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## 1.0 List of Acronyms

### List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>BCR</td>
<td>Benefit/Cost Ratio</td>
</tr>
<tr>
<td>CAG</td>
<td>Citizen Advisory Group</td>
</tr>
<tr>
<td>CDBG-DR</td>
<td>Community Development Block Grant – Disaster Recovery</td>
</tr>
<tr>
<td>EFH</td>
<td>Essential Fish Habitat</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>HUD</td>
<td>Department of Housing and Urban Development</td>
</tr>
<tr>
<td>NEPA</td>
<td>National Environmental Policy Act</td>
</tr>
<tr>
<td>NJDEP</td>
<td>New Jersey Department of Environmental Protection</td>
</tr>
<tr>
<td>RBD</td>
<td>Rebuild by Design</td>
</tr>
<tr>
<td>RBDM</td>
<td>Rebuild by Design Meadowlands</td>
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</tbody>
</table>
2.0 Agenda

Project Update and Preferred Alternative

6-8 PM
January 11, 2018
Robert L. Craig School Gymnasium
20 West Park Street
Moonachie, NJ 07074

Project Website
www.rbd-meadowlands.nj.gov
Project Email
rbd-meadowlands@dep.nj.gov

Welcome

Presentation

Opening Remarks (10 Minutes)

Welcoming (Linda Fisher, NJDEP & Borough Mayors)

Agenda (Chris Benosky, AECOM)

Project Overview (Garrett Avery, AECOM)

Selecting a Preferred Alternative (Lulu Loquidis, AECOM)

Alternative 1 Storm Surge Flooding (Lulu Loquidis, AECOM)

Alternative 2 Frequent Rain Flooding (Garrett Avery, AECOM)

Alternative 3 The Preferred Alternative (Garrett Avery, AECOM)

The Build Plan (Lulu Loquidis, AECOM)

The Build Plan Benefits (Garrett Avery, AECOM)

Next Steps & Q&A/Closure (Dave Rosenblatt, Assistant Commissioner NJDEP & Chris Benosky, AECOM)

Next Steps

Question and Answers
REBUILD BY DESIGN: MEADOWLANDS

COMMUNITY MEETING

PROJECT UPDATE AND PREFERRED ALTERNATIVE
JANUARY 11, 2018

AGENDA

- Welcome
- The Meadowlands Challenge
- Alternative 1
- Alternative 2
- Alternative 3
  - Build Plan
  - Future Plan
- Preferred Alternative
- Takeaways / Next Steps
- Question & Answer

Christopher Benosky, AECOM
REBUILD BY DESIGN COMPETITION & AWARD

- Original Proposed RBD Concept
- Protect: Flood Protection
- Connect: Transportation Improvements
- Grow: Re-Development
- Cost Estimate (Competition Cost) $850M+

Competition Graphic: MIT

REBUILD BY DESIGN COMPETITION & AWARD

- HUD awarded State of New Jersey $150M for Phase 1 Pilot Area only
- Project must be functional and completed by September 2022

PILOT 1
LITTLE FERRY, SOUTH HACKENSACK, MOONACHIE, TEUFELSDORD, & CARLSTADT
PROJECT OVERVIEW
GARRETT AVERY, AECOM

THE PURPOSE

Address flood risk

Increase resiliency of the communities and ecosystems

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

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

Increase **community resiliency**

**Reduce flood insurance rates** and claims from future events

**Enhance water quality** and protect ecological resources

**Protect** life, public health, and property

Incorporate flood hazard risk reduction strategy with **civic, cultural, & recreational values**

PROJECT GOALS

1. Create the **BEST POSSIBLE PROJECT** with the available funding

2. Meets the Project Mandate by providing **FLOOD REDUCTION & CO-BENEFITS** such as reducing sediment & improving water quality

3. Construct a project that provides **STORM PROTECTION** and allows for a **QUicker RECOVERY**
PROJECT CONSTRAINTS

1. Construct a complete project that functions with INDEPENDENT UTILITY to meet purpose & need without relying on future projects.

