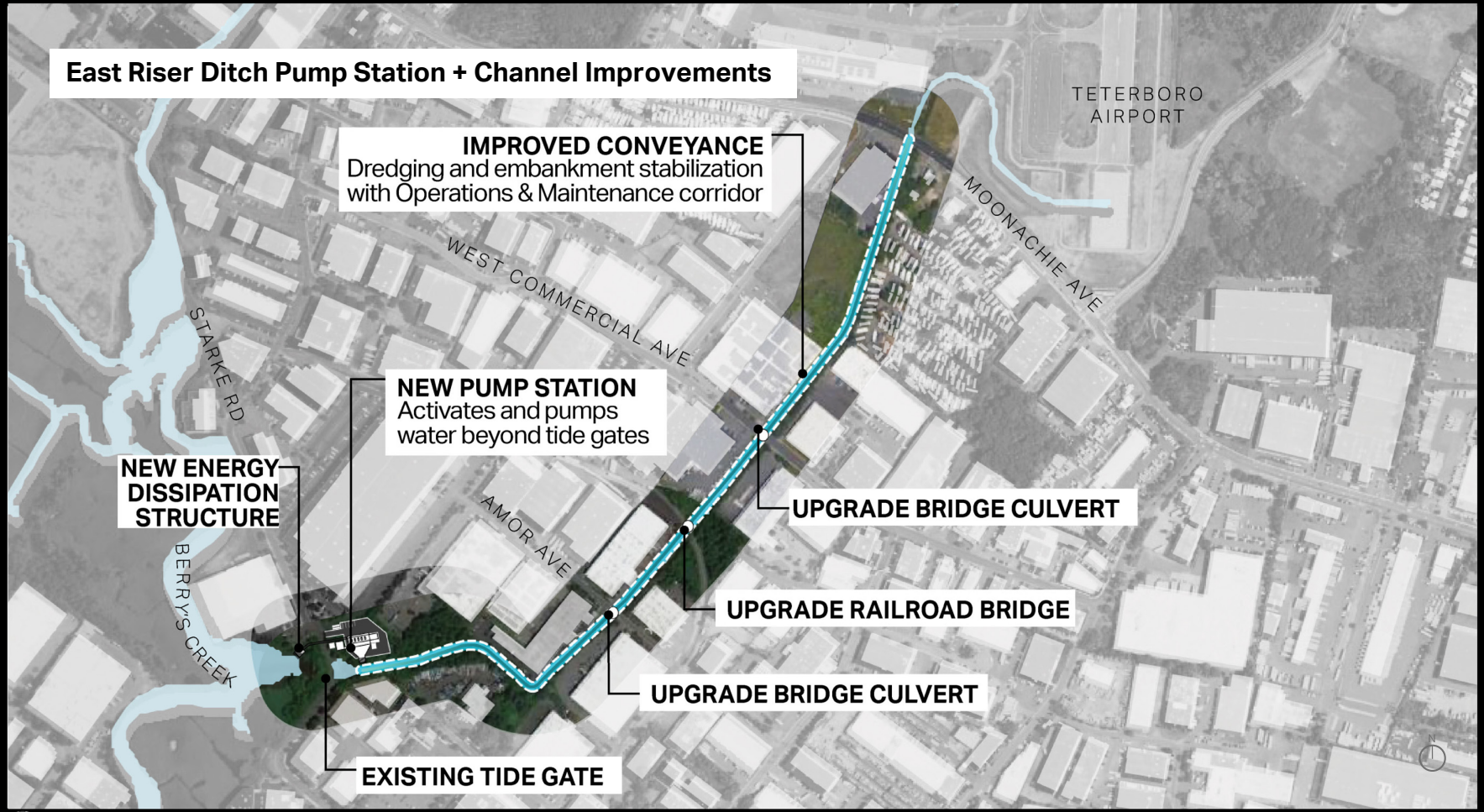


INFORMATIVE
Project team presented information about the project performance

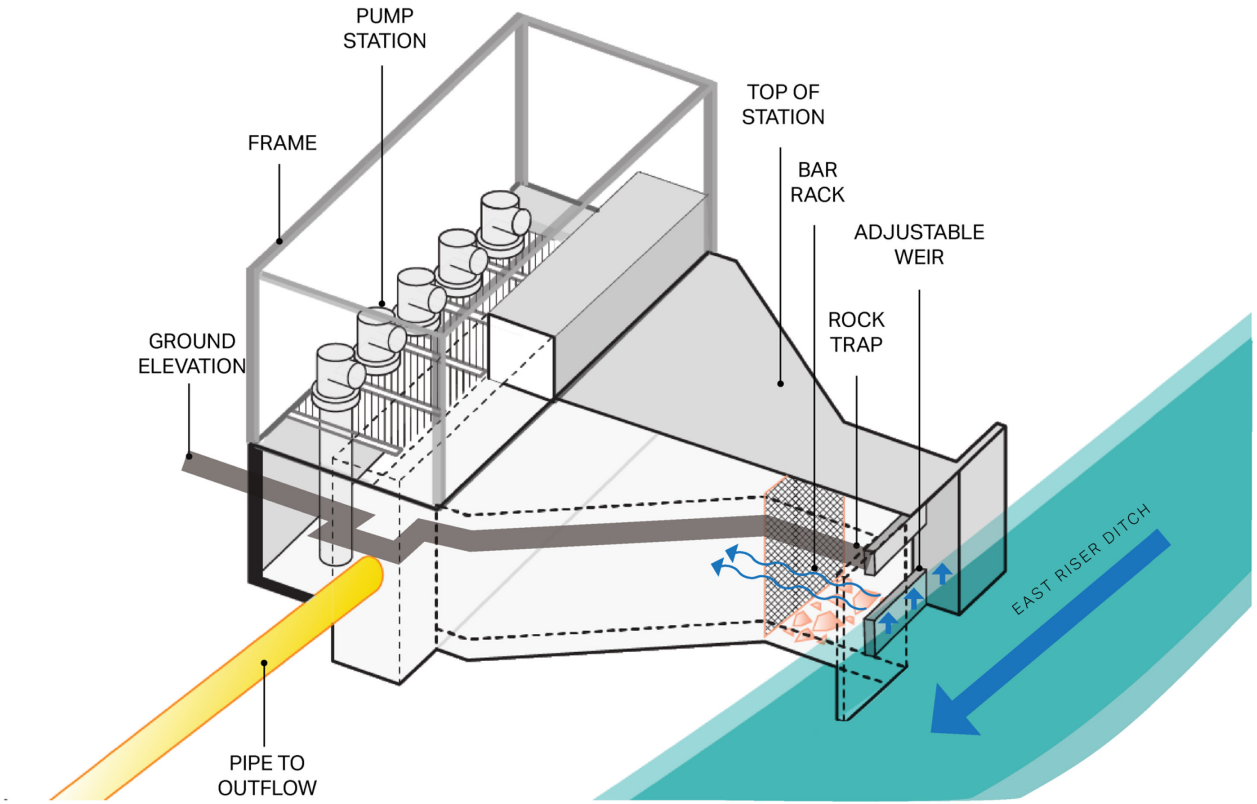
FOSTERED PARTNERSHIPS
Meet with Municipalities, State and Federal Agencies to discuss proposed designs and long-term maintenance needs

East Riser Ditch is within a flat, low-lying, densely developed watershed with overburdened infrastructure and a lack of channel capacity

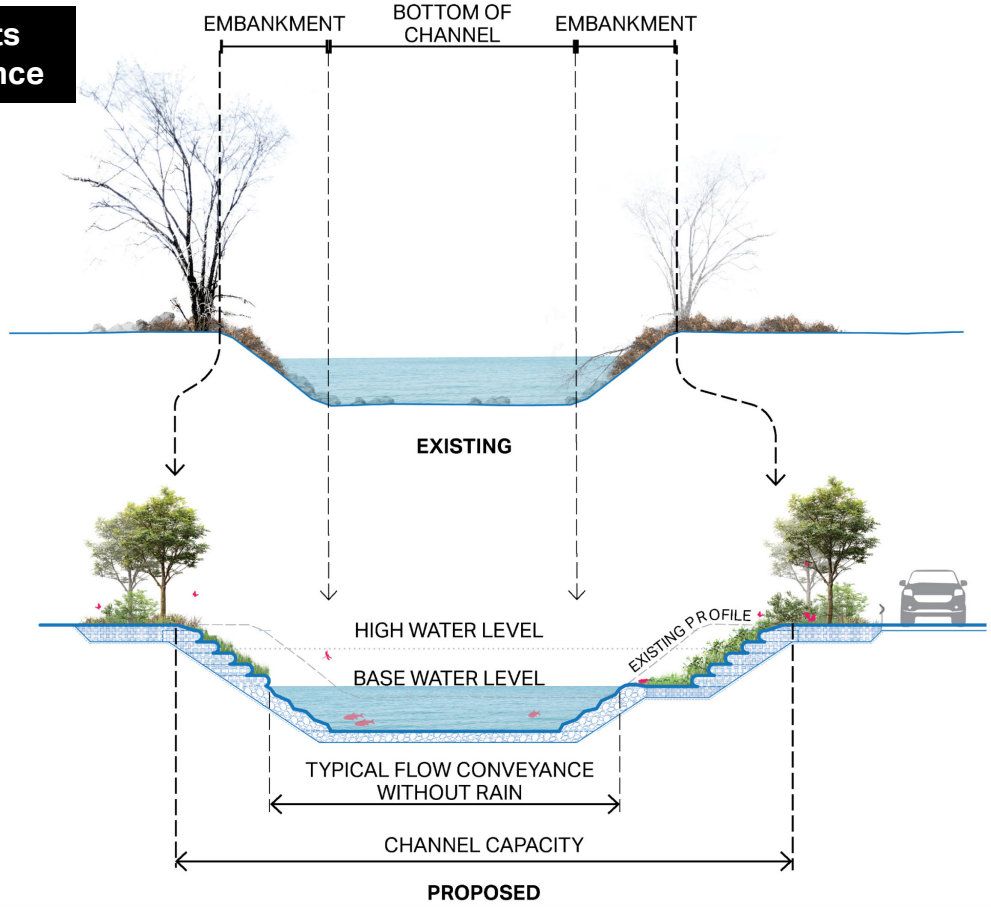



East Riser Ditch Pump Station + Channel Improvements
IMPROVED CONVEYANCE
Dredging and embankment stabilization with Operations & Maintenance corridor
NEW PUMP STATION
Activates and pumps water beyond tide gates
NEW ENERGY DISSIPATION STRUCTURE
UPGRADE BRIDGE CULVERT
UPGRADE RAILROAD BRIDGE
UPGRADE BRIDGE CULVERT
EXISTING TIDE GATE
TETERBORO AIRPORT
MOONACHIE AVE
WEST COMMERCIAL AVE
STARKE RD
AMOR AVE
BERRY'S CREEK

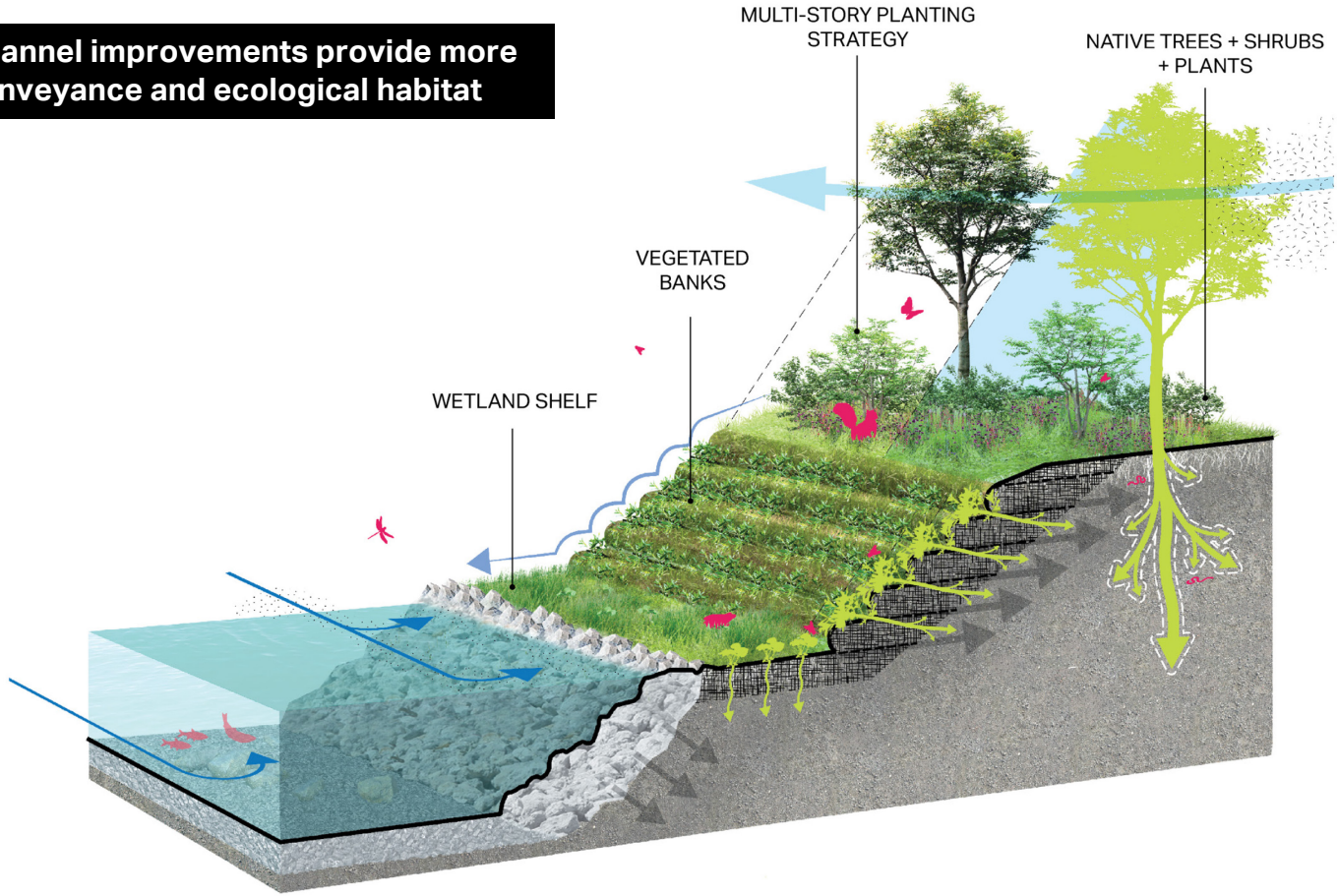
Pump Station controls the volume of water in the channel



