REBUILD BY DESIGN

MEADOWLANDS

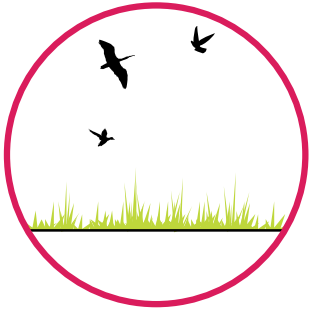
CITIZEN ADVISORY GROUP (CAG) MEETING #4

CONCEPT COMPONENT DEVELOPMENT

FLOOD PROTECTION PROJECT

Boroughs of Little Ferry, Moonachie, Carlstadt, and Teterboro, and the Township of South Hackensack in Bergen County, New Jersey

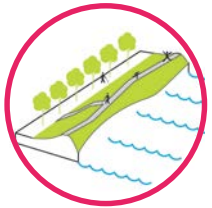
- Welcome & Opening Remarks



- Initial Screening Criteria - 35 comments from 5 reviewers received from our last meeting
- Completed and published to Project Website:
  - Final Public Scoping Document
  - Final Public Scoping Summary Report
  - Meeting Minutes from CAG Meeting #3
  - August 2016 Newsletter
- Developing the Preliminary Draft EIS
  - Conducting field work to support EIS and Feasibility Study
- Developing initial concepts (*with input from you tonight!*)

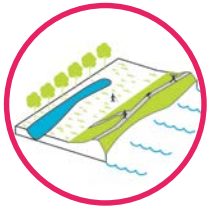
Building the Concepts

- Design Elements: “Kit of Parts”
- Learn and Discuss Options via Breakout Sessions
- Provide Input into Concept Development



ALTERNATIVE 1

ALTERNATIVE 2



ALTERNATIVE 3

Alternative 1: Structural Flood Reduction

- Alternative 1 is composed of various structural, infrastructure-based solutions that would be constructed to provide protection from both inland and tidal/storm surge flooding.

Alternative 2: Storm Water Drainage Improvements

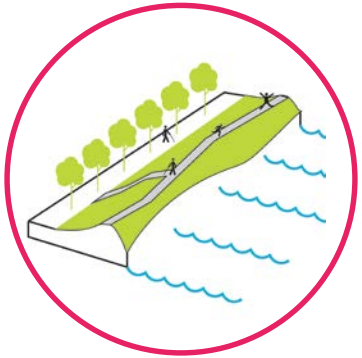
- Alternative 2 is composed of a series of storm water drainage projects aimed at reducing the occurrence of higher frequency, small- to medium-scale flooding events that impact the communities located in the Project Area.

Alternative 3: Hybrid

- Alternative 3 is composed of a strategic, synergistic blend of new infrastructure and local drainage improvements to reduce flood risk in the Project Area.

ABOUT THE PROCESS

Things to Keep in Mind



- **"Kit of Parts"**
  - Tool to Assist in the Development of Concepts
- **Balance and Tradeoff**
  - The "Kit of Part" strategies have a range of costs and a range of combinations
  - Where are we willing to compromise as a community?
  - What is most important?
- **Different Options** *created to:*
  - Gauge Interest
  - Prioritize Location
  - Begin to Analyze and Balance Costs

- **Design Considerations – "Kit of Parts" Presentation** (15 Minutes)
- **Workshop Session** (90 Minutes):
  - **Alternative 1: Structural Flood Reduction** (30 Minutes)
    - Discussion of Concepts
    - Network Map Overlay + Zones
    - Network Map Trace Paper Overlay + Alignment Discussion
  - **Alternative 2: Storm Water Drainage Improvements** (30 Minutes)
    - Discussion of Concepts
    - Network Map + Zones
  - **Alternative 3: Hybrid** (20 Minutes)
    - Trace Paper Overlay + Discuss Priorities & Tradeoffs
  - **Handout & Next Steps** (10 Minutes)

“KIT OF PARTS” - DESIGN CONSIDERATIONS

Susan Bemis, AECOM

DESIGN CONSIDERATIONS - Overlays

EASEMENTS & PUBLIC LAND

Location Key

N

1000' 2000'

Legend

- Watershed Boundaries
- Water
- Wetlands
- Wetland Mitigation Banks
- Public Land
- Easements & Encumbrances

- Use publicly owned land (consider agency ownership) and right-of-way areas (public easements, encumbrances) to decrease cost.
- Understand the costs of land acquisition.

DESIGN CONSIDERATIONS - Overlays

EVACUATION ROUTES & ZONING

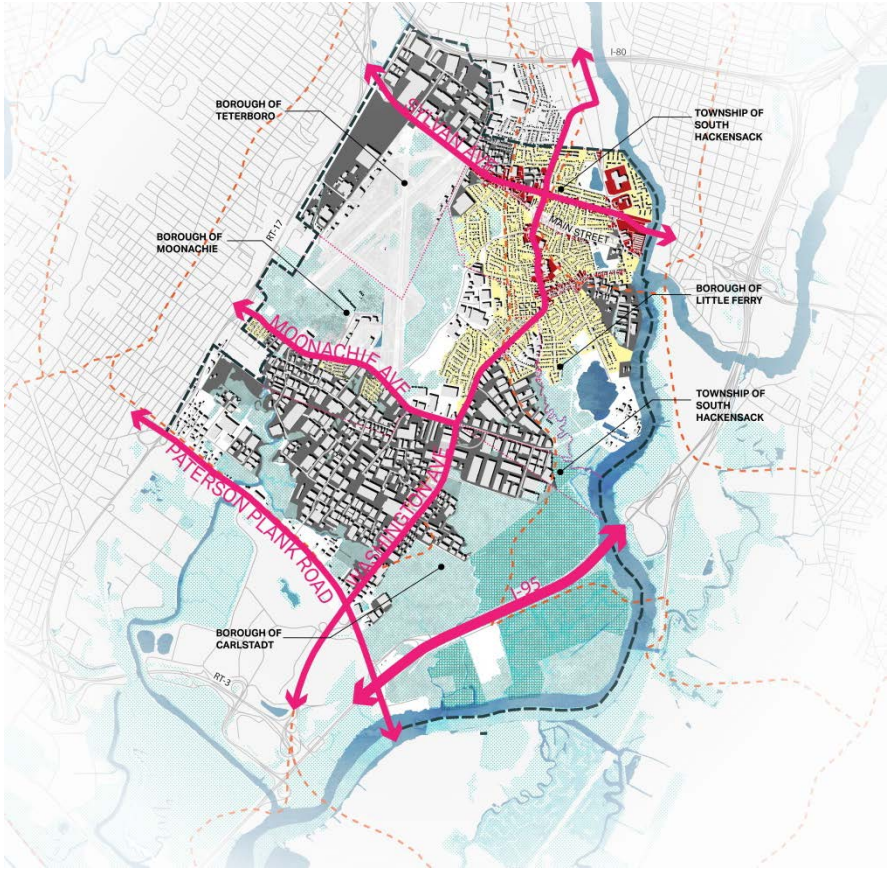
Location Key

N

1000' 2000'

Legend

- Watershed Boundaries
- Water
- Wetlands
- Wetland Mitigation Banks
- Evacuation Routes
- Residential
- Commercial
- Light Industrial



- Improve evacuation route durability in a storm event.
- Focus on residential areas, protect all residents.
- Focus on cost-effective alternatives for industrial edges.

