REBUILD BY DESIGN

MEADOWLANDS

CITIZEN ADVISORY GROUP (CAG) MEETING #8

ALTERNATIVE 1: STRUCTURAL FLOOD REDUCTION CONCEPT DEVELOPMENT

Mach 29, 2017
1.0 List of Acronyms

List of Acronyms

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<th>Acronym</th>
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<tr>
<td>BCR</td>
<td>Benefit/Cost Ratio</td>
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2.0 Agenda

Alternative 1: Structural Flood Reduction

Welcome

Presentation

Opening Remarks (10 Minutes)

Welcoming (Linda Fisher, NJDEP)

Project Status Update (Chris Benosky, AECOM)

Alternative 1: Alignment Screening Process (10 Minutes)

Initial Screening Options (Chris Benosky, AECOM)

Alternative Alignment Concept Development (Garrett Avery & Lulu Loquidis, AECOM, 40 Minutes)

Alternative 3: Hybrid Alignment (Chris Benosky, 5 Minutes)

Next Steps & Q&A/Closure (20 Minutes)

Next Steps (Chris Benosky, AECOM)

Question and Answers

Physical Model Stations
AGENDA

- Project Status Update and Schedule
- Alternative 1: Alignment
  - Screening Process
  - Concept Development
- Alternative 3 Alignment
  - Hybrid Concept Development
- Next Steps
- Question & Answer
- Physical Model Stations
PROJECT STATUS UPDATE

Christopher Benosky, AECOM

- Refined working draft Concept Screening Criteria
- Completed and published to Project Website:
  - Meeting Minutes from CAG Meeting #7
  - February 2017 Newsletter
- Developing cost and moving toward a hybrid
- Field work and site surveying still ongoing
- Action Plan Amendment

ALTERNATIVE 1: ALIGNMENT

SCREENING PROCESS

CHRISTOPHER BENOSKY, AECOM
SCREENING PROCESS
CONCEPT DEVELOPMENT & SCREENING PROCESS

ALIGNMENT OPTIONS: 11 PRESENTED IN DECEMBER

Since December, 11 alignments were analyzed
ALIGNMENT OPTIONS: SCREENING PROCESS
3 DISTINCT AREAS OF FOCUS

- 5 tie-in options were evaluated in the northeast, 3 in the southeast, and 3 at Berry's Creek

INITIAL SCREENING OF THE NORTHEAST OPTIONS

1. Screened out - passive deployable (gate closure) required in evacuation route
2. No road crossing or regrading required
   - Tie-in north of project boundary in City of Hackensack
3. Extends further north
   - Creates connection to existing Hackensack Riverwalk
4. Screened out - passive deployable (gate closure) required in evacuation route
   - Provides less protection than 2 & 3
5. Screened out - passive deployable (gate closure) required in evacuation route
   - Provides less protection than 2 & 3
SCREENING THE SOUTHEAST OPTIONS

1. Screened out – many deployables (gate closure) needed to cross private driveways
   Requires substantial acquisition of private property

2. Tie-in on south side of Commerce Blvd
   Located primarily within Carlstadt R.O.W. (between curb and marsh)

3. Sheet pile or berm with new tide gate at Moonachie Creek
   Located on the Kane mitigation bank berm on the freshwater side
   Tie-in on south side of Barella Riverwalk

SCREENING THE BERRY’S CREEK OPTIONS

1. Surge barrier at Berry’s Creek

2. Combined single sheet pile with concrete cap and reinforced double sheet pile and earthen berms
   Two new tide gates near Peach Island Creek
   Two new pump stations at the West Riser and East Riser tide gates

3. Combined single sheet pile with concrete cap, reinforced double sheet pile, and earthen berms
   Five new tide gates and three new pump stations at the West Riser and East Riser tide gates
REFINING ALIGNMENT CONCEPTS

FILL THE GAPS
By connecting the existing topographical high points, the project can reduce construction costs and minimize additional regrading of the Hackensack River edge.

STICK TO THE EDGE/MAXIMIZE PROTECTION
Where possible, the flood risk intervention runs along the edge between social activity and ecology. This allows maximum engagement for place-making activities and increases the protection area.

LEVERAGE PUBLIC LAND
With numerous public agencies in the project area, the project seeks to connect existing public parks as well as provide new park space on existing public land.