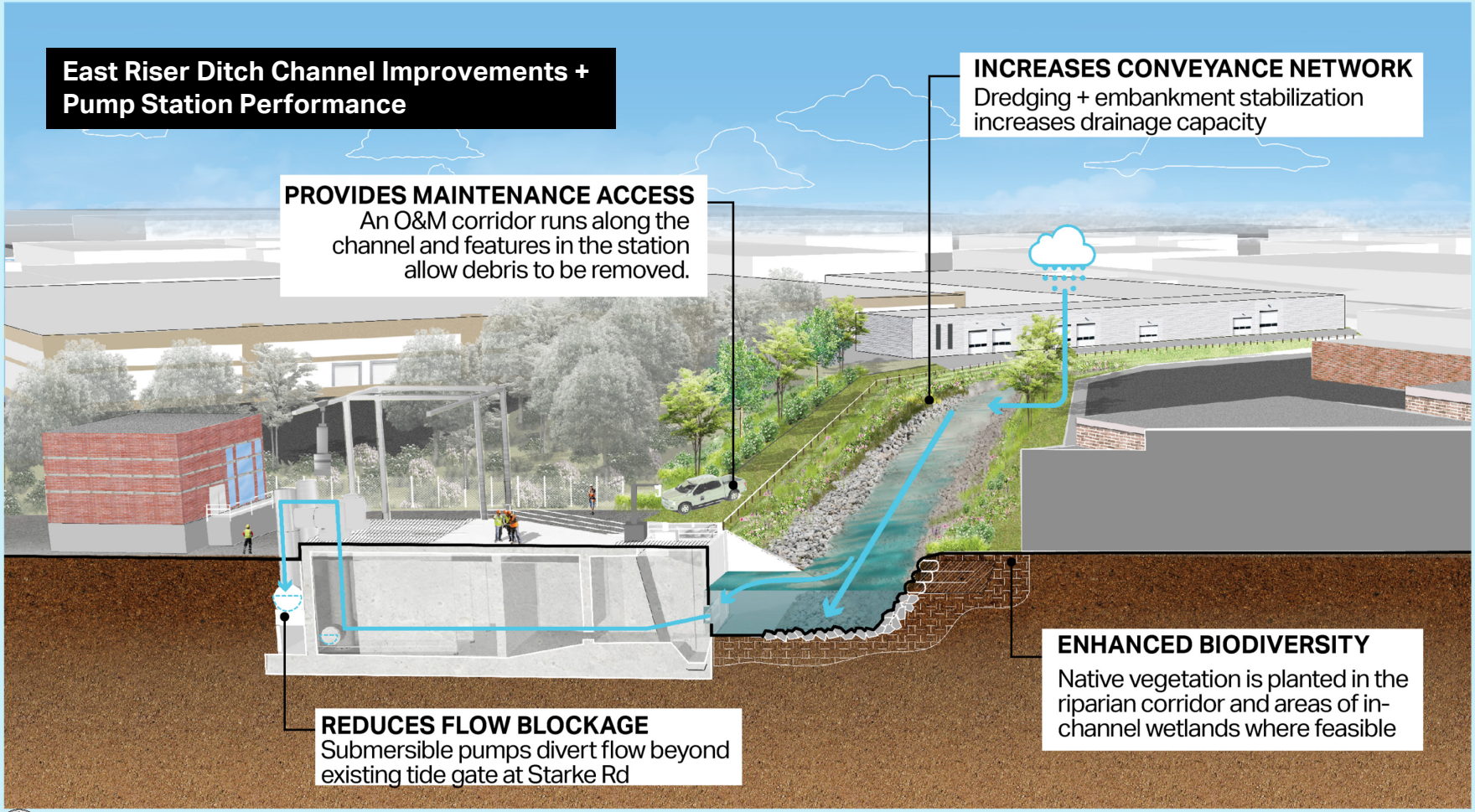
Channel Improvements create more conveyance



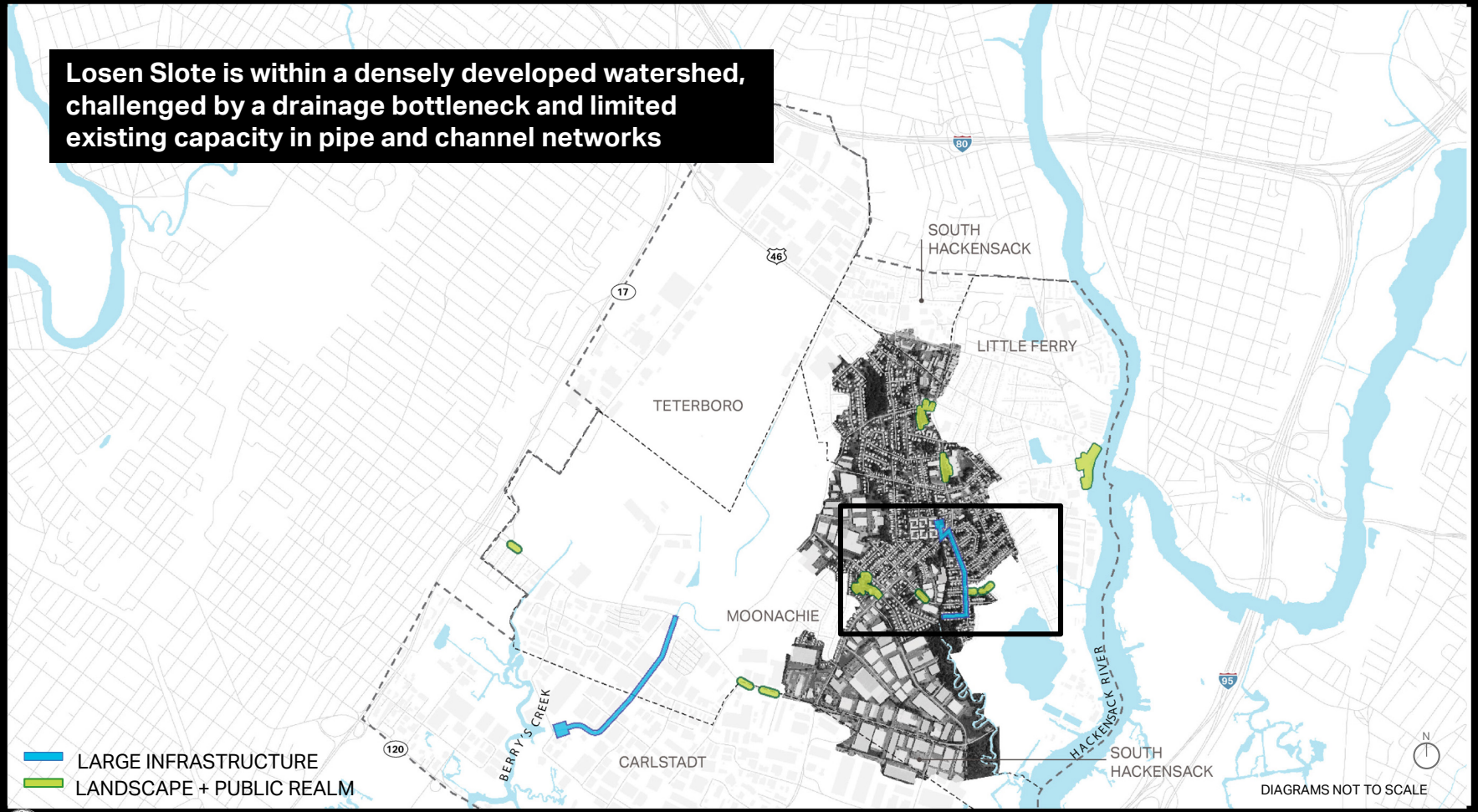
Channel improvements provide more conveyance and ecological habitat

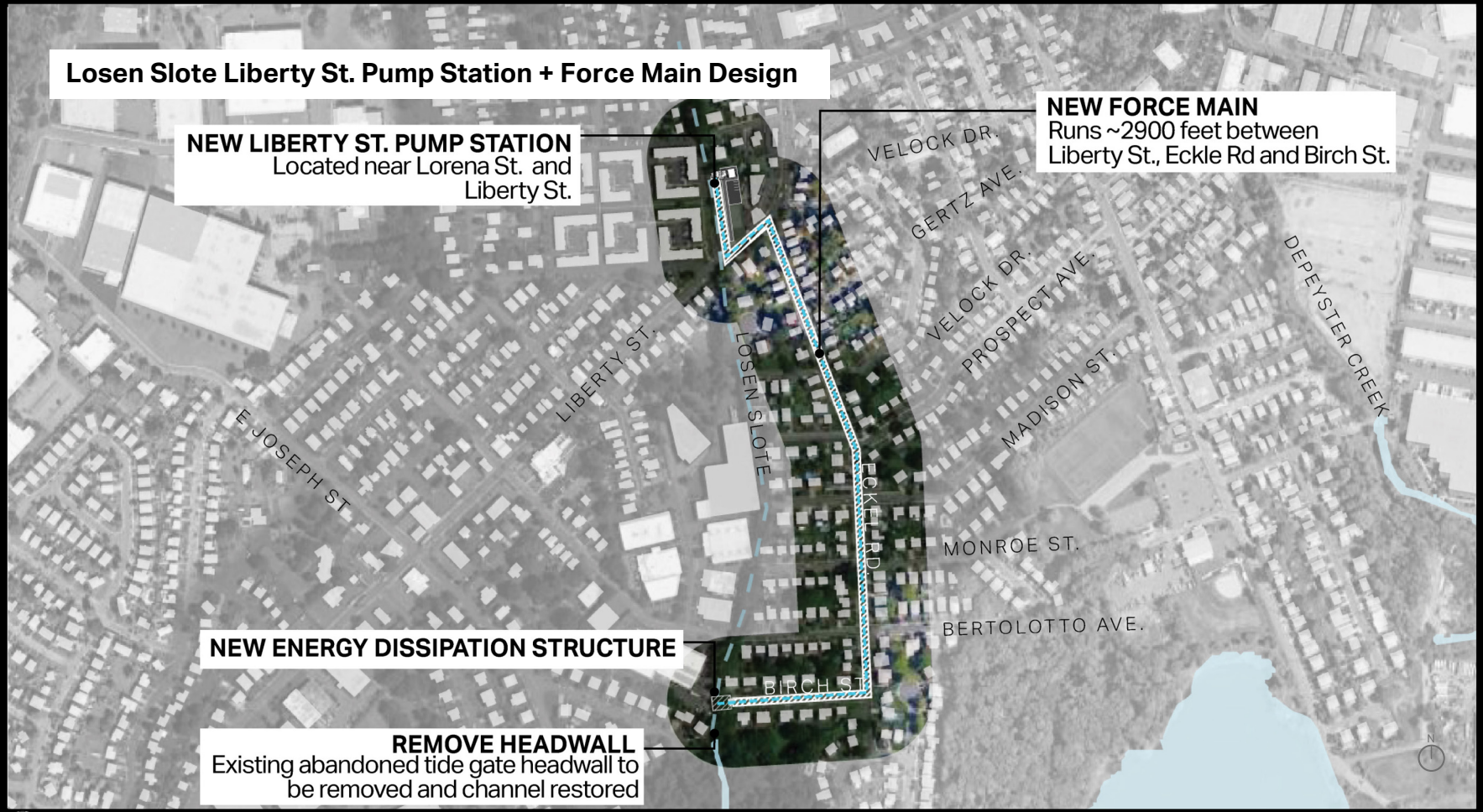


East Riser Ditch Channel Improvements + Pump Station Performance

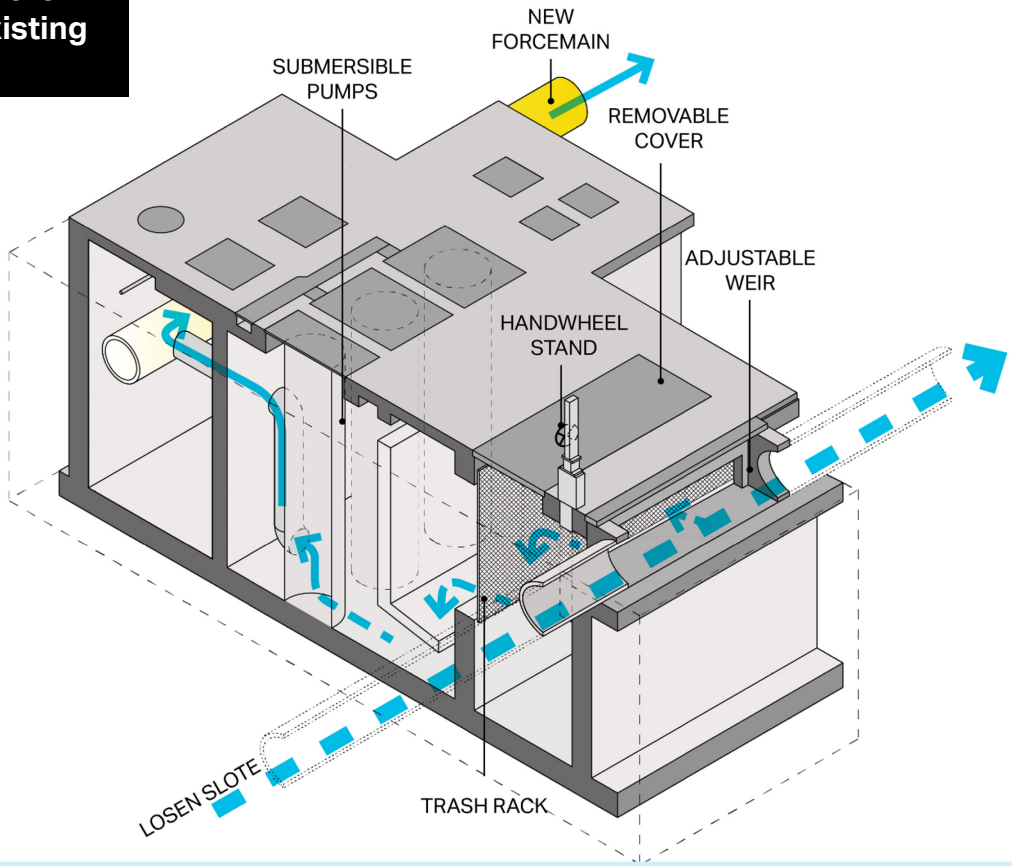


Losen Slote is within a densely developed watershed, challenged by a drainage bottleneck and limited existing capacity in pipe and channel networks




Losen Slote Liberty St. Pump Station + Force Main Design
NEW LIBERTY ST. PUMP STATION
Located near Lorena St. and Liberty St.
NEW FORCE MAIN
Runs ~2900 feet between Liberty St., Eckle Rd and Birch St.
NEW ENERGY DISSIPATION STRUCTURE
REMOVE HEADWALL
Existing abandoned tide gate headwall to be removed and channel restored
VELOCK DR.
GERTZ AVE.
VELOCK DR.
PROSPECT AVE.
MADISON ST.
DEPEYSTER CREEK
LIBERTY ST.
E JOSEPH ST
LOSEN SLOTE
ECKEL RD.
MONROE ST.
BERTOLOTTO AVE.
BIRCH ST
N