DESIGN CONSIDERATIONS - Overlays

PROJECT AREA HIGH POINTS

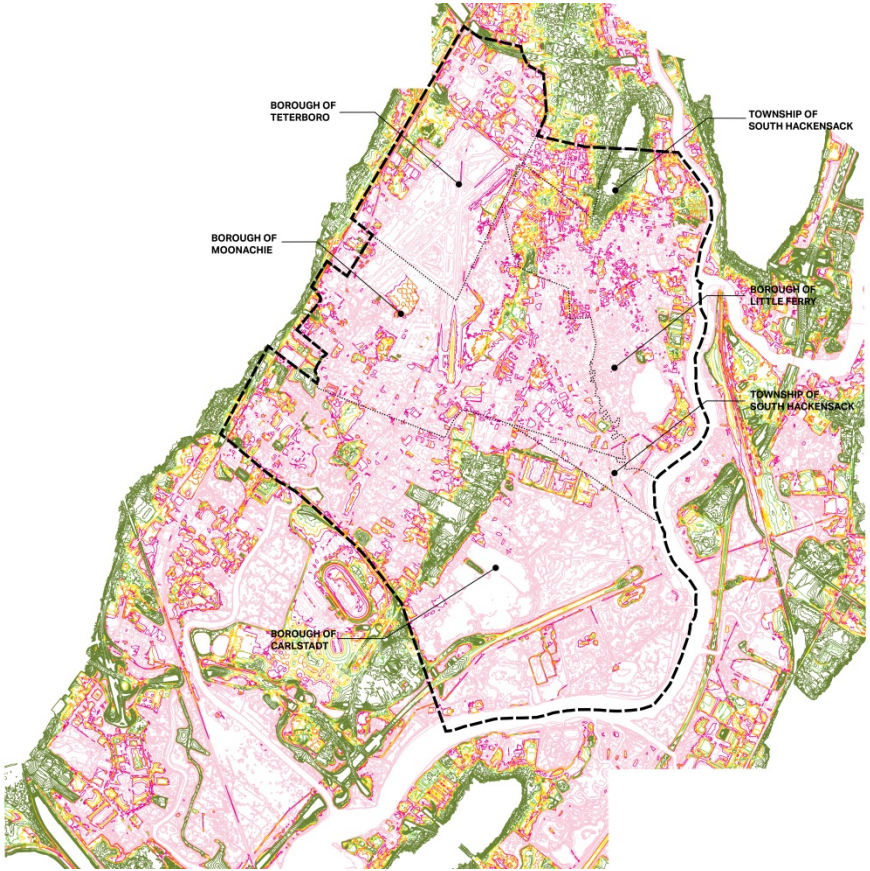
Location Key

Legend

- Above 10’
- 9’
- 8’
- 7’
- 6’
- Below 6’

N

1000’ 2000’



- Connect to elevation high points (reduce length/cost of structural protection) and substantial existing structures for tie backs and anchors.
- Focus on areas within the 100-year flood zone.

DESIGN CONSIDERATIONS – Overlays

DITCHES & LEGACY BERMS

Location Key

Legend

- Water
- Wetlands
- Wetland Mitigation Banks
- Legacy Berms
- Ditches
- Sub-basin Boundry

N

1000' 2000'

- Consider connecting water systems.
- Potential to enhance and connect to existing legacy berms and ditches.
- Provide connection and waterfront access.

DESIGN CONSIDERATIONS - Overlays

100 YEAR FLOOD PLAIN

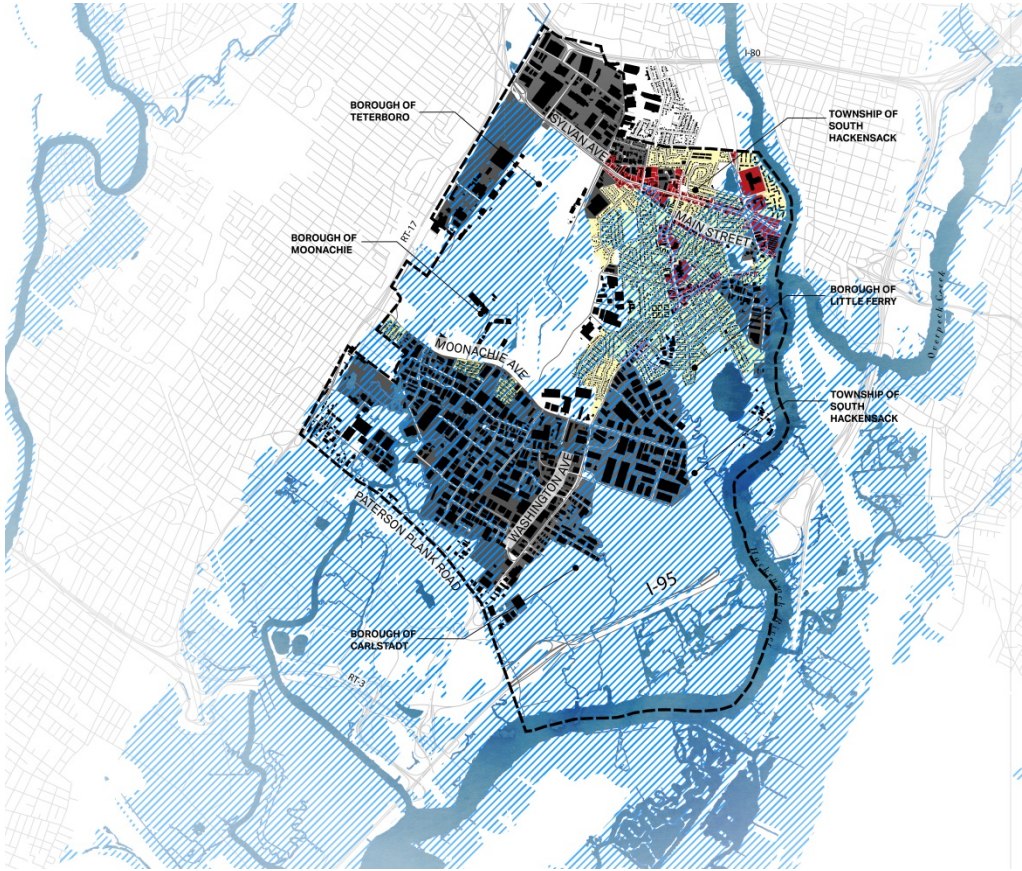
Location Key

N

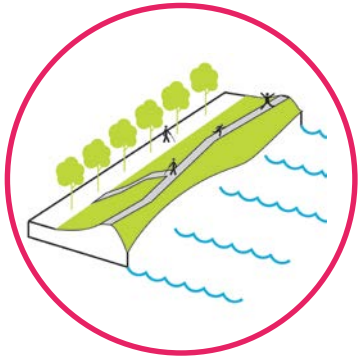
1000' 2000'

Legend

- Municipality
- Water
- 100 Year Floodplain
- Residential
- Commercial
- Light Industrial



- This graphic shows the severity of the risk and vulnerability of the Meadowlands. Almost the entire site sits within the 100 year flood plain.