2. Use only AVAILABLE FUNDS without relying on future funding.


4. Project must have a POSITIVE BENEFIT COST RATIO.

PROJECT AREA CHALLENGES

The Meadowlands sits at a low elevation relative to sea level. Protection from tidal influence and storm surge is limited. Some existing storm infrastructure is under-performing and needs to be updated, or more frequently maintained.
PROJECT AREA NEEDS

INSUFFICIENT PROTECTION
Existing protection from tidal surge is limited, which can result in severe flooding.

INSUFFICIENT DRAINAGE
The existing drainage system proves to be insufficient during flood events.

FREQUENT STORMS
Severe interior flooding can occur multiple times a year due to frequent rain storms.

WATER QUALITY
Runoff flows directly into the storm system untreated.

THE MEADOWLANDS - THREE ALTERNATIVES

Alternative 1:
Storm Surge Flooding

Alternative 2:
Frequent Rain Flooding

Alternative 3:
Storm Surge & Frequent Rain Flooding
PROJECT ROADMAP

NEW MEADOWLANDS WINNING CONCEPT
AECOM BEGINS
PRESENTATION OF PREFERRED ALTERNATIVE
DRAFT/FINAL ENVIRONMENTAL IMPACT STATEMENT
PUBLIC COMMENT PERIODS
PROJECT CONSTRUCTION
COMPLETE & FUNCTIONAL

ALTERNATIVE 3 - THE PREFERRED ALTERNATIVE

Alternative 3:
Storm Surge & Frequent Rain Flooding
SELECTING A PREFERRED ALTERNATIVE
LULU LOQUIDIS, AECOM

COMMUNITY ENGAGEMENT
EXECUTIVE STEERING COMMITTEE & CITIZENS ADVISORY GROUP

EXECUTIVE STEERING COMMITTEE (ESC)
- NJ Department of Environmental Protection (NJDEP) Commissioner
- Department of Housing & Urban Development (HUD) Rebuild By Design (RBD) Project Management (PM) Team
- NJ Department Environmental Protection (NJDEP)
- AECOM (Consultant)
- Local Mayors and other representatives
- New Jersey Sports & Exhibition Authority (NJSEA)
- Berger-Hill Joint Venture (Consultant/Third Party Reviewer)

CITIZEN ADVISORY GROUP (CAG)
- Community Representatives
- Vulnerable Population Representatives

ENVIRONMENTAL IMPACT STATEMENT OUTREACH
- Stakeholder Outreach
- Pertinent Federal/State/Local/Agencies
- Federally Recognized Native American Tribes

- Workshops/Meetings with CAG & ESC
- Newsletters/Flyers/Websites
- Public Scoping Meetings at Notice of Intent
- Public Hearing at DEIS
OUR PROCESS
THE SCREENING TOOL

Concepts are screened against each other to determine how they will meet the below metrics.

FLOOD REDUCTION BENEFITS
BUILT HUMAN ENVIRONMENT
NATURAL ENVIRONMENT
CONSTRUCTION & MAINTENANCE
COST & BENEFIT

FLOOD REDUCTION BENEFITS

Categories Evaluated:
- Reduces Flood Risk from Coastal Storm Surge (Alternatives 1 and 3)
- Reduces Flood Risk from Rainfall / Interior Drainage Challenges (Alternatives 2 and 3)
- Provides Protection to Vulnerable and Underserved Populations
- Provides Protection to Critical Infrastructure (emergency services, hospitals, transit facilities)
Categories Evaluated:

- Effects to Existing Utilities & Utility Infrastructure
- Effects to Existing Transportation Network, Local Traffic, and Connectivity
- Effects on Land Acquisition / Housing Displacements
- Potential to Provide Increased Waterfront Access
- Effects to Recreational, Civic, and Cultural Amenities and Uses
- Effects to Viewshed and Local Visual Quality
- Effects to Air Traffic Safety at Teterboro Airport

Categories Evaluated:

- Effects to Existing Hazardous Waste Sites
- Effects to Berry’s Creek Remediation
- Effects on the Transport of Environmental Contaminants/ Sediments during Flood Events
- Effects to Water Resources, including Water Quality, “Waters of the US,” Wetlands, and Mitigation Banks
- Effects to Fisheries and Essential Fish Habitat (EFH)
- Effects on Protected Species and their Habitats
- Effects on Other Sensitive Ecological Resources, including Biodiversity, Habitat, and Migration/Movement Corridors
- Effects to Historic and Prehistoric Cultural Resources
CONSTRUCTION & MAINTENANCE

Categories Evaluated:
- Constructability
- Minimizes Long-Term Maintenance & Operation Requirements for Overall System
- Potential to Complete by September 2022

BENEFIT & COST

Categories Evaluated:
- Provides Benefits to the Project Area and Community
- Can be Implemented within Available Funding Limits
- Has a Positive Benefit/Cost Ratio
BENEFIT COST RATIO

GRANT-SPECIFIC BENEFIT/COST EVALUATION CRITERIA

Economic Revitalization Benefits
• Direct effects on local or regional economy (e.g., tourism revenue)
• Improved Property Value (exclusive of enhanced flood protection)
• Value creation attributable to Rebuild By Design

Environmental Benefits
• Protection from disruptive non-disasters (nuisance flooding)
• Reduced vulnerability of energy and water infrastructure
• Improved Ecosystem and Biodiversity
• Water & Air Quality Improvements

Social Benefits
• Reductions in human suffering
• Improved Recreation Value
• Improved Community Identity and Social Cohesion
• Greater access to Cultural, Historical, Archeological Sites and Landscapes

STORM SURGE FLOODING

ALTERNATIVE 1
LULU LOQUIDIS, AECOM
ALTERNATIVE 1 STORM SURGE
APPROACH & GOALS

+ INFRASTRUCTURE
Connecting to high points to reduce construction costs and minimize grading

+ ECOLOGY
Minimize disturbance, consider habitat improvements to fragmented systems, and creation of new ecological zones

+ PARKS
As a co-benefit to flood reduction, the project seeks to connect existing public parks as well as provide new park space

ALTERNATIVE 1 STORM SURGE - ANALYSIS
HIGH POINTS

- Existing topography was analyzed to determine water flow and identify areas of high ground

- Above 10' NAVD88
- 9' NAVD88
- 8' NAVD88
- 7' NAVD88
- 6' NAVD88
- Below 6' NAVD88
ALTERNATIVE 1 STORM SURGE - ANALYSIS
SOILS & SUB-STRUCTURE

- All proposed flood protection strategies were informed by geotechnical analysis.
- The soil type helped the team determine how deep the piles and sub-structure needed to extend.

Data Source:
USDA WSS AV Web Soil Survey

ALTERNATIVE 1 STORM SURGE SCREENING EXAMPLE

- Explored many options to a 100-year flood, but both Options 1 and 2 resulted in fatal flaws.
- The 7' NAVD88 design elevation was further analyzed.

<table>
<thead>
<tr>
<th>Initial Concepts</th>
<th>Description</th>
<th>Within Budget</th>
<th>No Increased Flood Risk</th>
<th>Benefit Cost Ratio &gt; 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1</td>
<td>100-year Storm Protection/Expanded Project Area</td>
<td>X</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Option 2</td>
<td>100-year Storm Protection/Project Area</td>
<td>X</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Option 3</td>
<td>50-year Level of Protection/Project Area</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Option 4</td>
<td>Rtg Levels/ Reduced Project Area</td>
<td>•</td>
<td>•</td>
<td>X</td>
</tr>
<tr>
<td>Option 5</td>
<td>Storm Surge Barrier on Hackensack River</td>
<td>X</td>
<td>X</td>
<td>•</td>
</tr>
</tbody>
</table>
ALTERNATIVE 1 STORM SURGE - PLAN

- Provides protection from a storm surge to elevation 7' NAVD88 (approximately a 50-yr storm)
- Provides community co-benefits through water access & multifunctional wall elements
- Positive Benefit Cost Ratio greater >1
- Revised Feasibility-level concept cost exceeds $150M

CANTILEVER WALKWAY
CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES

- The Cantilever Walkway combines flood protection and public access
FLOOD PROTECTION
CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES

- The entire structure is built up to a 7' NAVD88 elevation

VIEWING PLATFORM & SHEET PILE
CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES

- Sheet pile is a cost effective material used in the southeast
- Public viewing platforms were integrated into the system
FLOOD PROTECTION
CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES

- Sheet pile wraps around viewing platform to form the flood protection system

FREQUENT RAIN FLOODING
ALTERNATIVE 2
GARRETT AVERY, AECOM
ALTERNATIVE 2 FREQUENT RAIN FLOODING

APPROACH & GOALS

+ INFRASTRUCTURE
  Enhance & restore channels to improve capacity to convey stormwater

+ ECOLOGY
  Native plantings and naturalized channel edges provide habitat and improve water quality

+ PARKS
  New park spaces slowing runoff & improve water quality

ALTERNATIVE 2 FREQUENT RAIN FLOODING - ANALYSIS

20 SUB-BASINS

- Analyzed 20 sub-basin areas in the hydrologic model

- Sub-basin boundary

A: UPPER EAST RISER
B: MIDDLE EAST RISER
C: LOWER EAST RISER
D: UPPER WEST RISER 1
E: UPPER WEST RISER 2
F: MIDDLE WEST RISER
G: LOWER WEST RISER
H: UPPER LOSEN SLOTE 1
I: UPPER LOSEN SLOTE 2
J: MOONACHEE
K: CARLSTDT
L: INDIAN LAKE
M: MAIN STREET
N: DEPEYSTER CREEK
O: LOWER LOSEN SLOTE
P: UPPER HACKENSACK
Q: MIDDLE HACKENSACK 1
R: MIDDLE HACKENSACK 2
S: LOWER HACKENSACK
T: BERRY'S CREEK
• Runoff flows to lower elevations, into creeks or ditches and is conveyed eventually into the Hackensack River or Berry's Creek
• We listened to the community members and used their input to map areas of frequent flooding

TETERBORO
MOONACHE
CARLSTADT
S. HACKENSACK

ALTERNATIVE 2 FREQUENT RAIN FLOODING - ANALYSIS
FREQUENCY & FLOW

- Top concepts were reviewed and evaluated using the screening criteria
- The Revised Concept was a result of reviewing and rearranging to create a concept carrying increased benefits

<table>
<thead>
<tr>
<th>Initial Concepts</th>
<th>Description</th>
<th>Within Budget</th>
<th>Distribution of Benefits</th>
<th>Benefit Cost Ratio &gt; 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Street</td>
<td>Increase storage capacity at Indian Lake, improves storm drainage pipes, includes upgrades to existing Willow Lake pump station discharge line, and new street and park green infrastructure</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>DePeyster Creek</td>
<td>Upgrade of existing pump station, upgrades of existing upstream culvert, channel dredging with habitat restoration, and new street and park green infrastructure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Losen Slote &amp; Carol Place</td>
<td>Two new pump stations and force mains to divert stormwater from residential area to downstream of Losen Slote, upgrades to existing storm drainage ditches and culverts, and new street and park green infrastructure</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>West Riser</td>
<td>New pump station, channel conveyance improvements with habitat restoration, culvert upgrades, and new street green infrastructure</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>East Riser</td>
<td>Pump station improvements, channel conveyance improvements with habitat restoration, culvert and bridge upgrades, and new street and park green infrastructure</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Revised Concept</td>
<td>New pump station and force mains to divert stormwater from residential area to downstream of Losen Slote, upgrades to culverts and bridge crossings, East River Ditch conveyance improvement, and new pump station, and new street and park green infrastructure</td>
<td></td>
<td>X</td>
<td></td>
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</table>

REVISED CONCEPT ADVANCES
**ALTERNATIVE 2 – FREQUENT RAIN FLOODING PLAN**

- Reduction in areal extent of flooding and depth of flooding for fluvial storms of a recurrence interval of 100-yr or less
- Provides community co-benefits through green infrastructure
- Positive Benefit Cost Ratio greater >1
- Revised Feasibility-level concept cost exceeds $150M