Pump Station controls the water volume in the existing drainage system

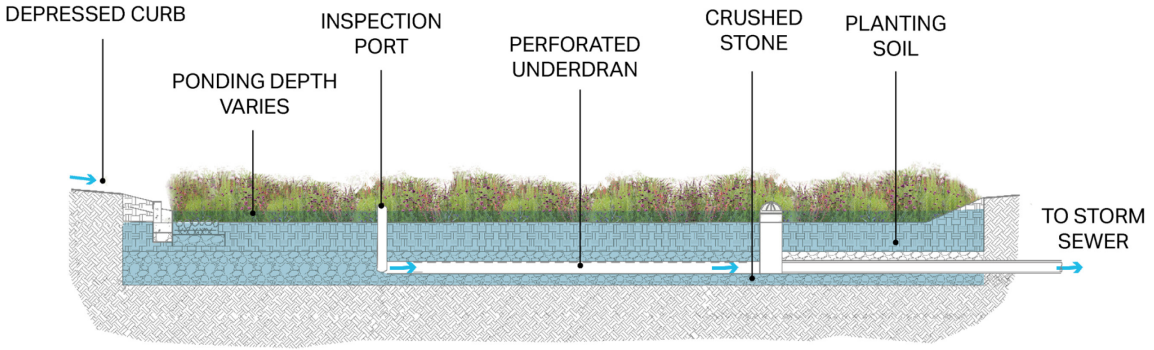


A biofilter and native planting improve water quality and ecology

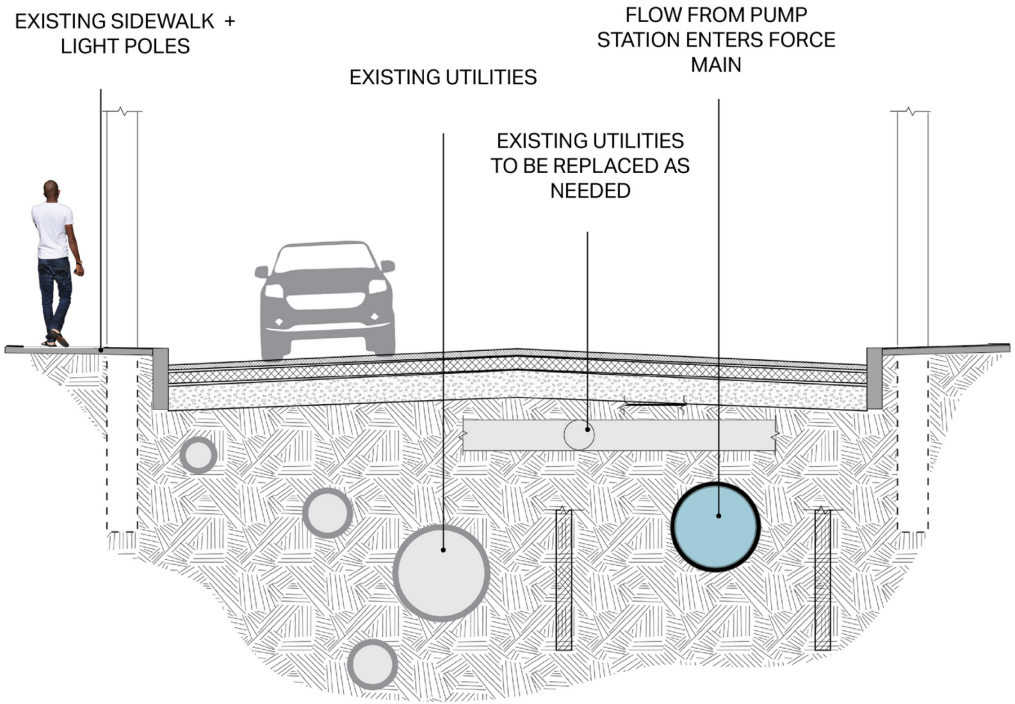
BLUE VERVAIN

BUTTONBUSH

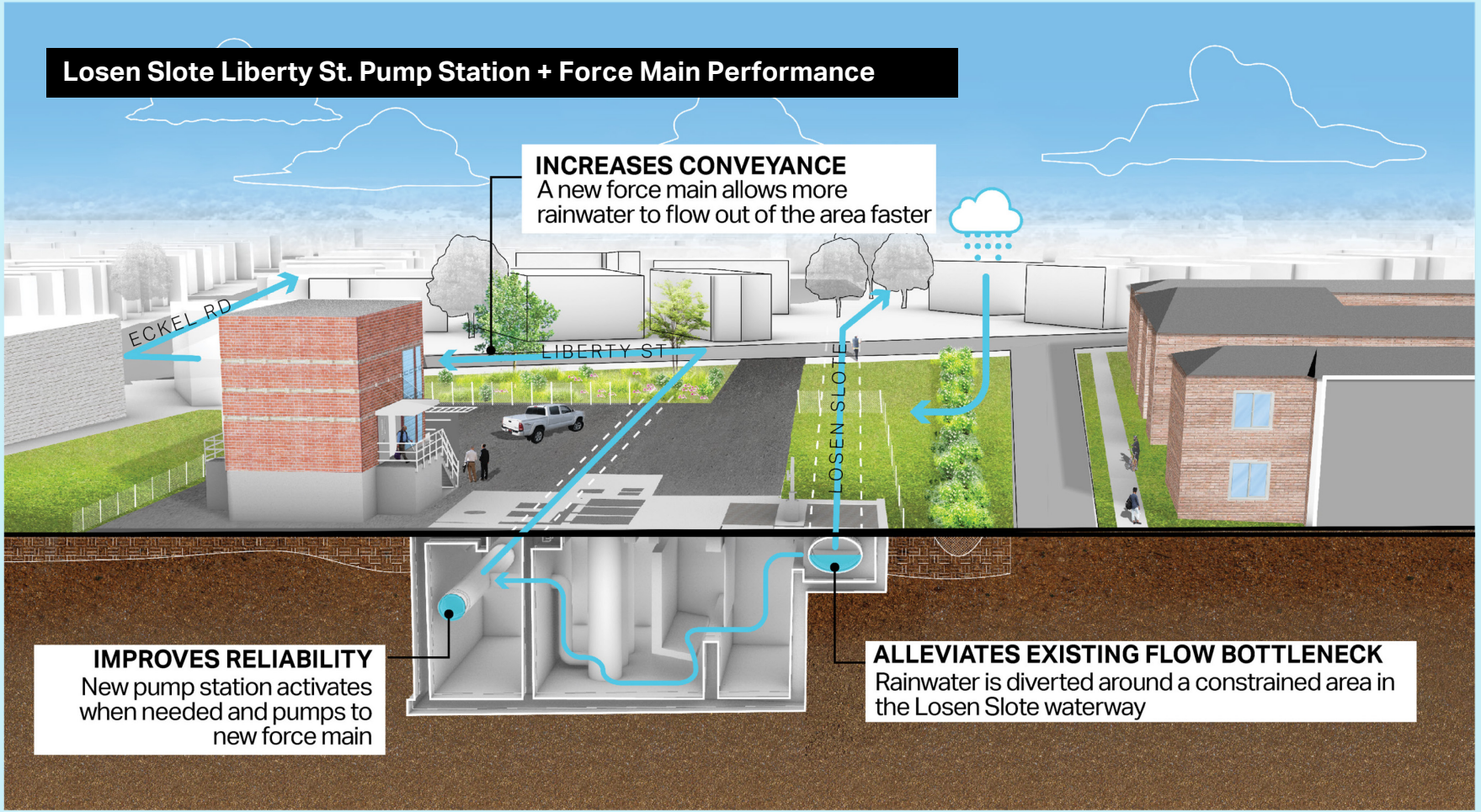
GREY BIRCH



A new force main provides more network capacity



Losen Slote Liberty St. Pump Station + Force Main Performance

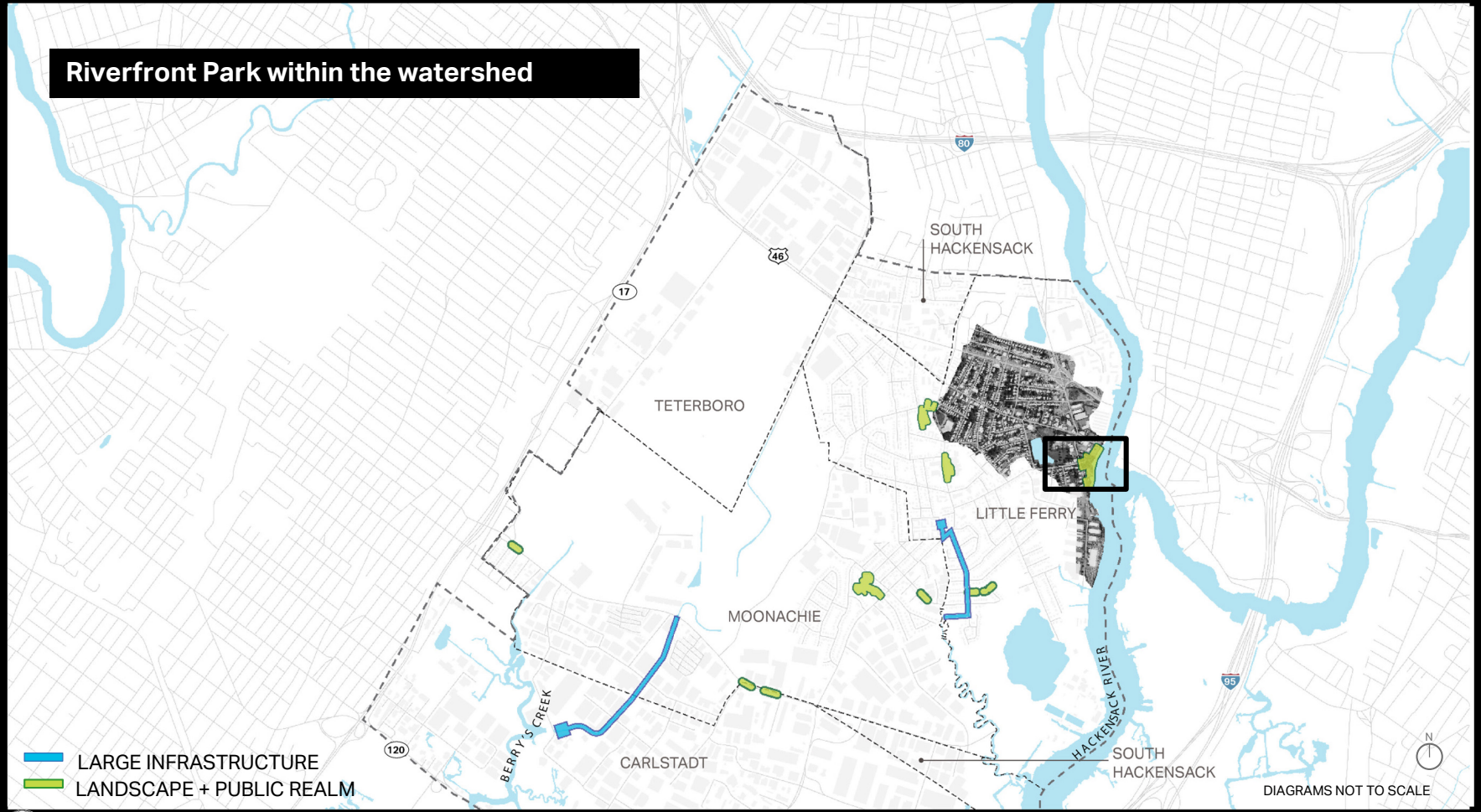


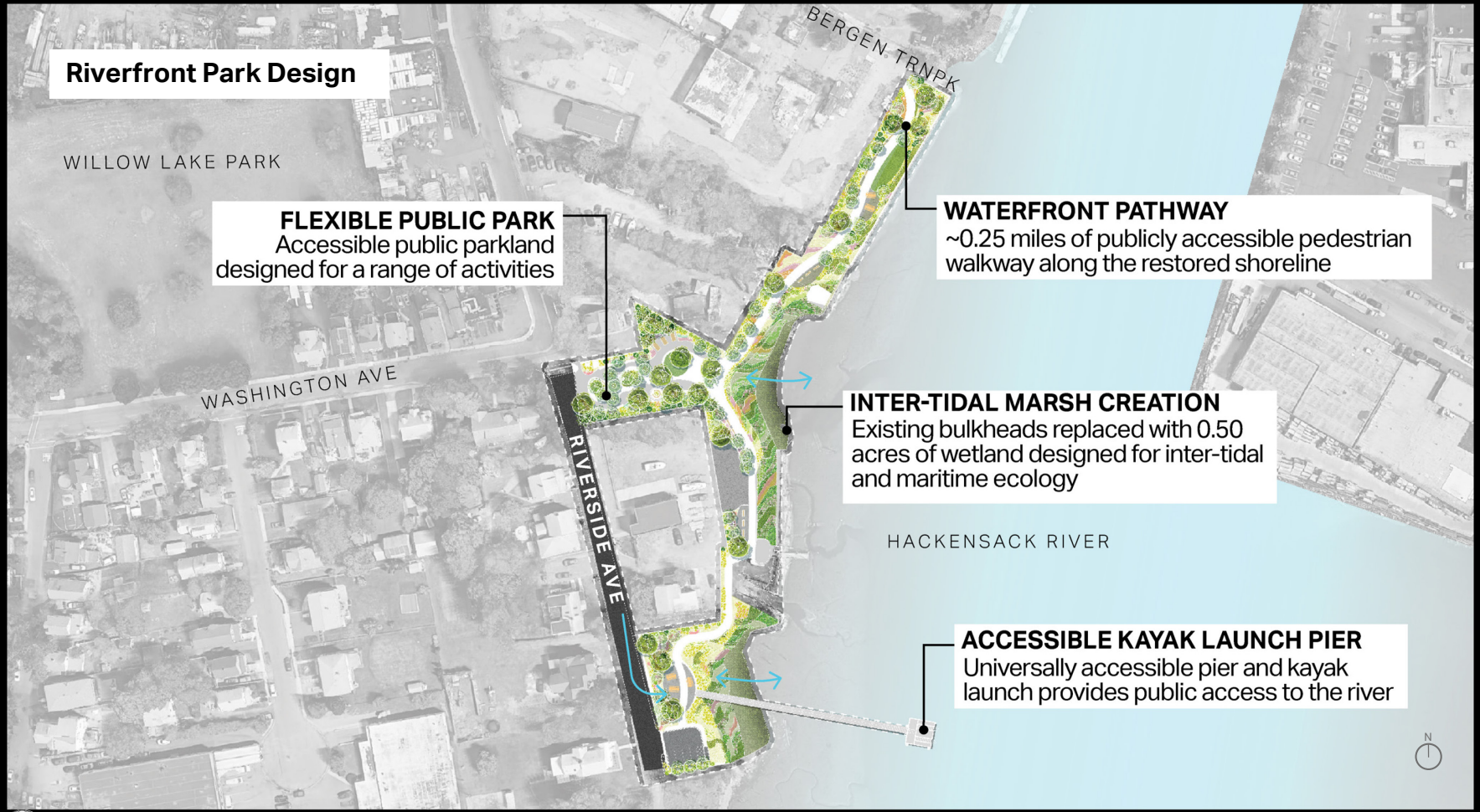
Riverfront Park community design discussions

CLARIFIED PARK PREFERENCES
Breakout groups discussed park character options from more urban to more natural types of furnishings, screening, planting and paving