ALTERNATIVE 1

STRUCTURAL FLOOD REDUCTION

NETWORK MAP + CONCEPTS + KIT OF PARTS

STRUCTURAL FLOOD REDUCTION

ALTERNATIVE 1: STRUCTURAL FLOOD REDUCTION NETWORK MAP

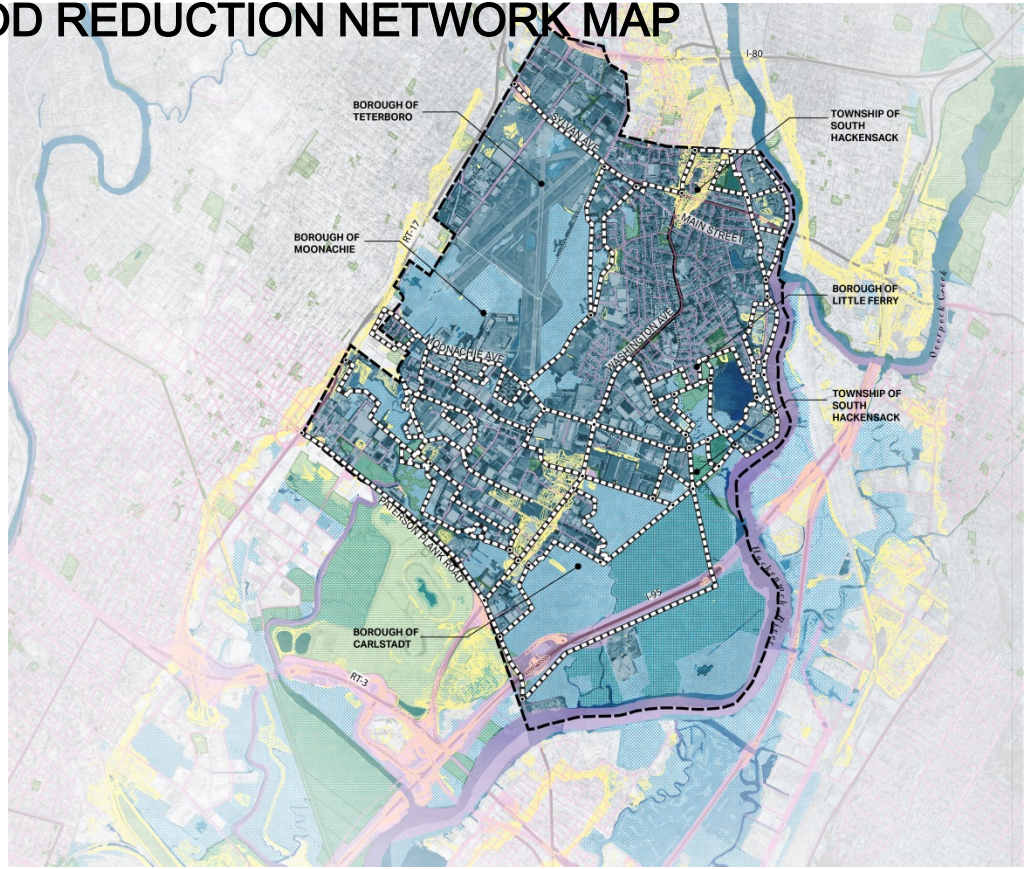
Location Key

N

1000' 2000'

Legend

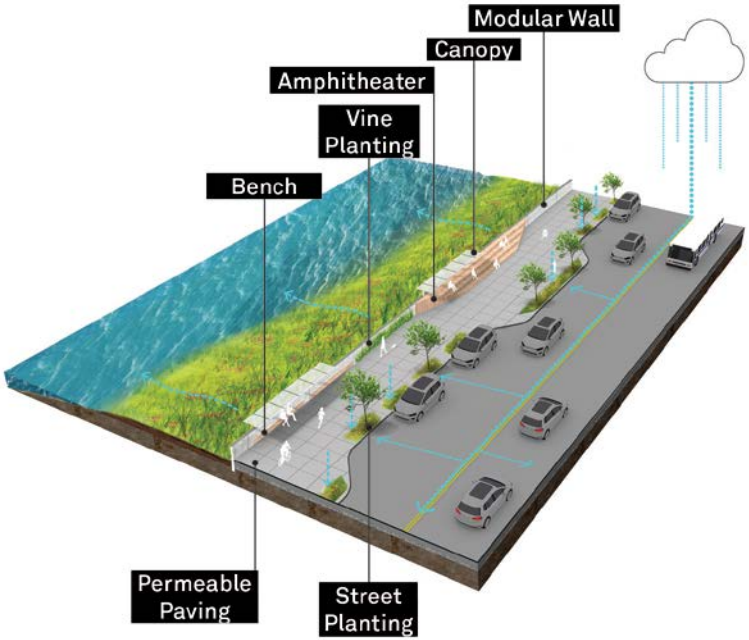
- Structural Flood Reduction Lines
- Water
- Wetlands
- Wetland Mitigation Banks
- Easements & Encumbrances
- Municipality
- Public Land
- 10+ ft elevation

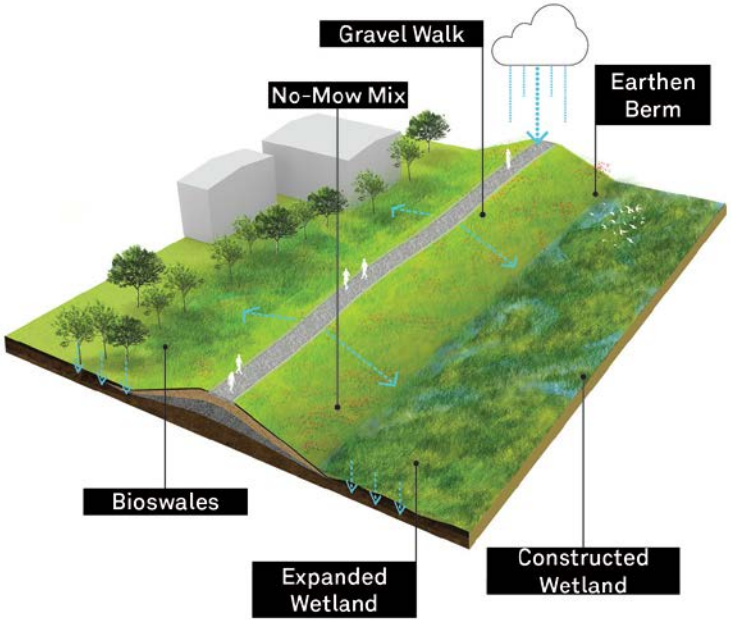


- Topographic high points, encumbrances, and public land create a map of potential paths for structural flood reduction.
- The network helps compare different options to "close the loop" and successfully provide flood protection.

STRUCTURAL FLOOD REDUCTION

ALTERNATIVE 1: CONCEPT DIAGRAMS





MODULAR PROTECTION STRATEGY

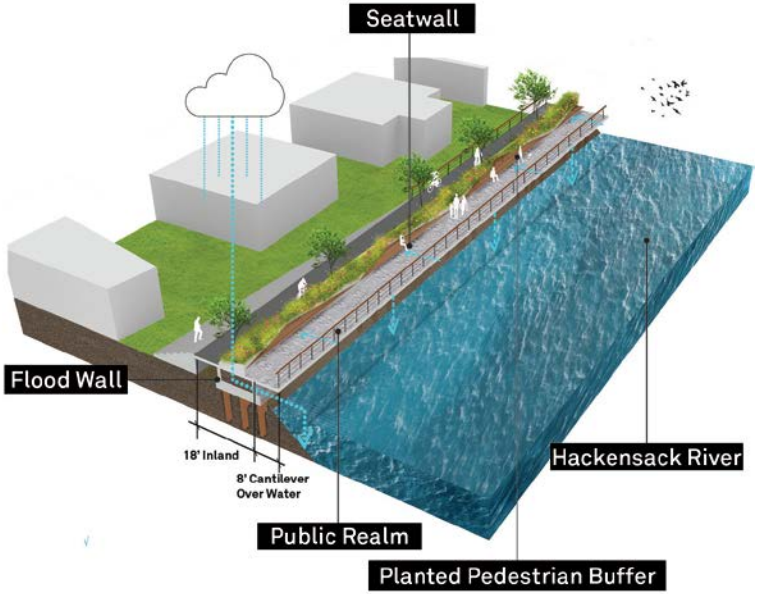
Bench + Canopy + Amphitheater + Planting