**LOSEN SLOTE DRAINAGE IMPROVEMENTS**

- New pump stations improve conveyance capacity by moving water from one location to another

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**CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES**

1. Submersible pump
2. 36" force main
3. Losen Slote
4. Control panel
GREEN INFRASTRUCTURE & PARK IMPROVEMENTS
CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES

- Wetland enhancement, improves storage and treatment capacities, and improves public recreation opportunity

THE PREFERRED ALTERNATIVE

ALTERNATIVE 3 – STORM SURGE & FREQUENT RAIN FLOODING
GARRETT AVERY, AECOM
ALTERNATIVE 3 – HYBRID

**APPROACH & GOALS**

+ **INFRASTRUCTURE**
  Structural Flood Reduction and local drainage infrastructure improvements

+ **ECOLOGY**
  Minimize ecological disturbance and improve habitat within channels, streets, and parks

+ **PARKS**
  Green infrastructure provides additional flood reduction & improves existing public parks

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ALTERNATIVE 3 – THE PREFERRED

A PLAN FOR 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
ARRIVING AT A PREFERRED ALTERNATIVE SCREENING

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Description</th>
<th>Stormwater &amp; Storm Surge Protection</th>
<th>Distribution of Benefits</th>
<th>Benefit Cost Ratio &gt; 1</th>
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<tbody>
<tr>
<td>Alternative 1</td>
<td>Final Storm Surge Protection Concept</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative 2</td>
<td>Final Stormwater Reduction Concept</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative 3</td>
<td>Final Storm Surge &amp; Stormwater Protection Concept</td>
<td></td>
<td></td>
<td>THE PREFERRED ALTERNATIVE</td>
</tr>
</tbody>
</table>

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.
**ALTERNATIVE 3 - BUILD PLAN**

**FREQUENT FLOOD REDUCTION**

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**

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

---

**FOR FUTURE IMPLEMENTATION**

**ADDITIONAL RAIN FLOODING REDUCTION FROM ALTERNATIVE 2**

1. East Riser Channel Improvements Extension toward South Hackensack
2. A second Losen Slote Pump Station & Force Main
FOR FUTURE IMPLEMENTATION
50-YEAR STORM SURGE PROTECTION FROM ALTERNATIVE 1

- All Future Plan elements will be evaluated in the Feasibility Study and Draft EIS
- Utilizing the Feasibility Study and EIS could reduce the timeline and initial expense for those implementing Future Plan components

THE BUILD PLAN
LULU LOQUIDIS, AECOM
ALTERNATIVE 3 - BUILD PLAN

The Build Plan can be constructed and functional by 2022
Will require less maintenance than that of an Alternative 1 system
Positive Benefit Cost Ratio greater >1
Can be constructed within Available Funds

EAST RISER CHANNEL IMPROVEMENTS
FLOOD REDUCTION BENEFITS

Channel conveyance improvements below Moonachie Ave with a new pump station
New wetland eco-park with ~12,000 SF of integrated green infrastructure and ~129,000 SF of wooded and emergent wetland to improve storage and water quality
EAST RISER CHANNEL IMPROVEMENTS
CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES

- Improves conveyance capacity
- Captures road runoff and filters suspended solids
- Native vegetation provides habitat and improves visual quality along the channel

EAST RISER CHANNEL IMPROVEMENTS
FLOOD REDUCTION CO-BENEFITS

- Channel conveyance improvements include habitat restoration with native vegetation
- New wetland eco-park is part of the flood reduction system, but also offers benefits in the form of habitat, environmental education, and recreation space
GREEN INFRASTRUCTURE & PARK IMPROVEMENTS
CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES

- Wetland enhancement, improves storage and treatment capacities, and improves public recreation opportunity

Elevated boardwalk
Channel improvements
Shallow emergent marsh
Native vegetation

LOSEN SLOTE DRAINAGE IMPROVEMENTS
FLOOD REDUCTION & CO-BENEFITS

- New pump station within the residential area of the stream
- Stormwater discharges via a 36" force main to the downstream Losen Slote marsh
- Energy dissipation structure limits erosion at discharge points
- Street green infrastructure collects water and filters total suspended solids
LOSEN SLOTE DRAINAGE IMPROVEMENTS
CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES

- A new pump station improves conveyance capacity by moving water from one location to another

1. Submersible pump
2. 36" force main
3. Losen Slote
4. Control panel

AVANTI PARK
FLOOD REDUCTION BENEFITS

- Water is stored in new open space and green infrastructure
- ~19,000 SF of improved wetland and ~11,000 SF of native planting and raingardens capture total suspended solids
**AVANTI PARK**

**FLOOD REDUCTION CO-BENEFITS**

- Street green infrastructure improves water quality, creates new habitat, and provides visual improvements
- New park space also creates places for people to gather, new habitat, and space for recreation

**AVANTI PARK**

**CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES**

- Bioretention systems capture and filters 1.25 inches of rainfall in two hours through planting media
- New retention areas create room for additional water storage
- Undeveloped land becomes public park and productive ecosystem
Multiple improvements are proposed at public facilities in Little Ferry such as bioswales and underground storage trenches.

Improvements are planned for the following facilities: Little Ferry Library, Little Ferry Municipal Building, Memorial Middle School, Washington Elementary, and Robert Craig Elementary.

Co-benefits to the municipal buildings include improvements near community buildings, such as opportunities for education, community outreach and involvement, and new habitat.
MUNICIPAL BUILDINGS & SCHOOLS
CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES

- Permeable paving and rain gardens collect and filters 1.25 inches of rainfall in two hours through planting media
- Green infrastructure can be an educational opportunity for schools and public buildings
- Greener streets improve habitat, create safer streets, and improve visual quality of the street

STREET GREEN INFRASTRUCTURE
CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES

- Green infrastructure provides a holding space for street runoff that is slowly released back into the stormwater system
- Subsurface green infrastructure features provide storage and ability to infiltrate runoff to reduce peak flow reaching the existing stormwater system
WILLOW LAKE & RIVERSIDE PARKS
FLOOD REDUCTION BENEFITS

- Reduce sedimentation into the drainage system & slows water movement
- Improvements to Willow Lake include approximately 65,000 SF of new native planting and low meadow and approximately 1,200 SF of rain gardens
- A new public open space on the Hackensack River includes approximately 5,700 SF of restored riparian wetland and approximately 30,000 SF of native planting and bioswales

WILLOW LAKE & RIVERSIDE PARKS
FLOOD REDUCTION CO-BENEFITS

- Co-benefits to the new and improved Little Ferry open spaces include new walking trails, space for recreation, water access, new habitat, and visual improvements
WILLOW LAKE PARK IMPROVEMENTS
CONCEPTUAL RENDERING FOR ILLUSTRATIVE PURPOSES

- Green infrastructure system would be sized to capture and treat 1.25 inches of rainfall in two hours
- Stone chimneys provided outlet for ponding water to reach stone storage
- Improvements to Willow Lake Park enhance water quality and user experience

BUILD PLAN CONSTRUCTION COST
FEASIBILITY-LEVEL COST BREAKDOWN

100% MEETS PROJECT PURPOSE & NEED

GREY INFRASTRUCTURE AND CHANNEL IMPROVEMENTS
85%

GREEN INFRASTRUCTURE AND PARK IMPROVEMENTS
15%
BUILD PLAN BENEFITS

GARRETT AVERY, AECOM

2-YEAR STORM (2023)

- Approximately **20 ACRES** would no longer flood during the 2-year storm (2023)
- Approximately **642 ACRES* would experience a reduction in flood water between 0.1ft to 3ft

* Additional flood depth reduction would occur in the vicinity of the drainage channels within East Riser Ditch (East Riser Ditch tide gate to Route 46) and Losen Slote (East Joseph Street to Niehaus) watersheds.
**BUILD PLAN BENEFITS**

**100-YEAR STORM (2023)**

- **Approximately 39 ACRES** would no longer flood during the 100-year storm (2023)

- **Approximately 1,244 ACRES** would experience a reduction in flood water between 0.1ft to 3ft