RECORDED PRIORITIES
Interactive activities gathered input on program priorities

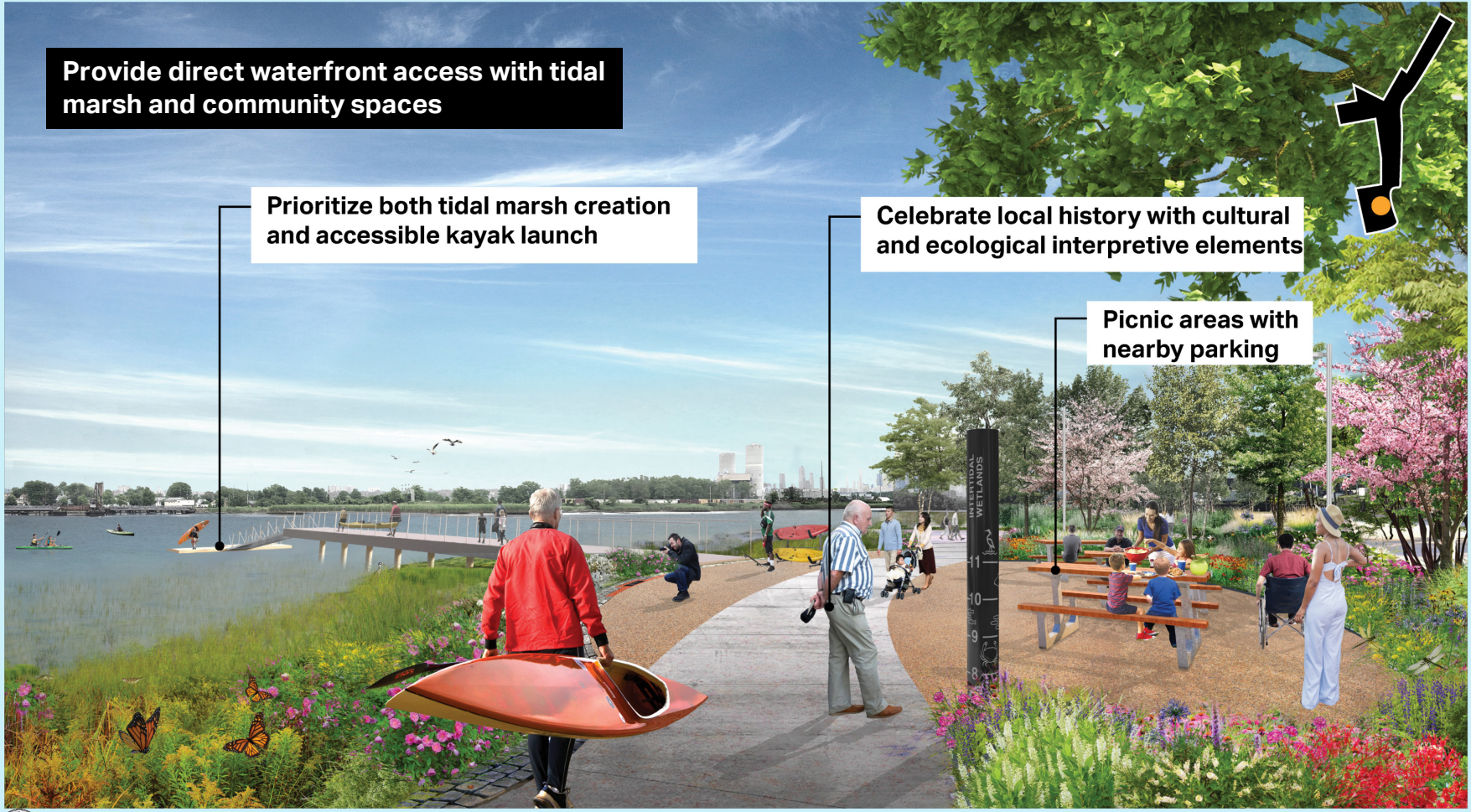
Riverfront Park within the watershed

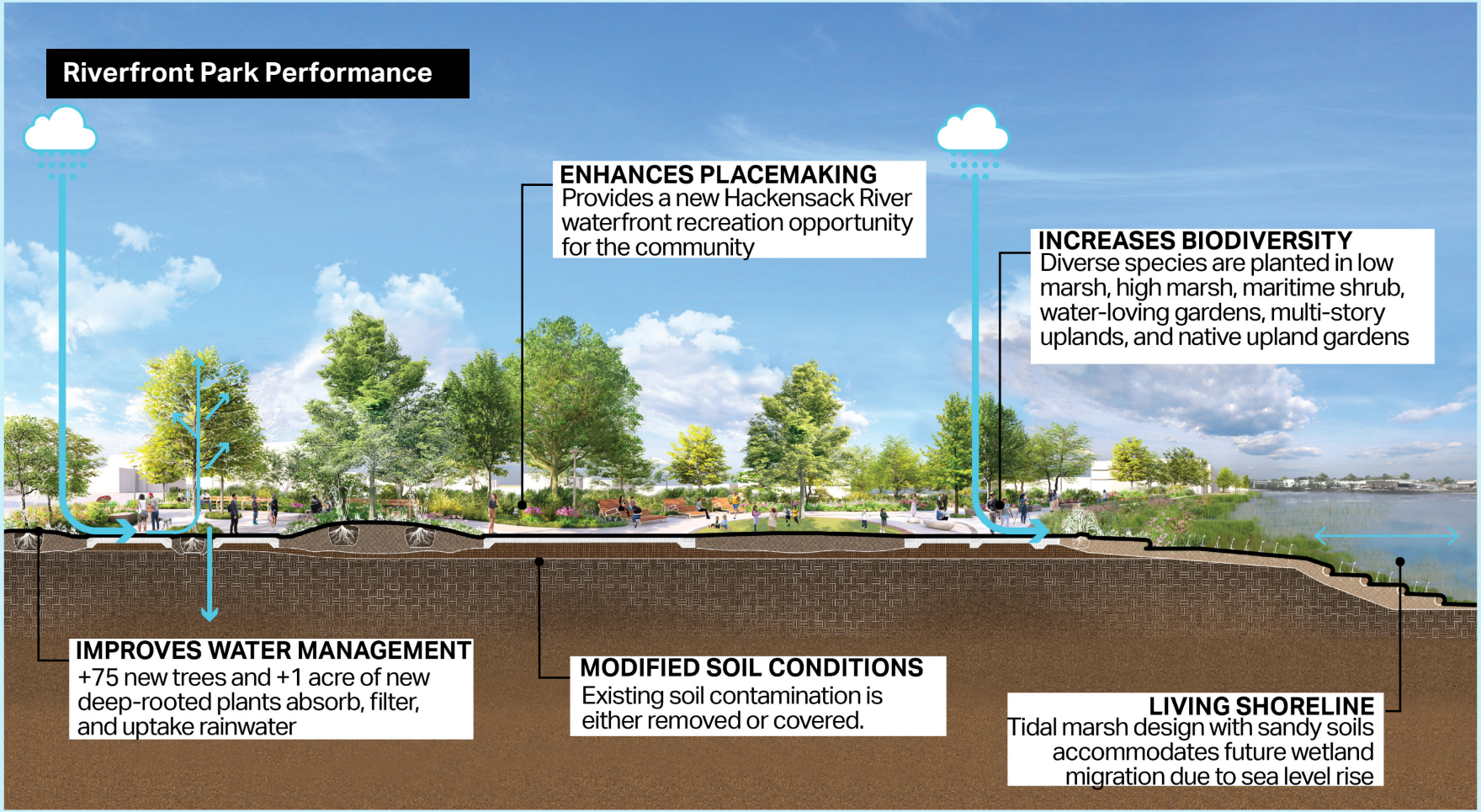



Riverfront Park Design
WILLOW LAKE PARK
BERGEN TRNPK
WASHINGTON AVE
RIVERSIDE AVE
HACKENSACK RIVER
FLEXIBLE PUBLIC PARK
Accessible public parkland designed for a range of activities
WATERFRONT PATHWAY
~0.25 miles of publicly accessible pedestrian walkway along the restored shoreline
INTER-TIDAL MARSH CREATION
Existing bulkheads replaced with 0.50 acres of wetland designed for inter-tidal and maritime ecology
ACCESSIBLE KAYAK LAUNCH PIER
Universally accessible pier and kayak launch provides public access to the river
N


Lush native gardens with areas for quiet seating or small group gathering
Linear seating
Lush woodland, wildflowers, and flowering plantings


Public waterfront with seating designed for flexible community use
Open area supports daily use and special events
Hybrid natural/ urban character


Provide direct waterfront access with tidal marsh and community spaces
Prioritize both tidal marsh creation and accessible kayak launch
Celebrate local history with cultural and ecological interpretive elements
Picnic areas with nearby parking
INTERTIDAL WETLANDS

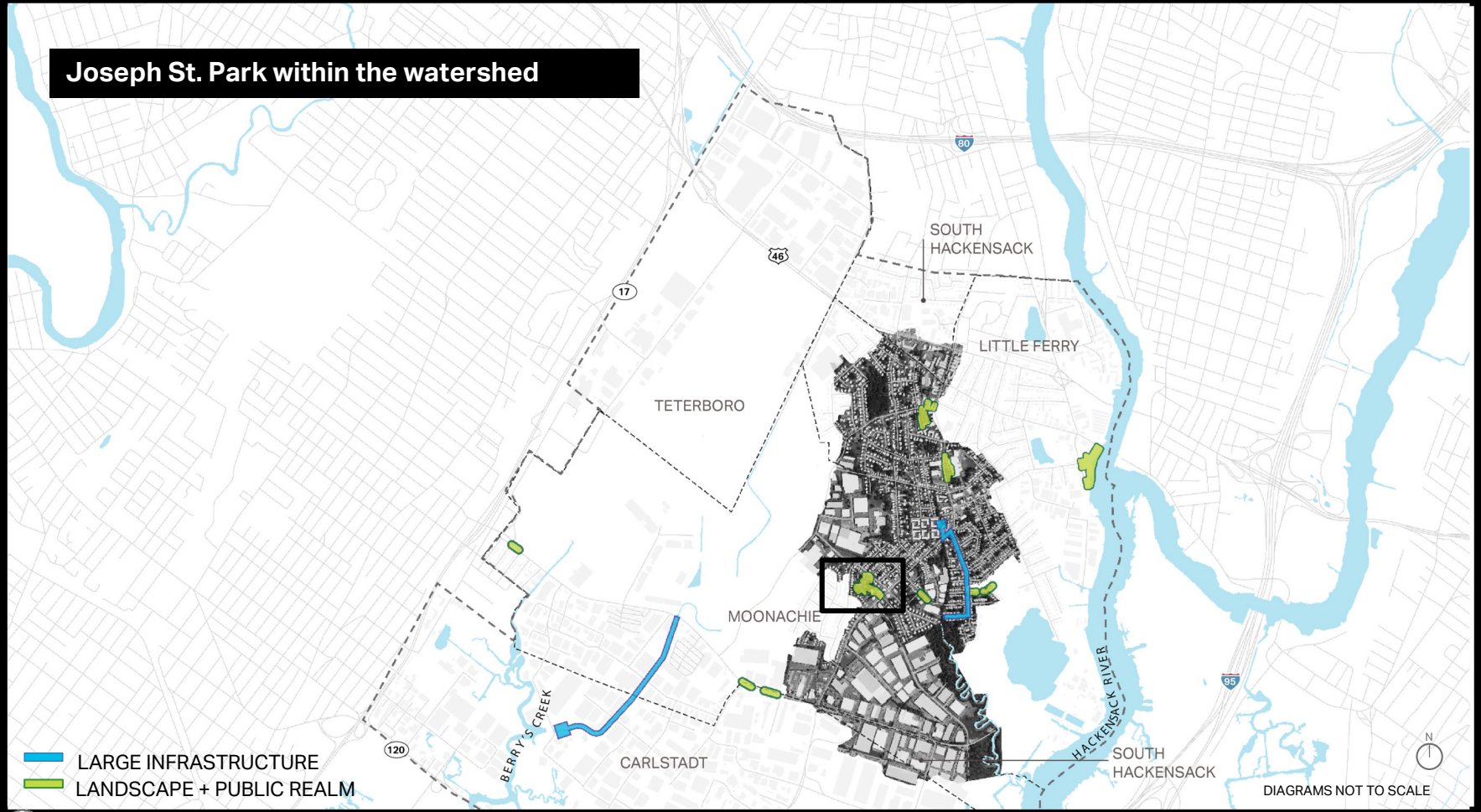

Riverfront Park Performance
ENHANCES PLACEMAKING
Provides a new Hackensack River waterfront recreation opportunity for the community
INCREASES BIODIVERSITY
Diverse species are planted in low marsh, high marsh, maritime shrub, water-loving gardens, multi-story uplands, and native upland gardens
IMPROVES WATER MANAGEMENT
+75 new trees and +1 acre of new deep-rooted plants absorb, filter, and uptake rainwater
MODIFIED SOIL CONDITIONS
Existing soil contamination is either removed or covered.
LIVING SHORELINE
Tidal marsh design with sandy soils accommodates future wetland migration due to sea level rise

Public facilities design discussions with municipal leaders and city staff

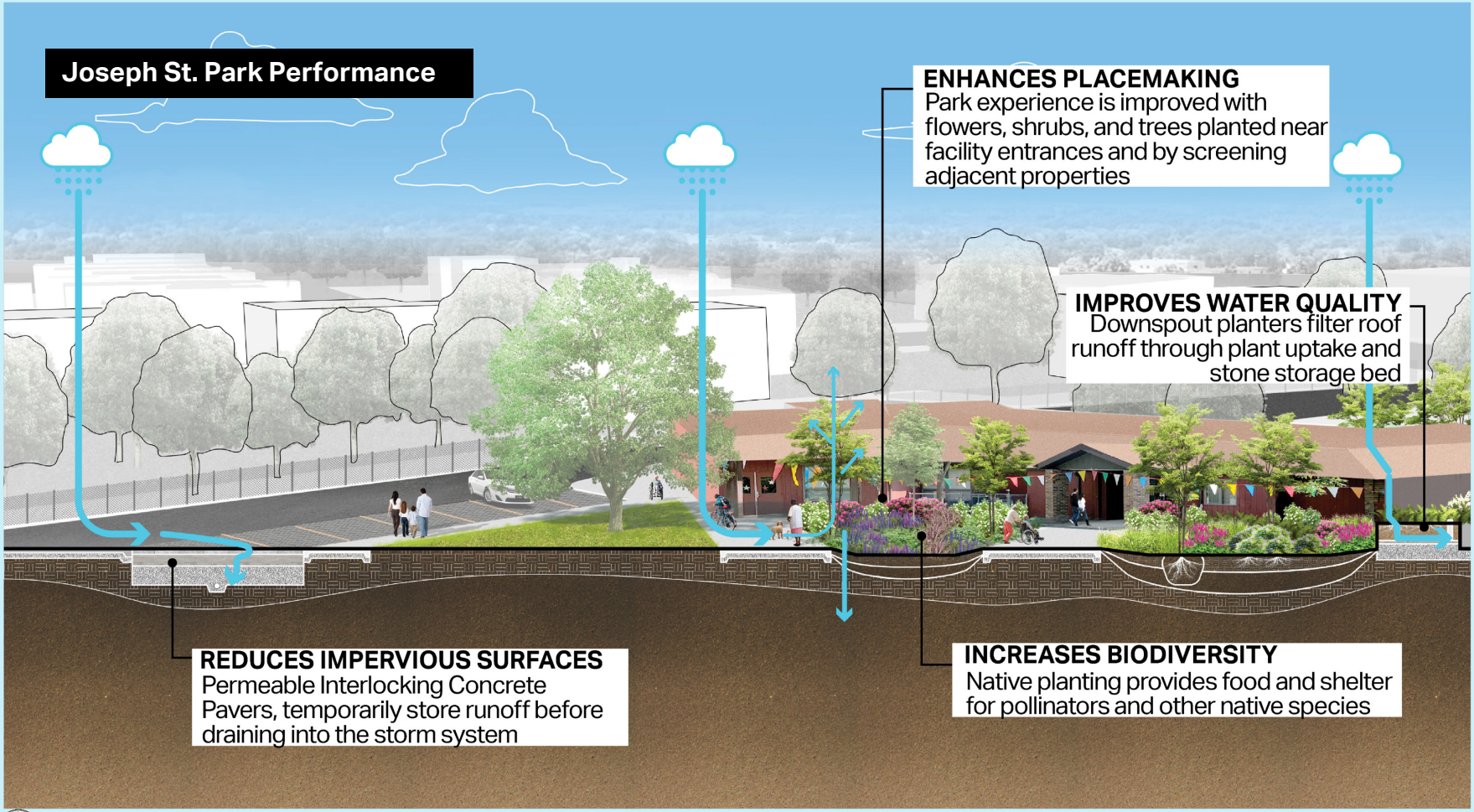
DISCUSSION-FOCUSED
Discussed potential design approaches together

MAPPED EXISTING CONDITIONS
Documented community knowledge, facility uses and areas of flooding