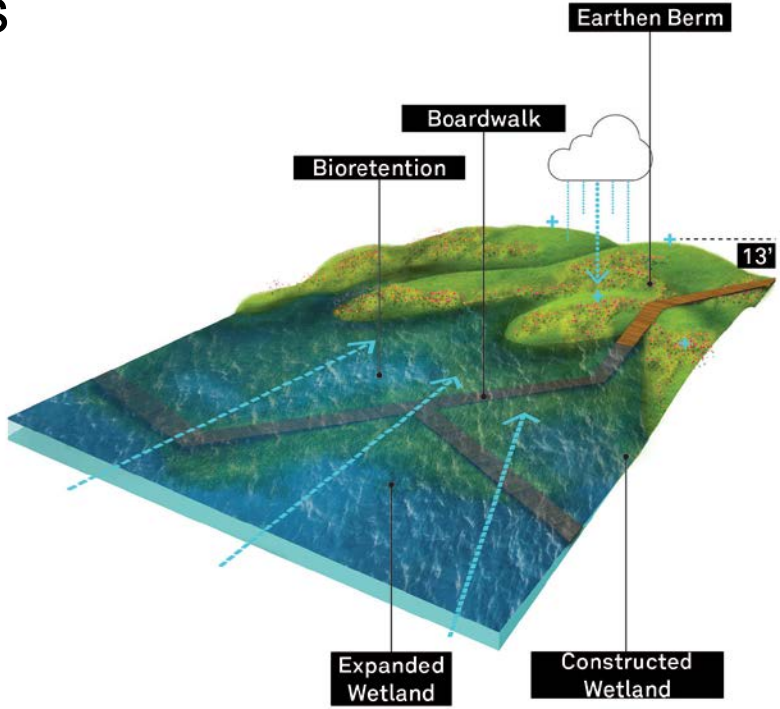
ECOLOGICAL PATH

Berm + Public Realm

STRUCTURAL FLOOD REDUCTION

ALTERNATIVE 1: CONCEPT DIAGRAMS





RESIDENTIAL PASSAGE

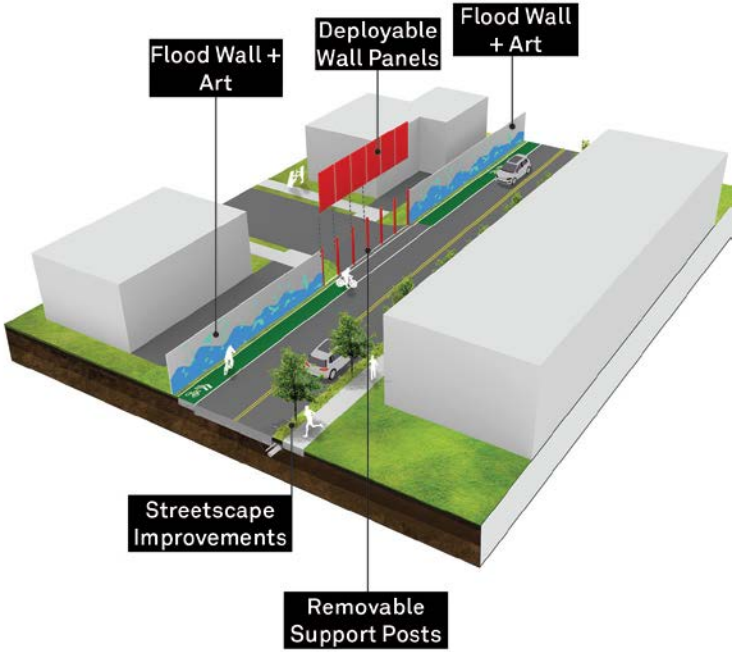
Cantilevered Walkway

FLUVIAL WETLAND PARK

A Flooded View of the Park

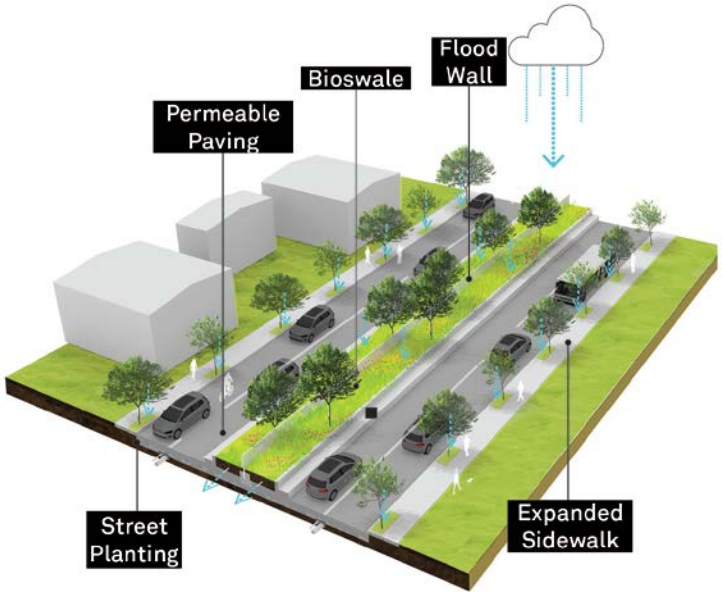
STRUCTURAL FLOOD REDUCTION

ALTERNATIVE 1: CONCEPT DIAGRAMS



INTERIOR DEPLOYABLE STRATEGY

Proposed Improvements

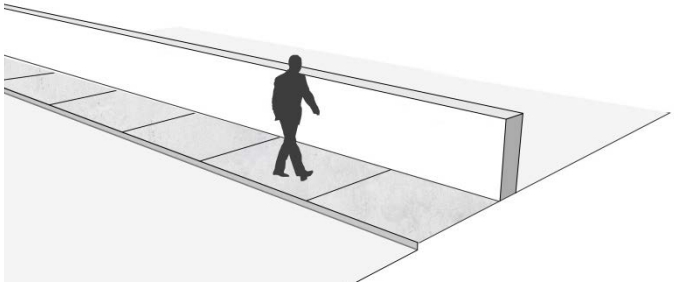


PLANTED STREET MEDIAN

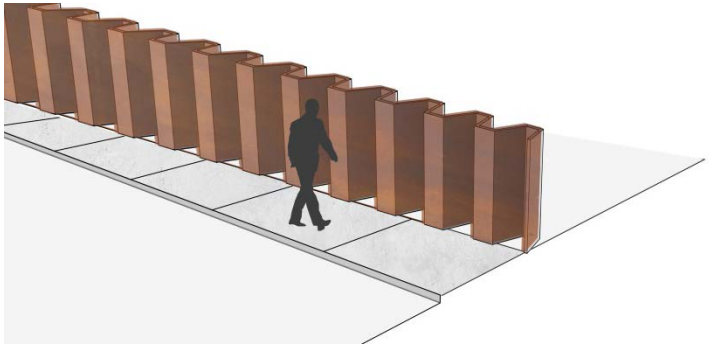
Flood Wall + Planting

STRUCTURAL FLOOD REDUCTION

ALTERNATIVE 1: KIT OF PARTS



BASIC FLOOD WALL

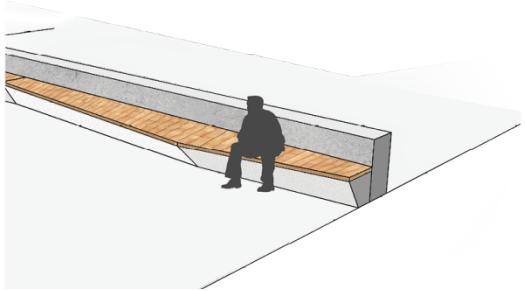


SHEET PILE

STRUCTURAL FLOOD REDUCTION

ALTERNATIVE 1: KIT OF PARTS

VINE PLANTING

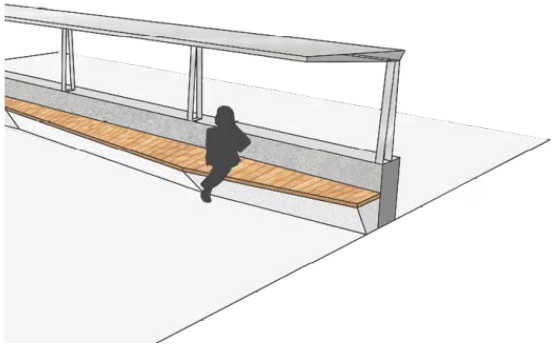


BENCH

STRUCTURAL FLOOD REDUCTION

ALTERNATIVE 1: KIT OF PARTS

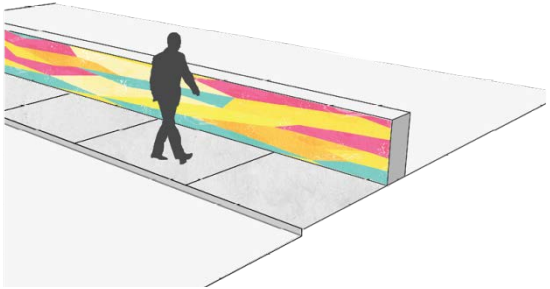
PLANTER