*Additional flood depth reduction would occur in the vicinity of the drainage channels within East Riser Ditch (East Riser Ditch tide gate to Route 46) and Losen Slote (East Joseph Street to Niehaus) watersheds.*

**BUILD PLAN BENEFIT**

**OPEN SPACE ENHANCEMENT: POPULATION & HOUSEHOLDS**

- **~300 HOUSEHOLDS**
  - Within 500’ of a new park

- **~5,000 PEOPLE**
  - Within 0.25 miles of a new park
BUILD PLAN BENEFIT
STREET GREEN INFRASTRUCTURE: HOUSEHOLDS

~218 HOUSEHOLDS
Within 100’ of a new trees

~775 TREES
New Trees Planted

Benefit Inputs
1. 100’ Buffer from New Trees in Parks and Streets
2. Improvements in Parks, Schools, and Public and Municipal Facilities

BENEFIT COST RATIO
GRANT-SPECIFIC BENEFIT/COST EVALUATION CRITERIA

Economic Revitalization Benefits
- Direct effects on local or regional economy (e.g., tourism revenue)
- Improved Property Value (exclusive of enhanced flood protection)
- Value creation attributable to Rebuild By Design

Environmental Benefits
- Protection from disruptive non-disasters (nuisance flooding)
- Reduced vulnerability of energy and water infrastructure
- Improved Ecosystem and Biodiversity
- Water & Air Quality Improvements

Social Benefits
- Reductions in human suffering
- Improved Recreation Value
- Improved Community Identity and Social Cohesion
- Greater access to Cultural, Historical, Archeological Sites and Landscapes
BENEFITS CATEGORIES ANALYZED
BENEFIT/COST EVALUATION

**ENVIRONMENTAL**
1%

**SOCIAL**
8%

**ECONOMIC**
10%

**RESILIENCY**
81%

BUILD PLAN BENEFITS
RESILIENCY

**PRESENT VALUE**
$87.1M

**INDUSTRIAL BENEFITS**
35%

**INJURY AND LOSS OF LIFE BENEFITS**
31%

**OTHER* BENEFITS**
0.1%

**RESIDENTIAL BENEFITS**
1.0%

**MUNICIPAL BENEFITS**
1.4%

**MOTOR VEHICLES BENEFITS**
1.5%

**COMMERCIAL BENEFITS**
30%

*Other category benefits include: Apartment Structures, Utility Structures, Debris Removal, Emergency Service, Critical Facility Disruption
BENEFIT EVALUATED
environmental benefits

Present Value
$175,000

Nutrient Pollution Benefits
2%

Pollination Benefits
20%

Air Quality Benefits
78%

NEXT STEPS

Dave Rosenblatt, Assistant Commissioner
NJDEP
CONSTRUCTING THE PREFERRED ALTERNATIVE

- Meets the project Purpose & Need
- Satisfies HUD mandate
- Can be constructed by 2022 with the allocated funding
- Provides Flood Reduction & numerous co-benefits

NEXT STEPS
OPERATIONS & MAINTENANCE (O&M)

- The State will provide an O&M plan that identifies the entities performing routine, on-going maintenance
- In cooperation with the Agencies and local municipalities receiving flood protection benefits, the State has begun by establishing an O&M Subcommittee
**NEXT STEPS**

**NJDEP: UPCOMING ACTIVITIES**

- **Action Plan Amendment (APA) 25:**
  - Draft APA publication: **January 12, 2018**
  - APA public comment period: **January 13 – February 12, 2018**
  - APA Public Hearing: **January 31, 2018**

- **Draft Environmental Impact Statement (DEIS):**
  - DEIS publication: **Spring 2018**
  - DEIS public comment period: **45 Days**
  - DEIS Public Hearing: **Spring 2018 (during public comment period)**

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**UPCOMING SCHEDULE**

[Chart showing upcoming schedule with various dates and milestones.]
NEXT STEPS

Critical Information

Project Website
www.rbd-meadowlands.nj.gov

Project Email
rbd-meadowlands@dep.nj.gov

Question & Answer

THANK YOU