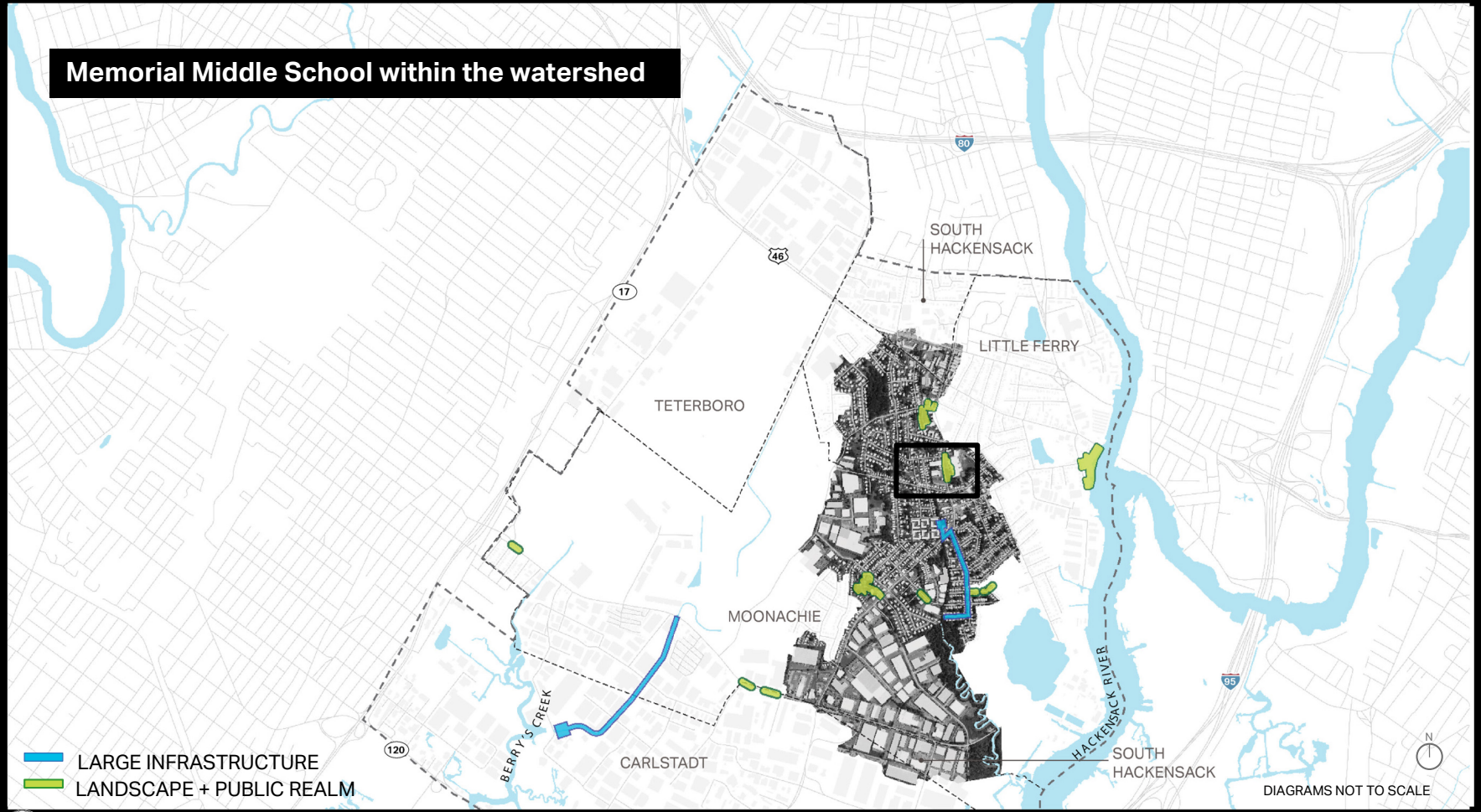
Joseph St. Park within the watershed



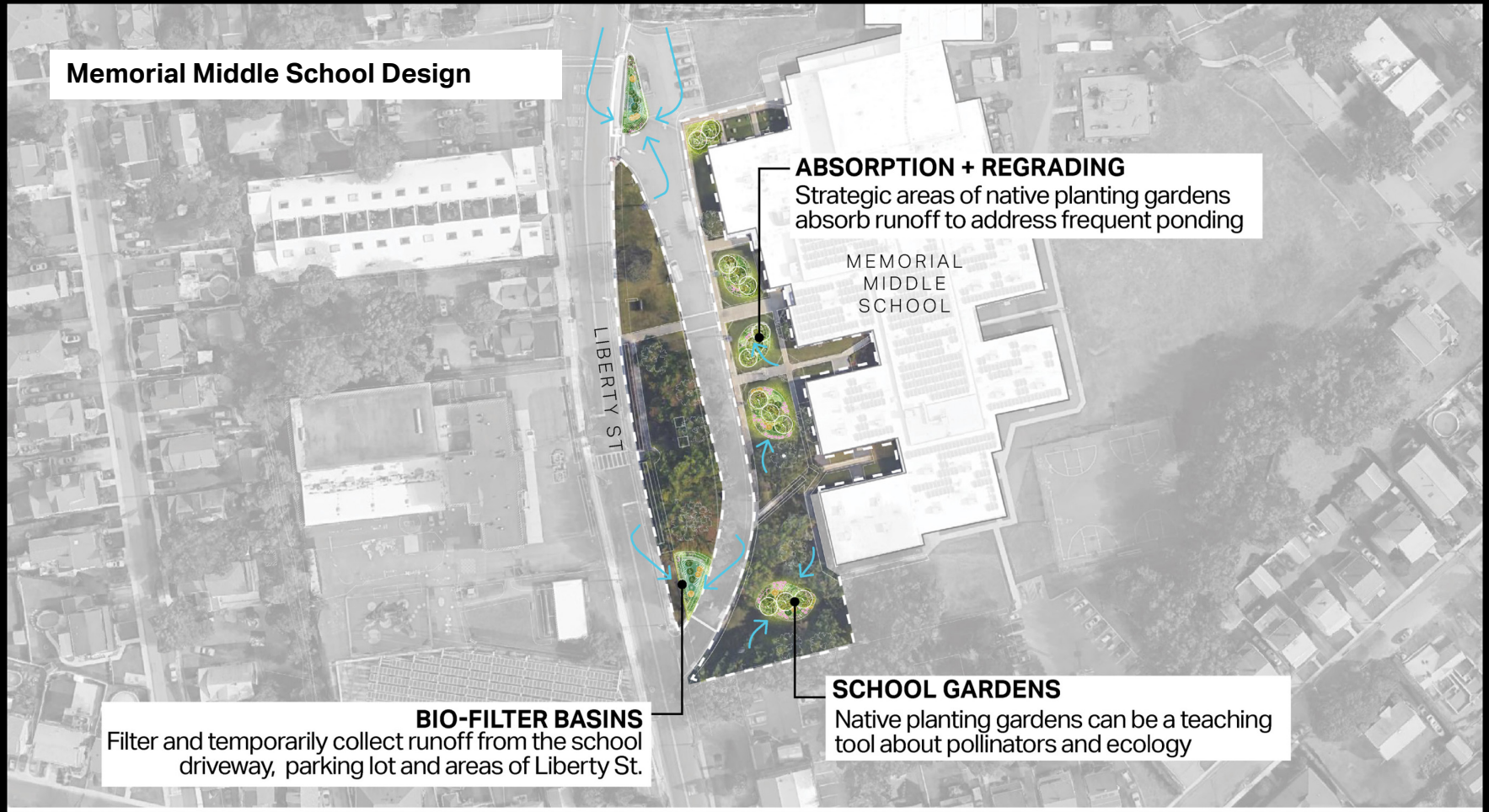
Joseph St. Park Design

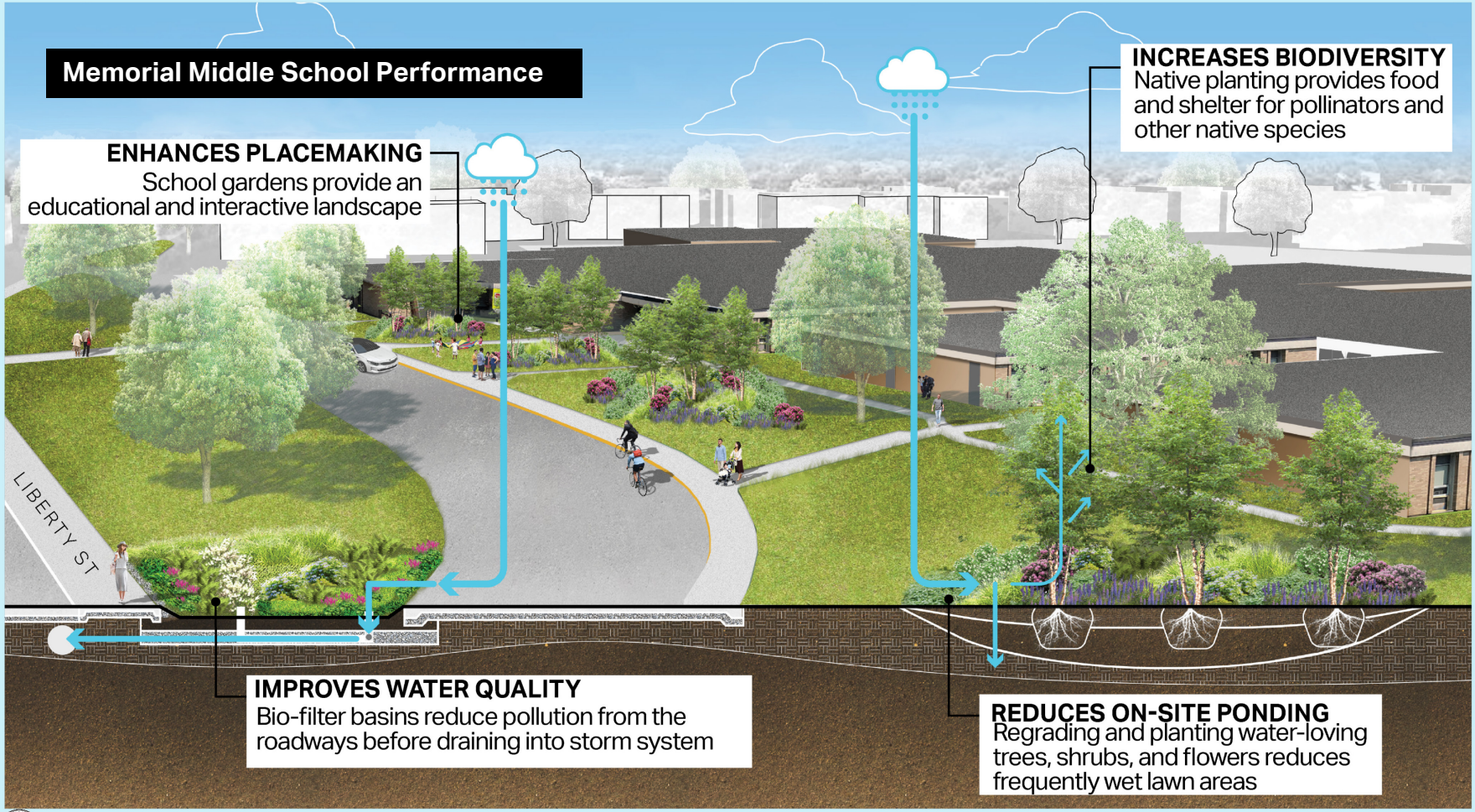

Joseph St. Park Performance
ENHANCES PLACEMAKING
Park experience is improved with flowers, shrubs, and trees planted near facility entrances and by screening adjacent properties
IMPROVES WATER QUALITY
Downspout planters filter roof runoff through plant uptake and stone storage bed
REDUCES IMPERVIOUS SURFACES
Permeable Interlocking Concrete Pavers, temporarily store runoff before draining into the storm system
INCREASES BIODIVERSITY
Native planting provides food and shelter for pollinators and other native species