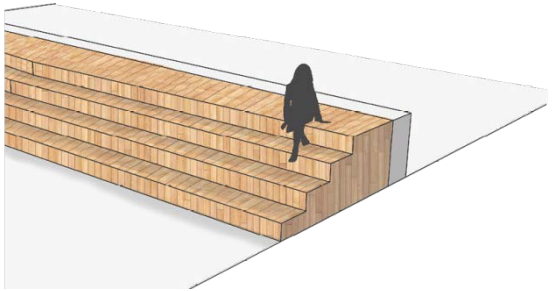
CANOPY

STRUCTURAL FLOOD REDUCTION

ALTERNATIVE 1: KIT OF PARTS



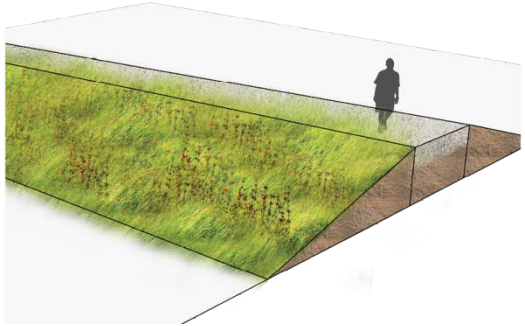
ART



AMPHITHEATER

STRUCTURAL FLOOD REDUCTION

ALTERNATIVE 1: KIT OF PARTS



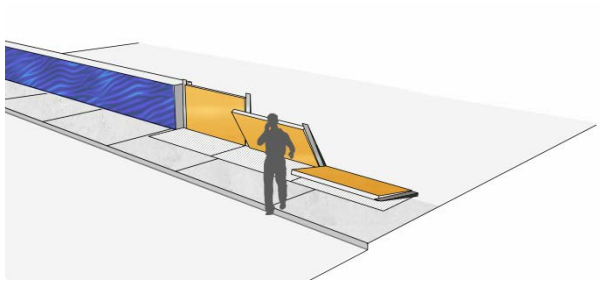
BERM + PATH

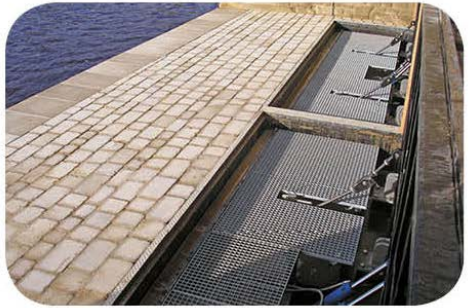
BERM + WALL

STRUCTURAL FLOOD REDUCTION

ALTERNATIVE 1: KIT OF PARTS

CANTILEVERED WALKWAY

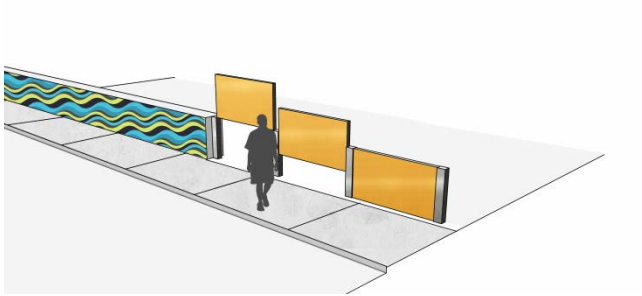




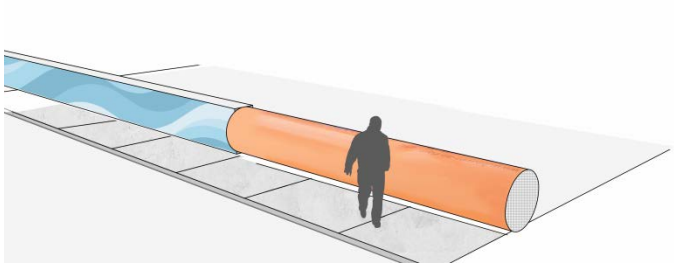
FLIP DEPOLYABLE

STRUCTURAL FLOOD REDUCTION

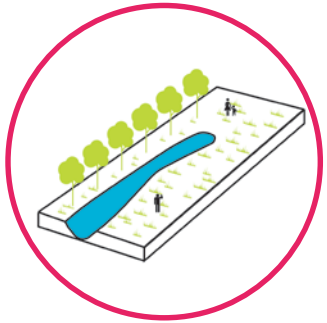
ALTERNATIVE 1: KIT OF PARTS



PANEL DEPOLYABLE



INFLATABLE DEPLOYABLE



ALTERNATIVE 2

STORM WATER DRAINAGE IMPROVEMENTS

NETWORK MAP + CONCEPTS + KIT OF PARTS

STORM WATER DRAINAGE IMPROVEMENTS

ALTERNATIVE 2: STORM WATER DRAINAGE IMPROVEMENTS ZONE MAP

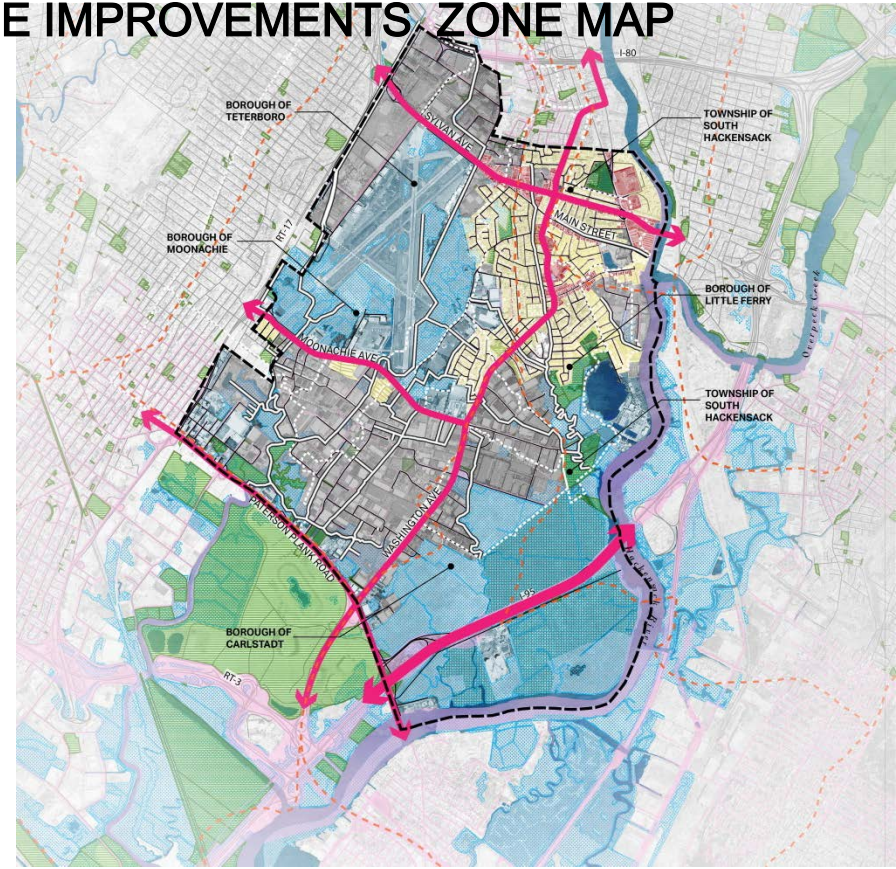
Location Key

N

1000' 2000'

Legend

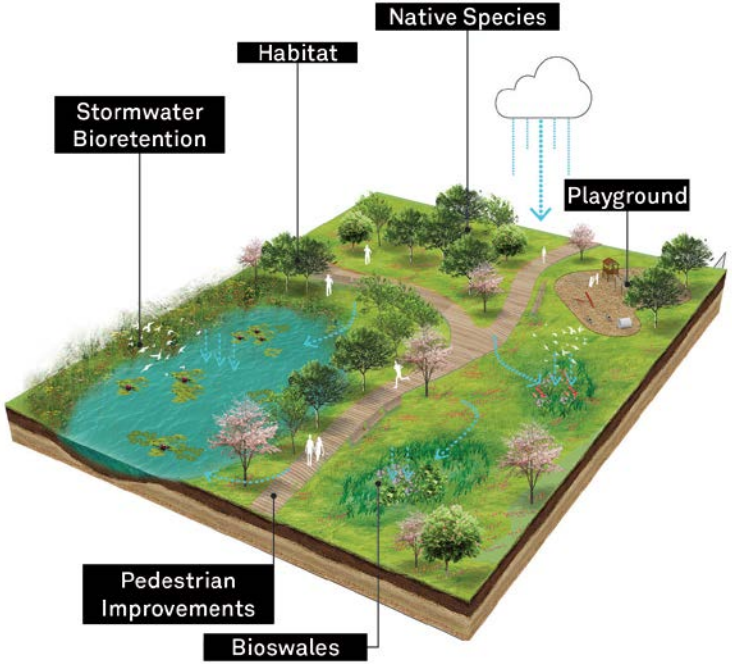
- Watershed Boundaries
- Ditches
- Water
- Wetlands
- Wetland Mitigation Banks
- Sub-basin Boundaries
- Evacuation Routes
- Easements & Encumbrances
- Municipality
- Residential
- Commercial
- Light Industrial
- Public Land

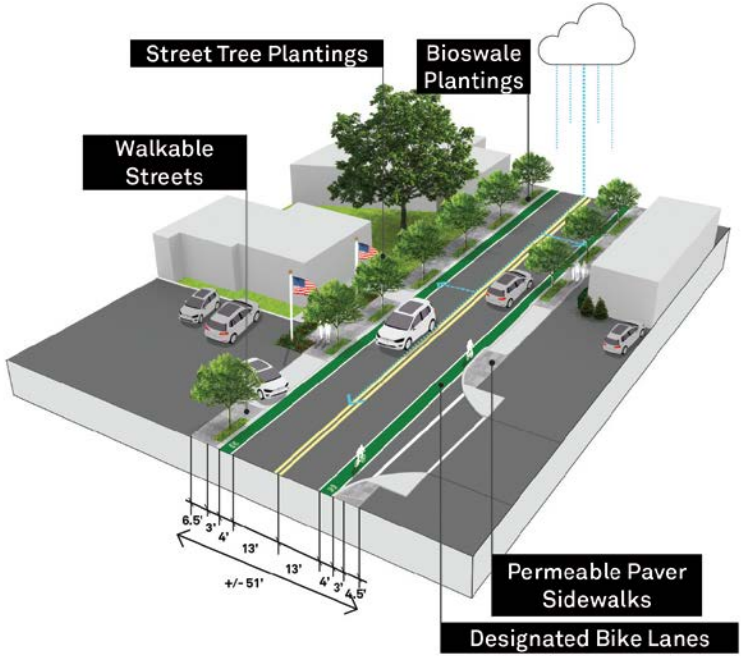


- Topographic edges & watersheds define natural catchment basins.
- Transit edges help define roadway connectors with green infrastructure.
- Zoning edges, especially industrial, residential, and commercial help define areas of focus.