Memorial Middle School within the watershed

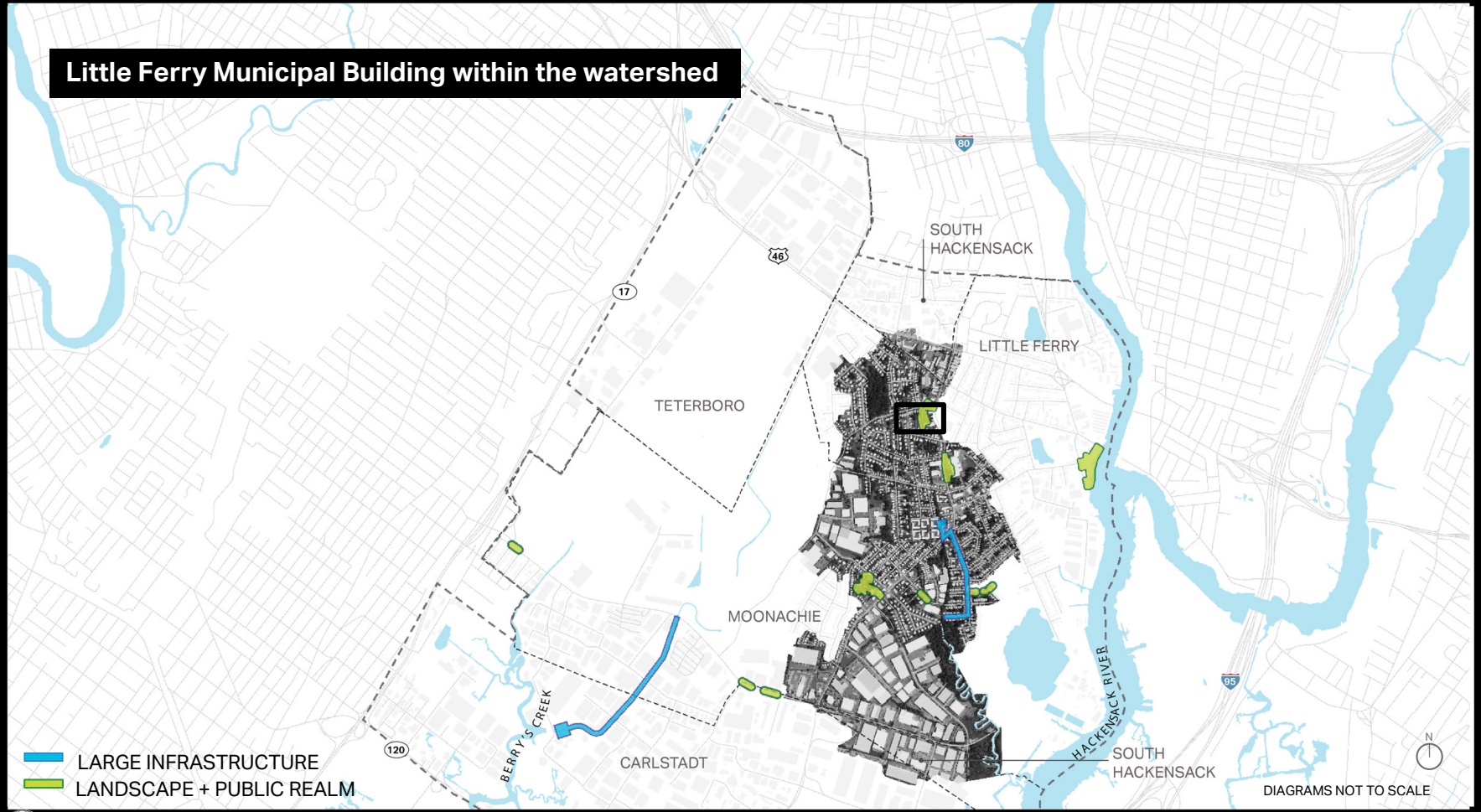


Memorial Middle School Design



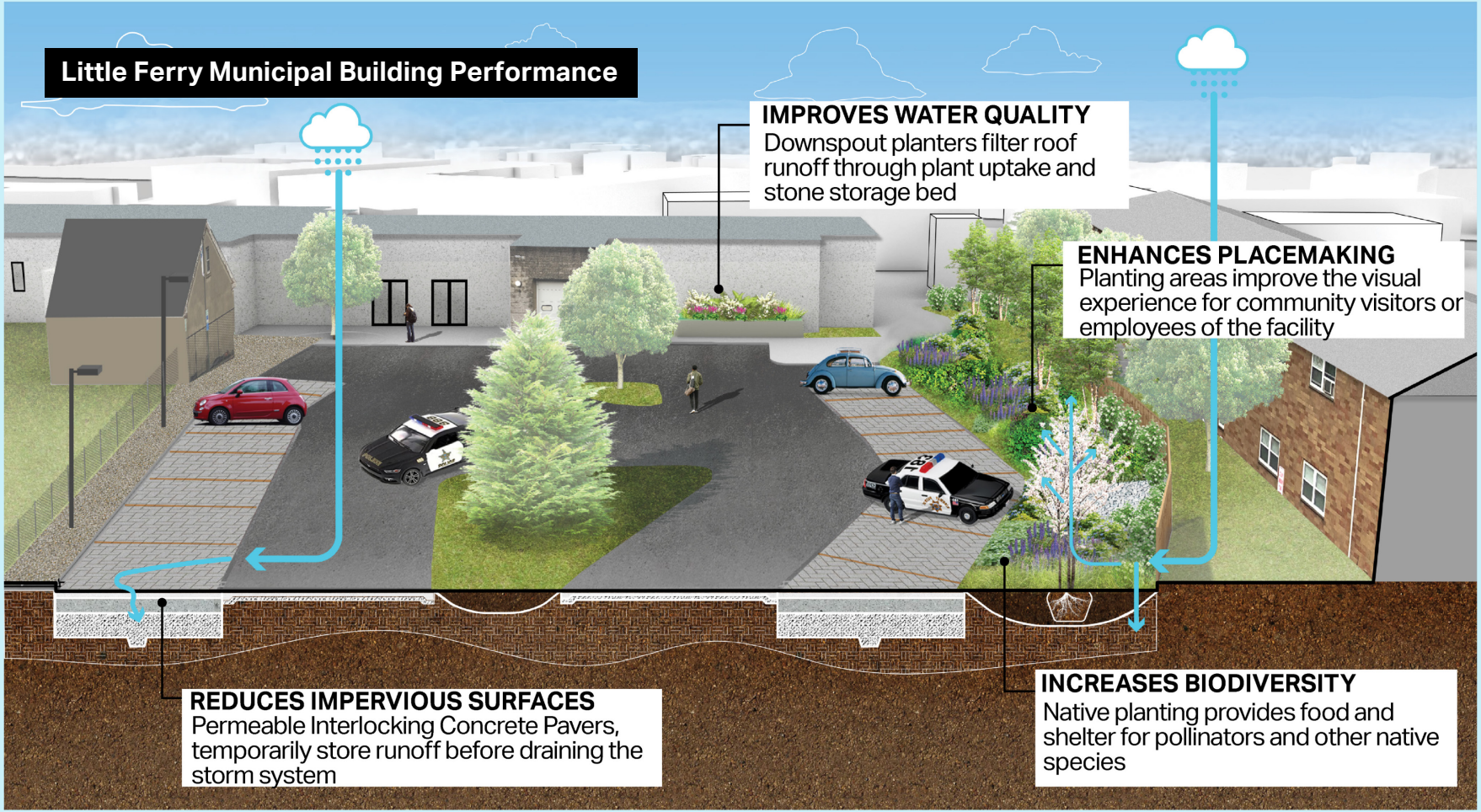

Memorial Middle School Performance
ENHANCES PLACEMAKING
School gardens provide an educational and interactive landscape
INCREASES BIODIVERSITY
Native planting provides food and shelter for pollinators and other native species
LIBERTY ST
IMPROVES WATER QUALITY
Bio-filter basins reduce pollution from the roadways before draining into storm system
REDUCES ON-SITE PONDING
Regrading and planting water-loving trees, shrubs, and flowers reduces frequently wet lawn areas

Little Ferry Municipal Building within the watershed

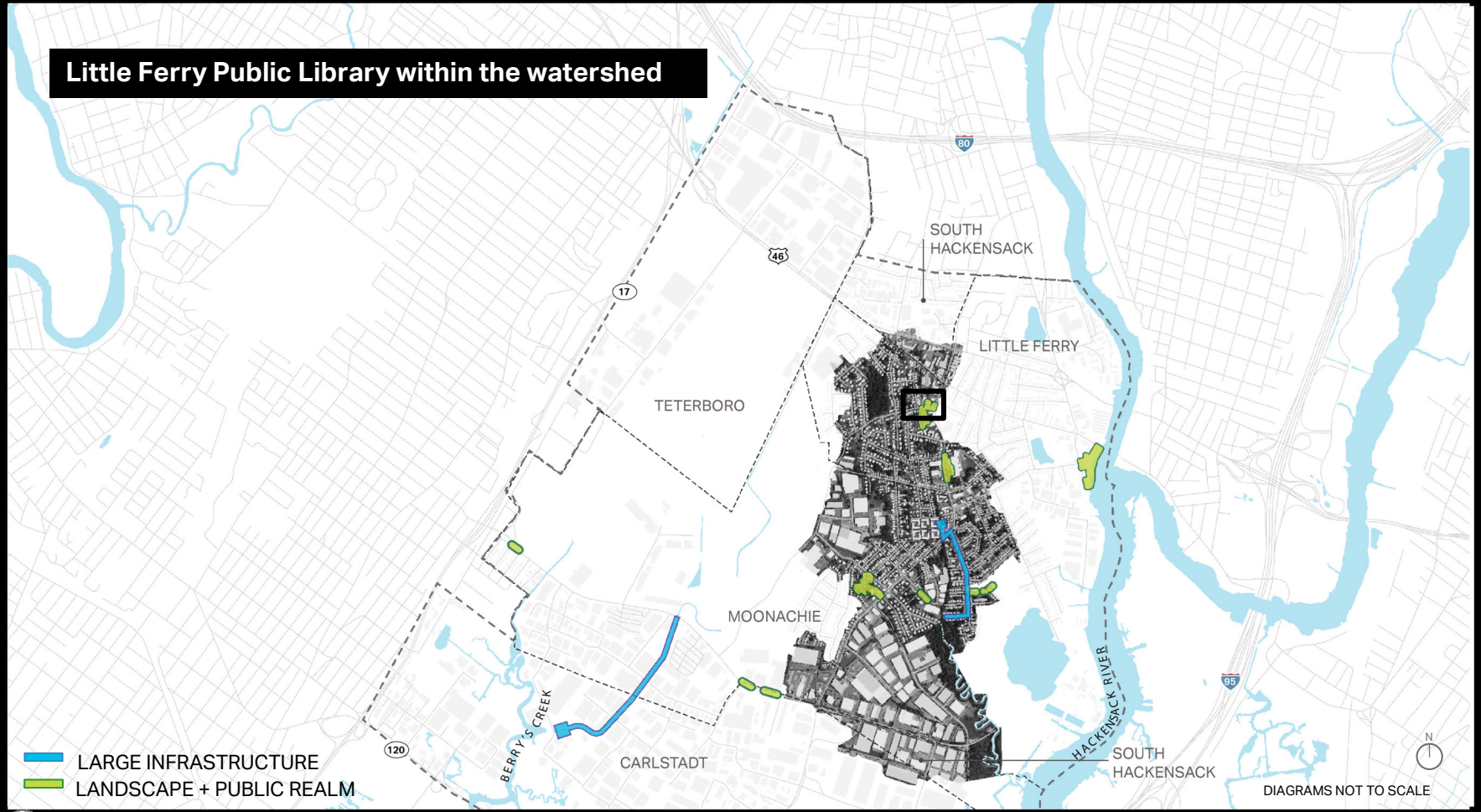


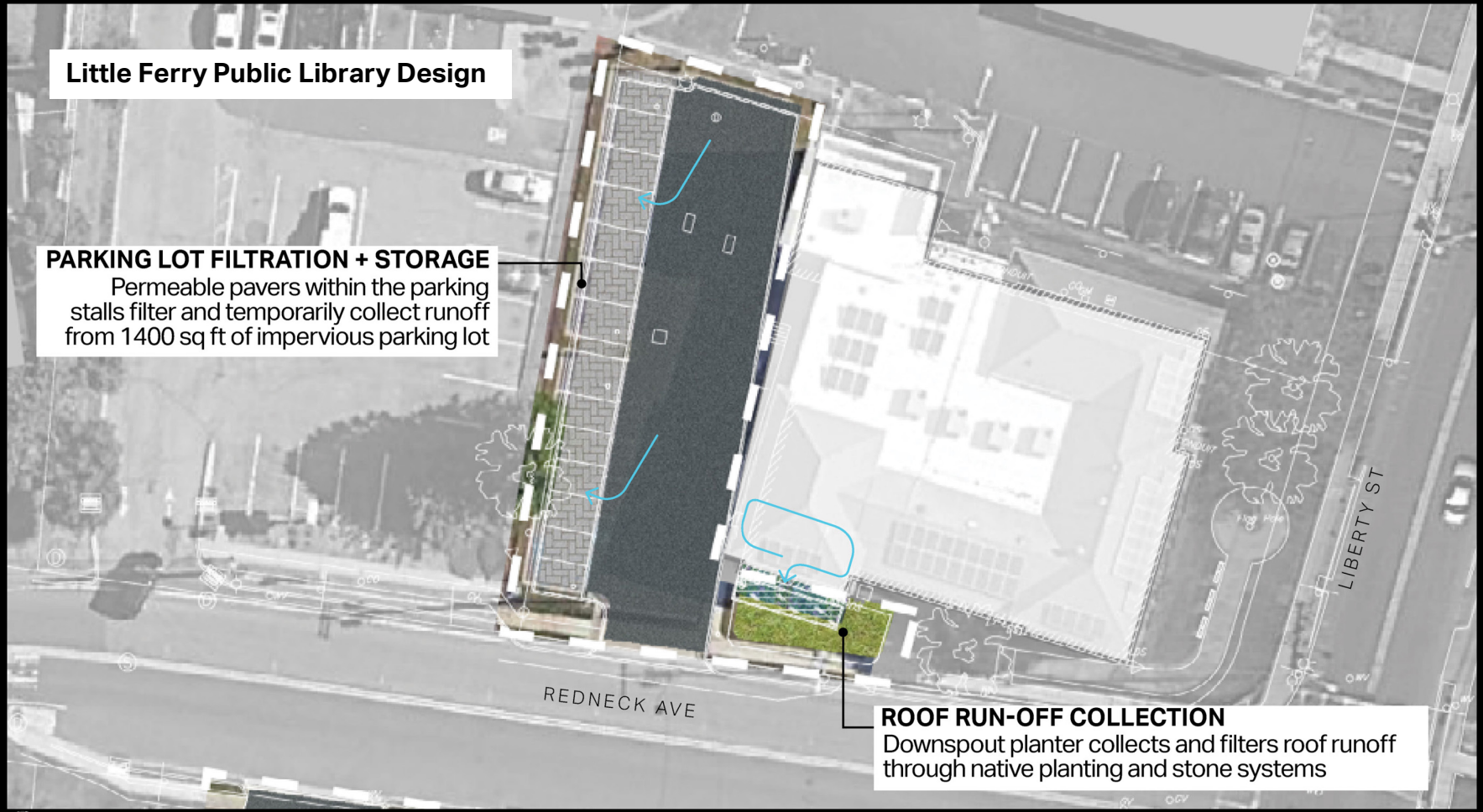
Little Ferry Municipal Building Design

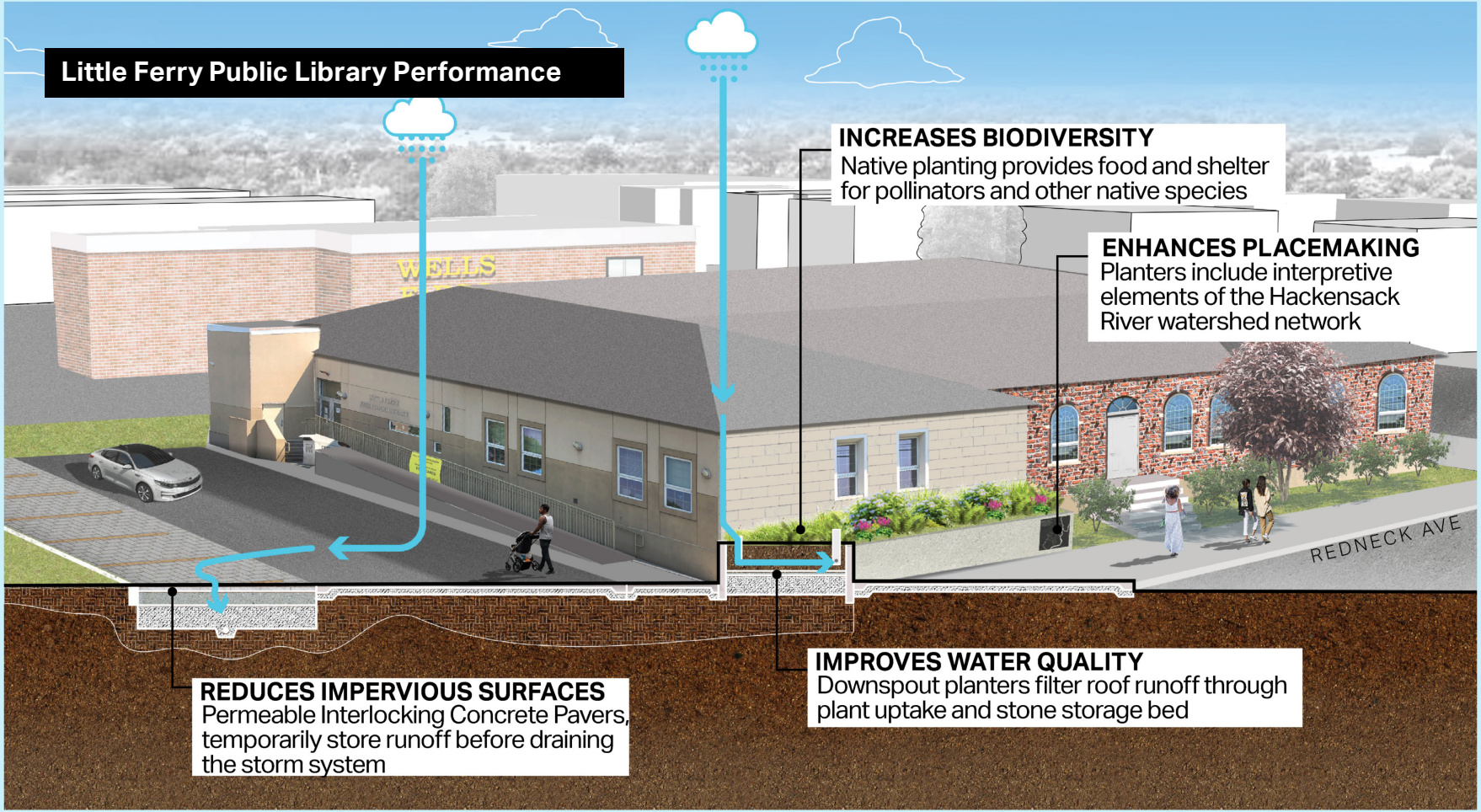
Little Ferry Municipal Building Performance