STORM WATER DRAINAGE IMPROVEMENTS

ALTERNATIVE 2: CONCEPT DIAGRAMS





OPEN SPACE

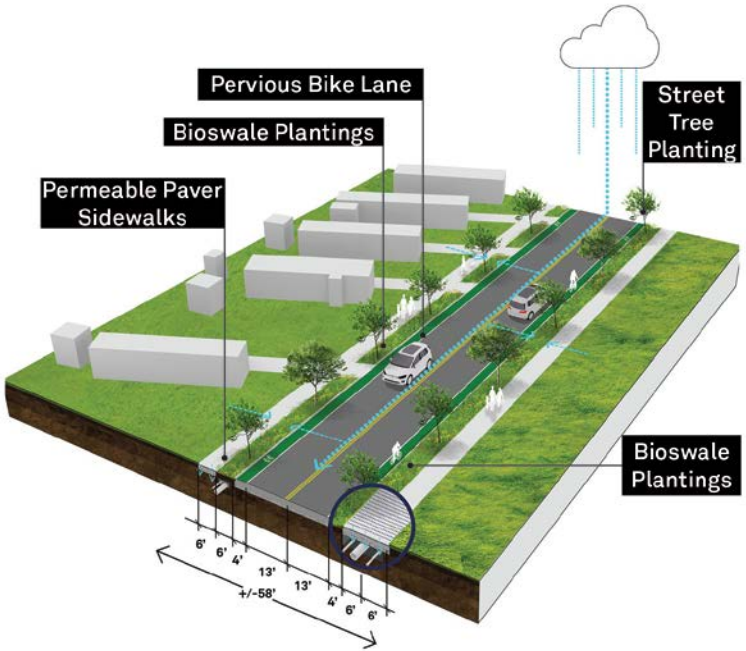
Managing Water + Providing Open Space

STREET IMPROVEMENTS

Walkable Streets + Bike Lanes

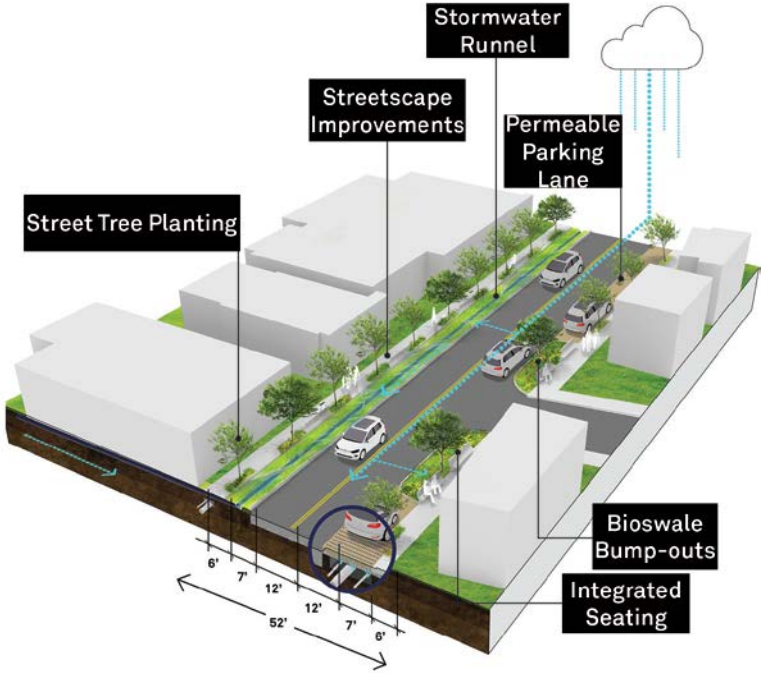
STORM WATER DRAINAGE IMPROVEMENTS

ALTERNATIVE 2: CONCEPT DIAGRAMS



STREET IMPROVEMENTS

Bike Lanes + Bioswales

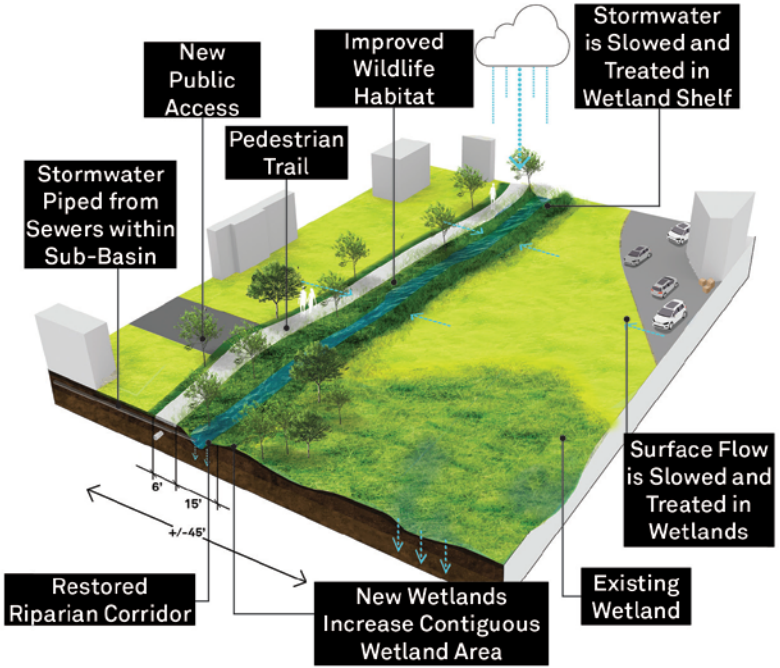


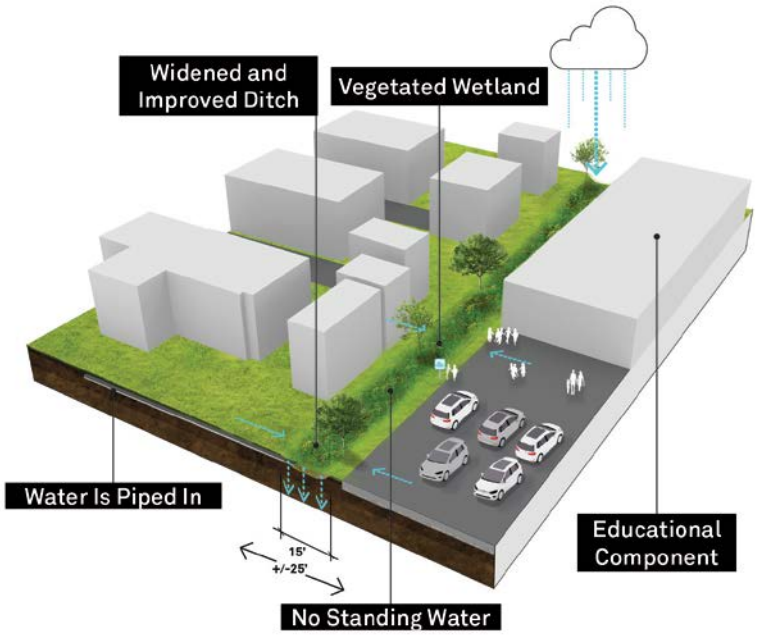
STREET IMPROVEMENTS

Permeable Paving + Runnel + Street Trees

STORM WATER DRAINAGE IMPROVEMENTS

ALTERNATIVE 2: CONCEPT DIAGRAMS





REVIVING THE DITCH

Option 1: Extend the Riparian Corridor

REVIVING THE DITCH

Option 2: Daylight and Enhance the Ditch

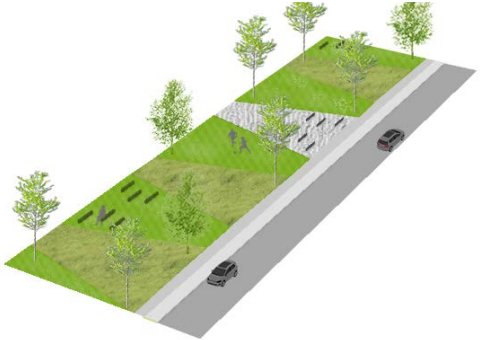
STORM WATER DRAINAGE IMPROVEMENTS

ALTERNATIVE 2: KIT OF PARTS

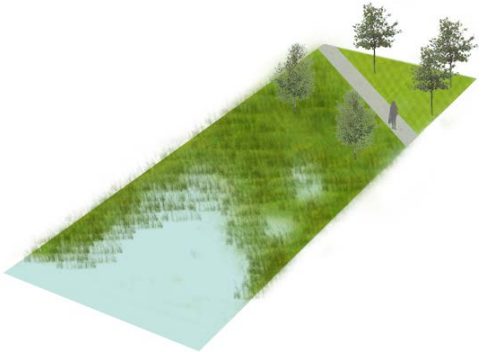
SUBSURFACE INFRASTRUCTURE

STORM WATER DRAINAGE IMPROVEMENTS

ALTERNATIVE 2: KIT OF PARTS



OPEN SPACE

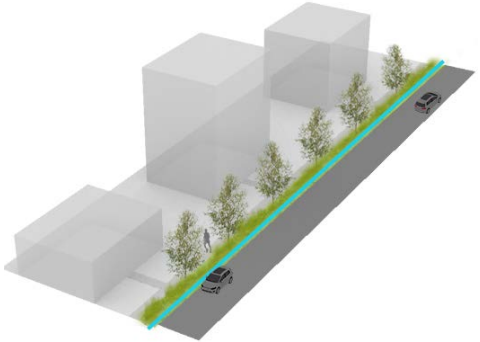


WETLAND ENHANCEMENT/CREATION

STORM WATER DRAINAGE IMPROVEMENTS

ALTERNATIVE 2: KIT OF PARTS

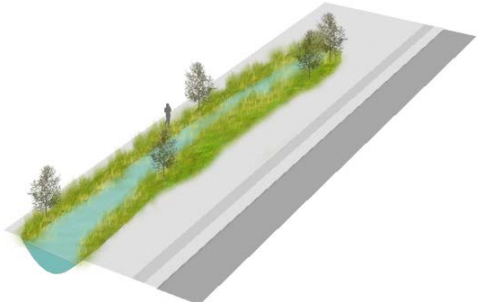
BIOSWALE



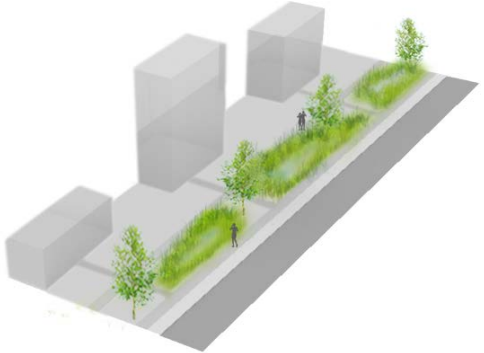
RUNNEL

STORM WATER DRAINAGE IMPROVEMENTS

ALTERNATIVE 2: KIT OF PARTS



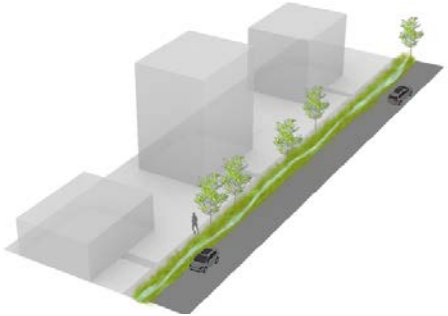
BIORETENTION



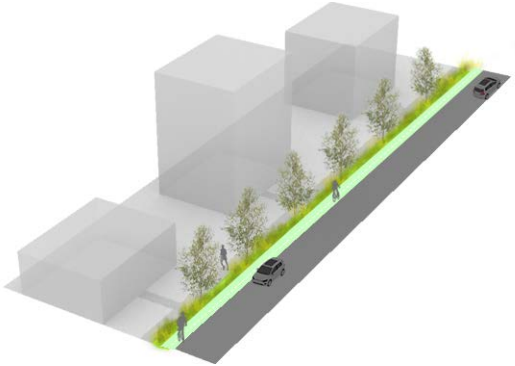
RAIN GARDEN

STORM WATER DRAINAGE IMPROVEMENTS

ALTERNATIVE 2: KIT OF PARTS



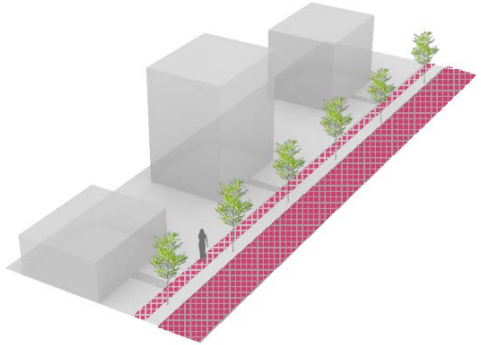
FILTER STRIP



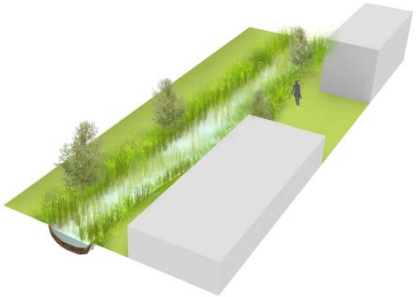
BIKEABLE STREETS

STORM WATER DRAINAGE IMPROVEMENTS

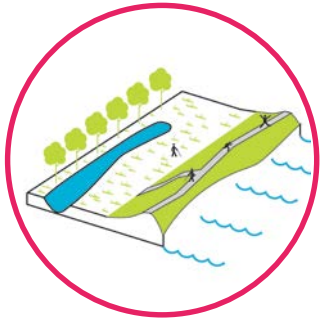
ALTERNATIVE 2: KIT OF PARTS



PERMEABLE PAVING



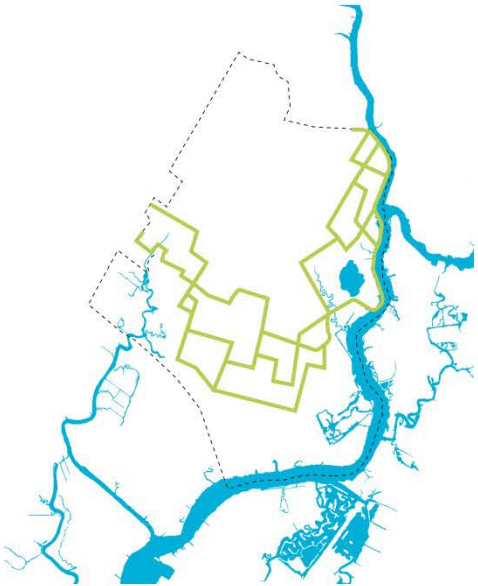
WIDENING DITCHES



ALTERNATIVE 3

HYBRID

ALTERNATIVE 3: PRIORITIES AND TRADEOFFS



Several Options for Protection

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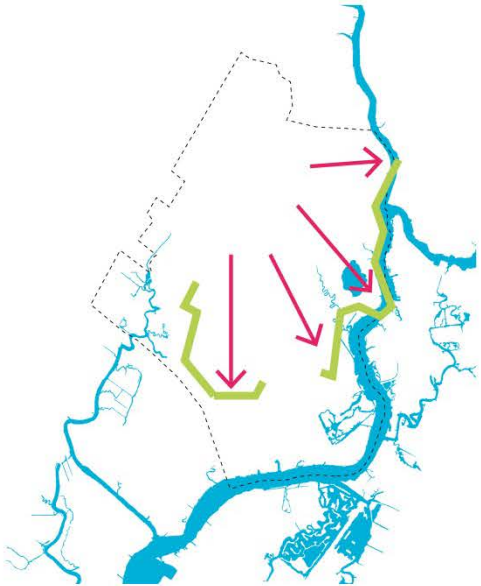

Consider Protected Areas

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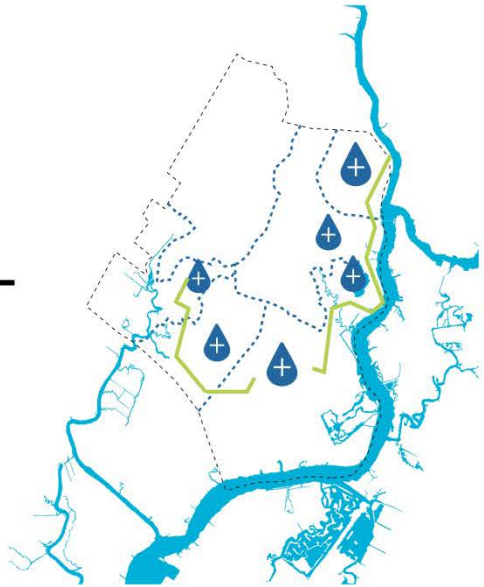
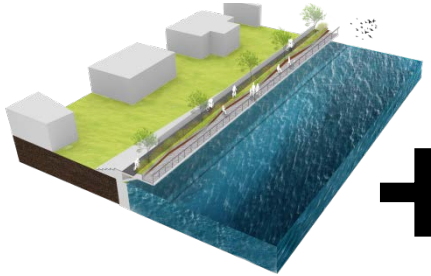


Identify Storm Water Improvement Areas

ALTERNATIVE 3: PRIORITIES AND TRADEOFFS



Alternative 1:
Structural Flood
Reduction

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Alternative 2:
Storm Water Drainage
Improvements

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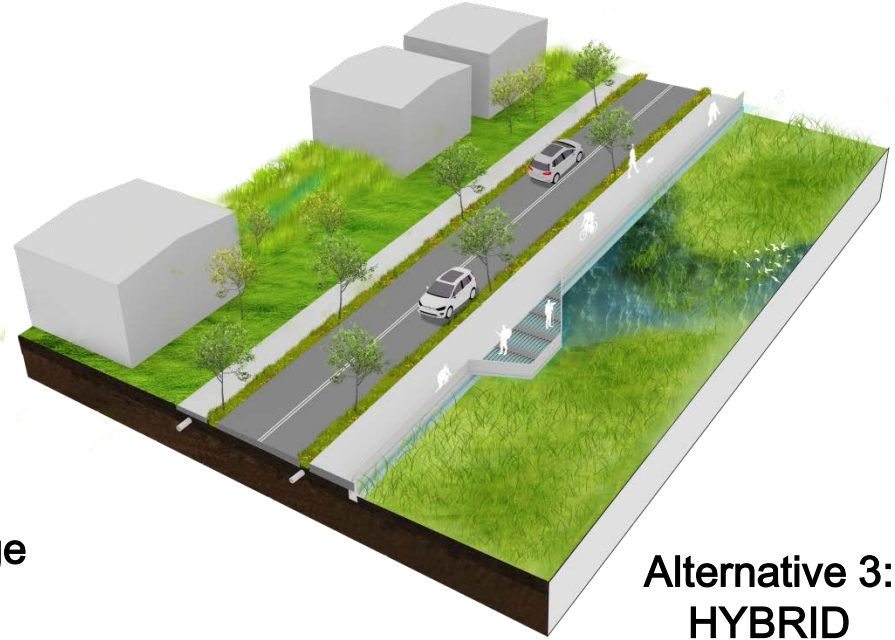

Alternative 3:
HYBRID

*Priorities and tradeoffs will be discussed in groups

BREAKOUT SESSION & NEXT STEPS

BREAKOUT SESSION & NEXT STEPS

- **Alternative 1: Structural Flood Reduction** (30 Minutes)
  - Discussion of Concepts
  - Network Map Overlay + Zones
  - Network Map Trace Paper Overlay + Alignment Discussion
- **Alternative 2: Storm Water Drainage Improvements** (30 Minutes)
  - Discussion of Concepts
  - Network Map + Zones
- **Alternative 3: Hybrid** (20 Minutes)
  - Trace Paper Overlay + Discuss Priorities & Tradeoffs
- **Handout & Next Steps** (10 Minutes)

Moving from “Kit of Parts” to Concepts

- Verbal Community Feedback (from Tonight's Groups)
- Written Community Feedback (In Handout)
- Analyzing Community Feedback
- Developing Concepts

NJDEP / AECOM upcoming activities:

- Prepare Meeting Summary for this meeting
- Continue developing:
- Initial Alternatives and Concepts
- Preliminary Draft EIS
- Update and refine Initial Screening Criteria Matrix

CAG: CALL TO ACTION

- Submit comments by September 30, 2016 on Concept Handout
- Review and comment on Meeting Summary for this meeting
- Share information from this Meeting with friends and neighbors
- Educate your friends and colleagues on the project and NEPA process
- Continue to build interest in the Project
- Continue obtaining information, ideas, and potential concerns from constituents
- Ensure the public knows about upcoming information (to be posted on Project website)

Critical Schedule Dates (approximate):

Monday, October 24

CAG Meeting #5: Initial Concept Alternatives

THANK YOU!