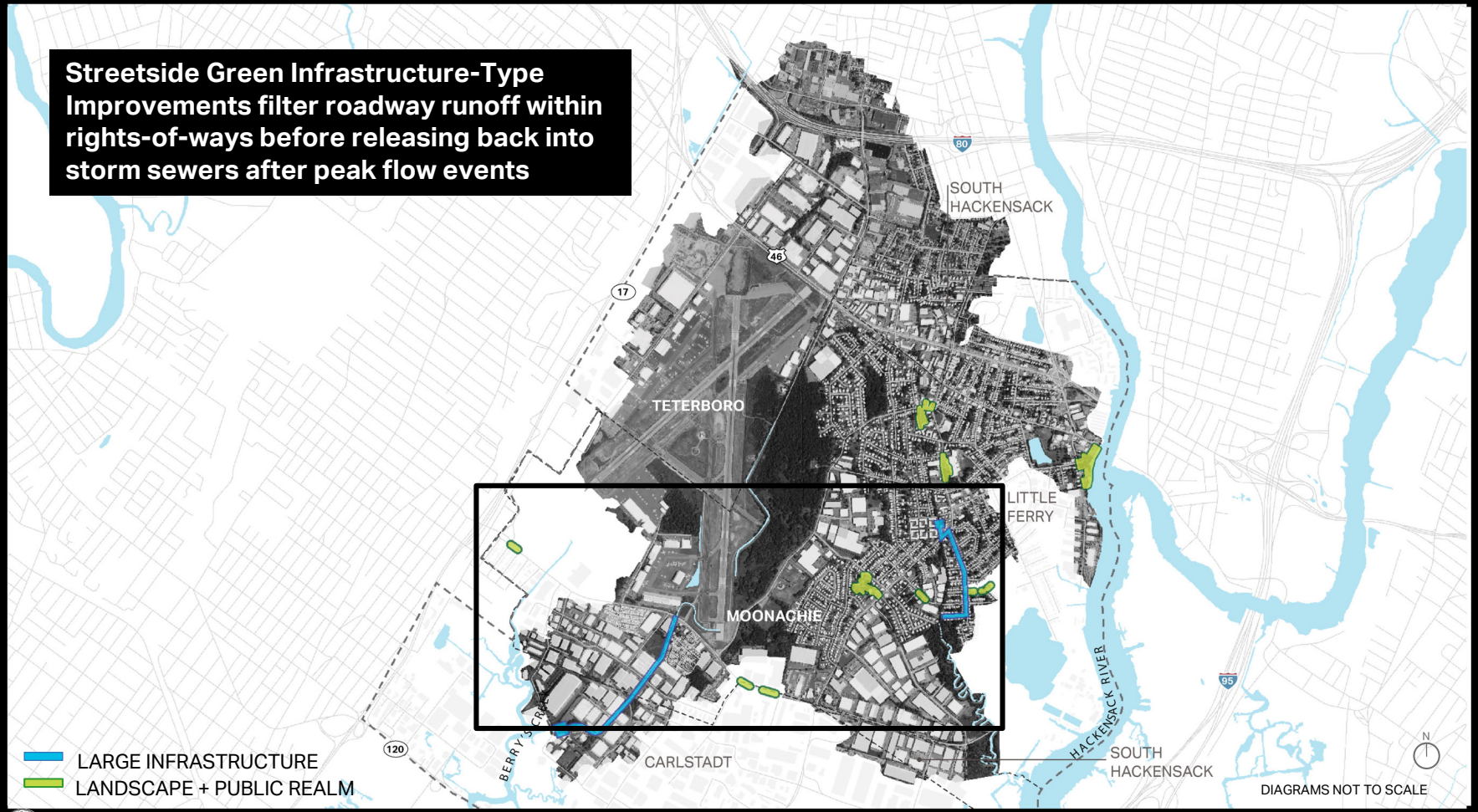
Little Ferry Public Library within the watershed

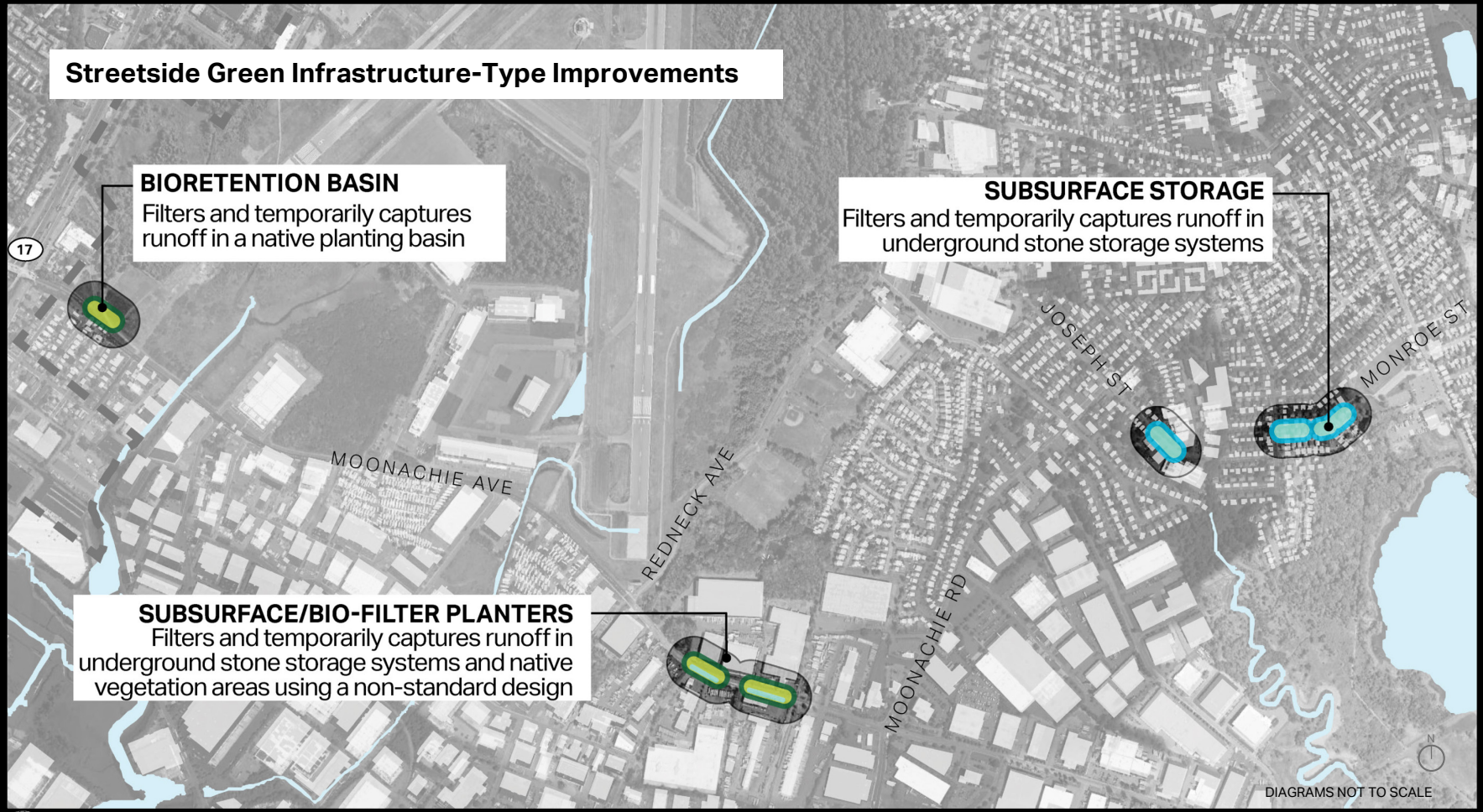



Little Ferry Public Library Design
PARKING LOT FILTRATION + STORAGE
Permeable pavers within the parking stalls filter and temporarily collect runoff from 1400 sq ft of impervious parking lot
REDNECK AVE
LIBERTY ST
ROOF RUN-OFF COLLECTION
Downspout planter collects and filters roof runoff through native planting and stone systems


Little Ferry Public Library Performance
INCREASES BIODIVERSITY
Native planting provides food and shelter for pollinators and other native species
ENHANCES PLACEMAKING
Planters include interpretive elements of the Hackensack River watershed network
REDNECK AVE
IMPROVES WATER QUALITY
Downspout planters filter roof runoff through plant uptake and stone storage bed
REDUCES IMPERVIOUS SURFACES
Permeable Interlocking Concrete Pavers, temporarily store runoff before draining the storm system

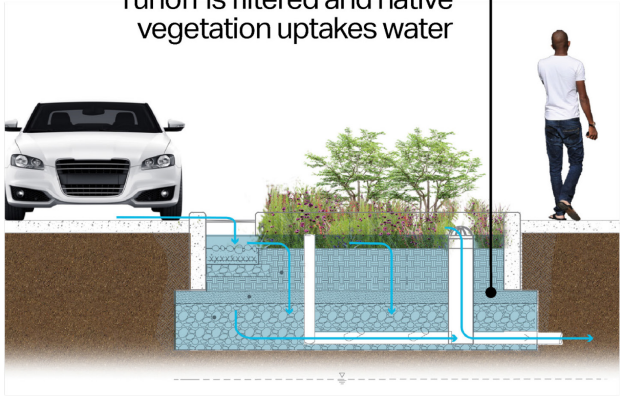
Streetside Green Infrastructure-Type Improvements filter roadway runoff within rights-of-ways before releasing back into storm sewers after peak flow events




Streetside Green Infrastructure-Type Improvements
BIORETENTION BASIN
Filters and temporarily captures runoff in a native planting basin
SUBSURFACE STORAGE
Filters and temporarily captures runoff in underground stone storage systems
SUBSURFACE/BIO-FILTER PLANTERS
Filters and temporarily captures runoff in underground stone storage systems and native vegetation areas using a non-standard design
17
MOONACHIE AVE
REDNECK AVE
MOONACHIE RD
JOSEPH ST
MONROE ST
N
DIAGRAMS NOT TO SCALE

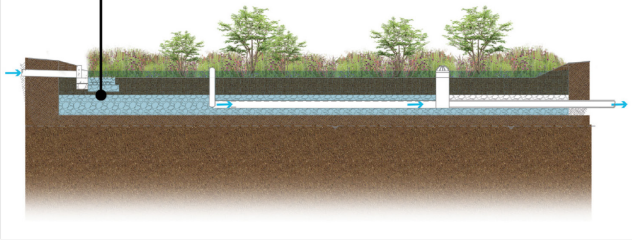
Streetside Green Infrastructure-type Performance

REDUCES TSS POLLUTION
Through non-standard designs, runoff is filtered and native vegetation uptakes water



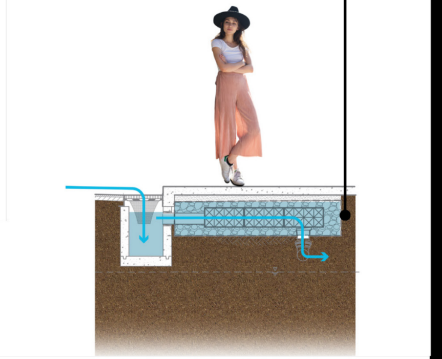
BIO-FILTER PLANTERS

REDUCES PEAK FLOW RUN-OFF
Temporarily stores and filters runoff during storm events to lessen the burden on infrastructure



BIORETENTION BASINS

DETAINS + FILTERS
Captures and treats roadway runoff underground before draining back into storm system after 72 hours



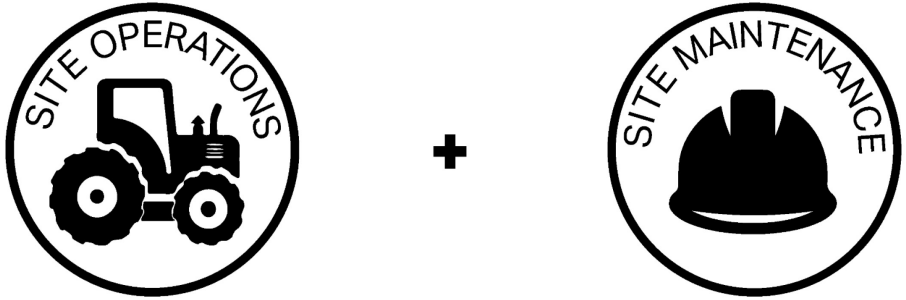
SUB-SURFACE STORAGE

MOVING FORWARD / CONSTRUCTION PHASE

DAVID BLAIR, AECOM

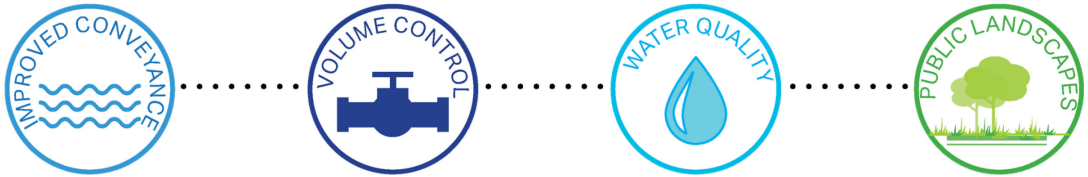
Operations + Maintenance Update

- Municipal-led inter-agency coordination
- Long-term O&M agreements in place prior to bidding, purchasing easements and construction



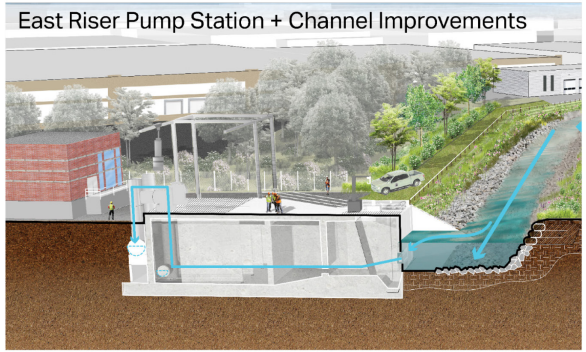
Balancing Priorities + Budget

BALANCING PRIORITIES

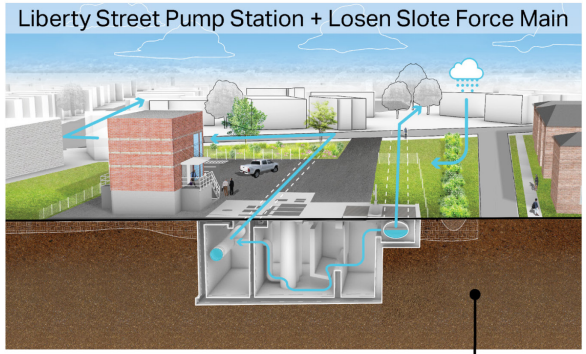


Construction phasing

East Riser Pump Station + Channel Improvements

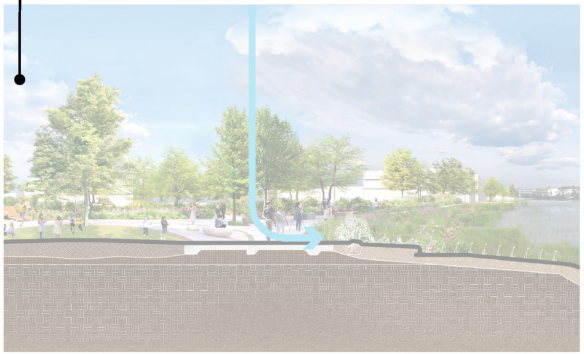


Liberty Street Pump Station + Losen Slote Force Main



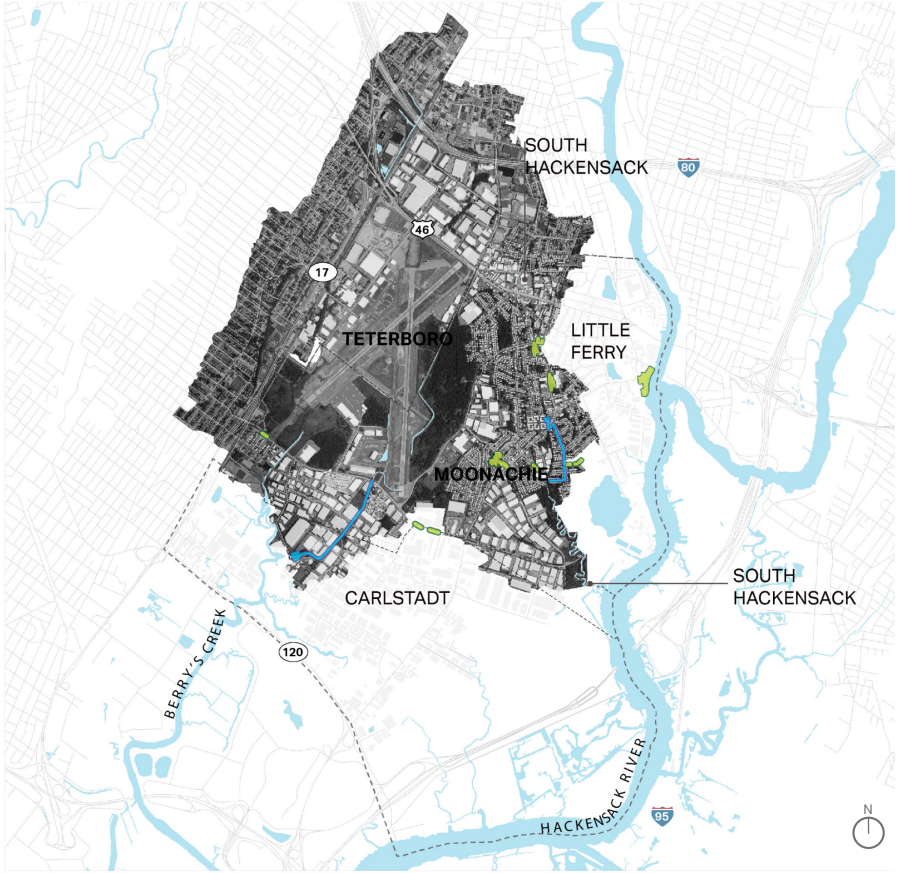
BUILT 1ST: LARGE SCALE INFRASTRUCTURE
East Riser Channel Improvements + Pump Station and Liberty Street Pump Station + Losen Slote Force Main

BUILT AS FUNDING ALLOWS: PUBLIC REALM LANDSCAPE
Riverfront Park and Joseph St. Park, Little Ferry Municipal Building, Little Ferry Public Library and Memorial Middle School



These 2 project components improve drainage for 4400 acres

- Projects are located in the lower reach of the watersheds and improve drainage within the larger basin
- Flood water will drain out of the area faster
- Some areas will no longer experience rainfall flooding in 2-year or 100-year rain events
- Residents and businesses can return to normal operations faster



LARGE INFRASTRUCTURE
LANDSCAPE + PUBLIC REALM

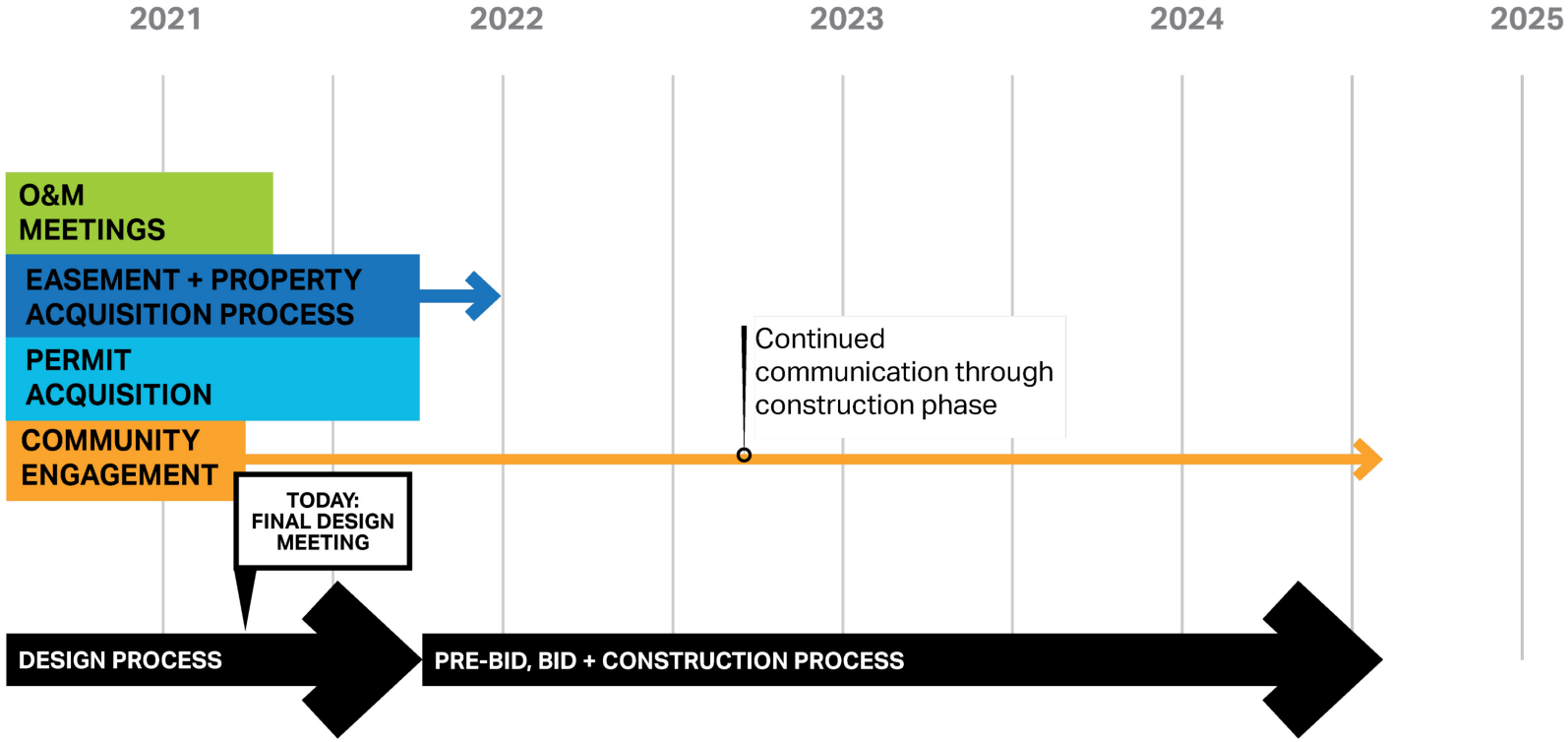
The project will improve resilience of the area

REDUCTIONS IN FLOOD DAMAGE TO STRUCTURES + PROPERTIES

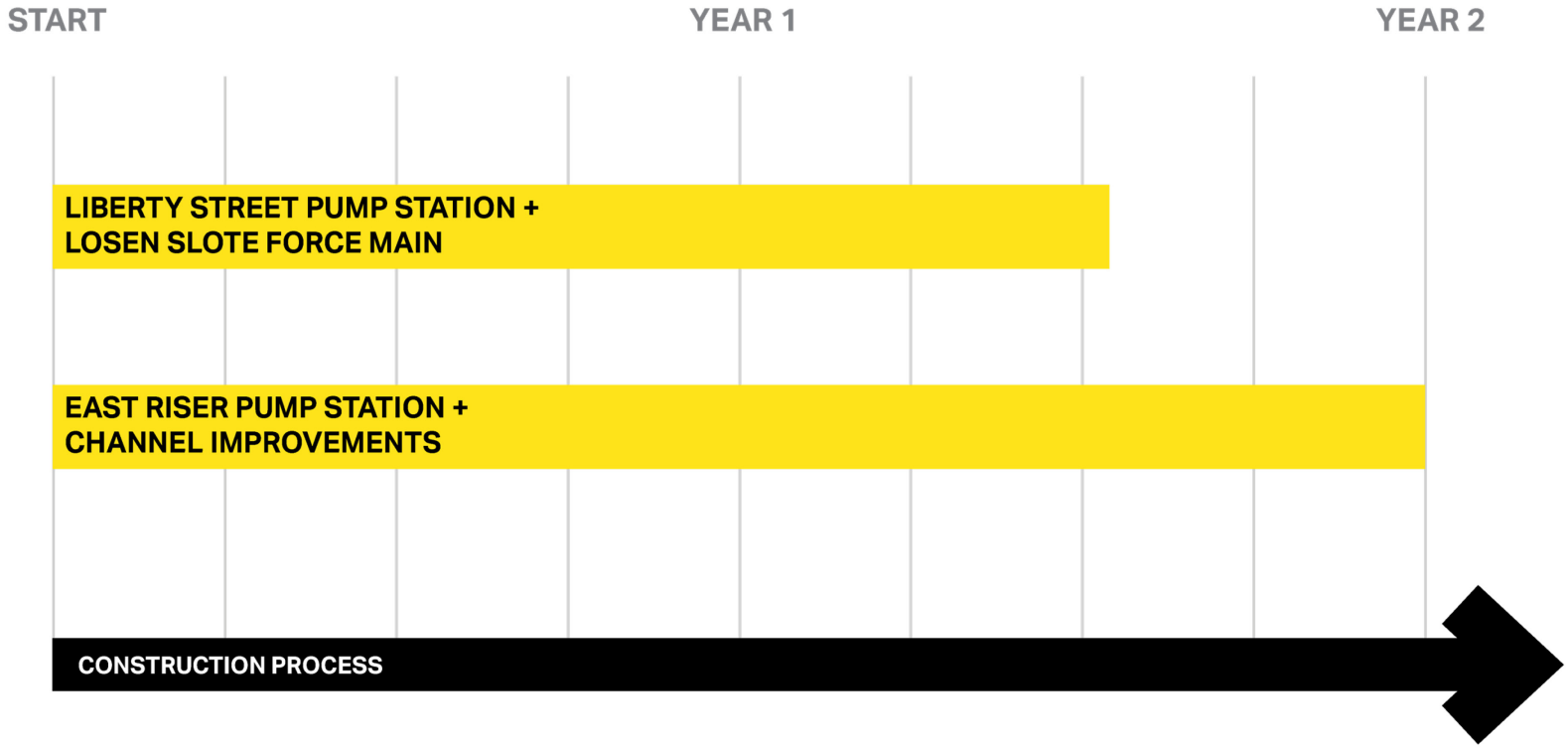
FEWER STREET CLOSURES + BUSINESS INTERRUPTIONS

FEWER CRITICAL FACILITY DISRUPTIONS

Next Steps


2021
2022
2023
2024
2025
O&M MEETINGS
EASEMENT + PROPERTY ACQUISITION PROCESS
PERMIT ACQUISITION
COMMUNITY ENGAGEMENT
Continued communication through construction phase
TODAY: FINAL DESIGN MEETING
DESIGN PROCESS
PRE-BID, BID + CONSTRUCTION PROCESS

What to expect during construction



PROJECT CONCLUSION

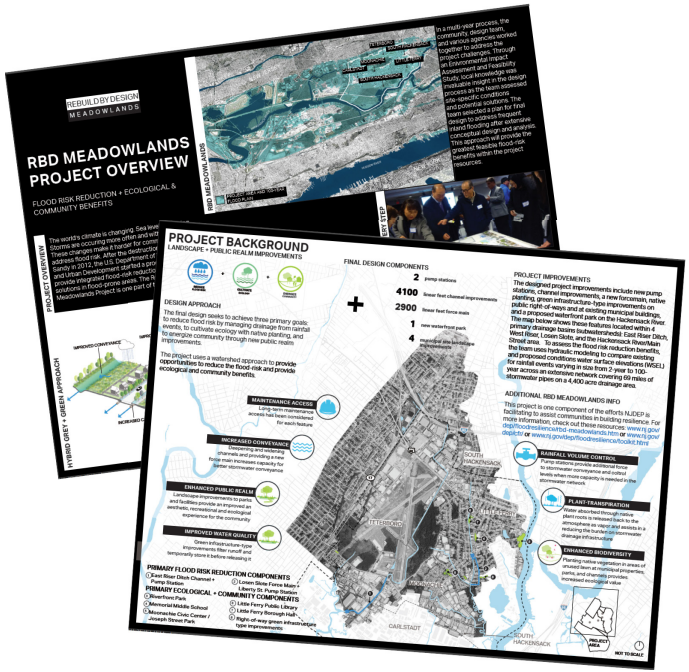
ANNA HOCHHALTER, AECOM

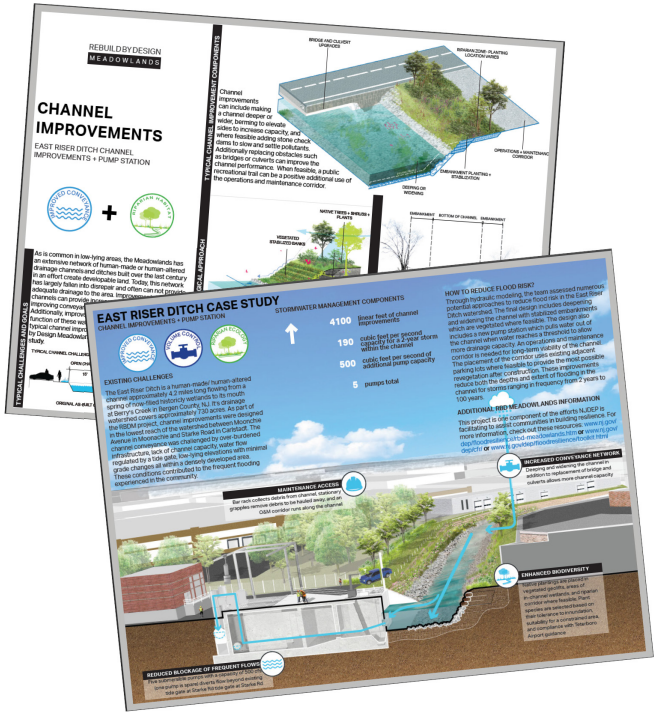
Additional materials are on-line to support long-term community-based resilience efforts

EDUCATE

ENGAGE

LEVERAGE





View and download Fact Sheets on-line:
https://www.nj.gov/dep/floodresilience/rbd-meadowlands.htm

Additional materials are on-line to support long-term community-based resilience efforts

EDUCATE

ENGAGE

LEVERAGE

View and share the project animation on the DEP website:
https://www.nj.gov/dep/floodresilience/rbd-meadowlands.htm

Ways to Stay Informed + Engaged

Website

www.rbd-meadowlands.nj.gov

Email

rbd-meadowlands@dep.nj.gov

Subscribe to the Electronic Mailing List

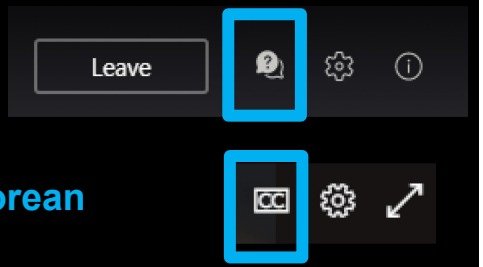
www.nj.gov/dep/floodresilience/rbd-meadowlands-subscribe.htm

ON-LINE MEETING TECH SUPPORT

Teams Meeting Resources

+ All participants will be on mute for the meeting.

+ Question & Answer will be facilitated at the end of the meeting.
  Send us Your Questions by:
  Chat: Use the Teams Meeting Q&A.
  Click the Q&A Icon and type in Chat Window
  Email: rbd-meadowlands@dep.nj.gov



+ Click the CC for Closed Captioning in English/Spanish/Korean

Technical Troubleshooting Resources

+ Email: rbd-meadowlands@dep.nj.gov
+ View Project Information on the Website: www.rbd-meadowlands.nj.gov