ALTERNATIVE 1: ALIGNMENT

NORTHEAST
GARRETT AVERY, AECOM
&
LULU LOQUIDIS, AECOM
CONSIDERATIONS – WHAT GOES WHERE

NORTHEAST

PROXIMITY TO RESIDENTS
PROXIMITY TO MAIN STREET
PROXIMITY TO OPEN SPACE
WATERFRONT ACCESS

- Proximity to existing open space, the Hackensack Riverwalk, Main Street, and residential communities
- Opportunities for waterfront connection and new open space

ALIGNMENT DEVELOPMENT – 7’ CONTOUR TIE-IN

NORTHEAST – OPTION 2

- No road crossing or regrading required
- Tie-in north of project boundary in the City of Hackensack
ALIGNMENT DEVELOPMENT – HACKENSACK TIE-IN
NORTHEAST – OPTION 3

APPLYING THE "KIT OF PARTS"

- Creates connection to existing segment of the Hackensack Riverwalk
- Further extends protection and modular system

ALIGNMENT DEVELOPMENT – TYPICAL
NORTHEAST

APPLYING THE "KIT OF PARTS"

- Infrastructure improvements continue as the alignment moves south
ALIGNMENT DEVELOPMENT – MULTI-FUNCTIONAL SYSTEM

NORTHEAST

ALTERNATIVE 1: ALIGNMENT
CENTRAL HACKENSACK NORTH
CONSIDERATIONS – WHAT GOES WHERE
CENTRAL HACKENSACK NORTH

- Proximity to existing open space and residential communities
- Opportunities for waterfront connection and new open space

APPLYING THE "KIT OF PARTS"

- A berm system turns into a public space under Route 46
- The berm system allows for inundation on the river’s side during a flood event

ALIGNMENT DEVELOPMENT – FLUVIAL PARK
CENTRAL HACKENSACK NORTH

Wetlands
Open Space
Water
Residential
Commercial
Industrial
ALIGNMENT DEVELOPMENT – K-TOWN PARK & RIVERWALK
CENTRAL HACKENSACK NORTH

- Active recreation field and public realm on the river’s edge
- Cantilever walkway is designed to reduce inland flooding and provide a waterfront destination
- The floodwall is built into the structure of the walkway

APPLYING THE “KIT OF PARTS”

CURRENT
ALIGNMENT DEVELOPMENT – K-TOWN PARK & RIVERWALK
CENTRAL HACKENSACK NORTH

• The alignment terminates with a connection to Riverside Park
• The new open space is a combination of active and passive recreation

ALIGNMENT DEVELOPMENT – K-TOWN PARK & RIVERWALK
CENTRAL HACKENSACK NORTH

APPLYING THE "KIT OF PARTS"
ALTERNATIVE 1: ALIGNMENT

CENTRAL HACKENSACK SOUTH

CONSIDERATIONS – WHAT GOES WHERE

CENTRAL HACKENSACK SOUTH

APPLYING THE “KIT OF PARTS”

- Proximity to industrial buildings and Bergen County Utilities Authority
- Less public space opportunity
- Potential for visual access and ecological benefit to Losen Slote

WALL
SINGLE SHEET PILE
DOUBLE SHEET PILE
BERM

Wetlands
Open Space
Water
Residential
Commercial
Industrial
The typical run is composed of floodwalls, sheet pile, and berm where space allows.

A tide gate protects existing treatment plant outfalls.
ALIGNMENT DEVELOPMENT – BERM
CENTRAL HACKENSACK SOUTH

- The berm and habitat zones would be planted with native species.
- Many of the plant species selected provide valuable food resources for migrating birds and butterflies.
- The river's edge will consist of a soft edge dominated by emergent low marsh species or, in cases where there is sufficient area, the project will develop a distinctive low marsh, high marsh, and upland/transition area habitat system.

PROPOSED

ALIGNMENT DEVELOPMENT – WALL
CENTRAL HACKENSACK SOUTH

- Structural elements would be integrated into the defensive sea wall to provide habitat enhancements.
- Three-dimensionality provides better habitat for marine species such as mussels and sponges as well as numerous “nooks and crannies” for fish, crabs, and other organisms to live in the area.

PROPOSED
ALTERNATIVE 1: ALIGNMENT
SOUTHEAST

CONSIDERATIONS – WHAT GOES WHERE
SOUTHEAST

APPLYING THE "KIT OF PARTS"
- Proximity to industrial buildings
- Less public space opportunity
- Potential for visual access and ecological benefit to adjacent wetlands

PROXIMITY TO INDUSTRIAL BUILDINGS
Wetland
Wetland
Wetlands
Open Space
Water
Residential
Commercial
Industrial

SINGLE SHEET PILE
DOUBLE SHEET PILE
ALIGNMENT DEVELOPMENT – ON COMMERCE BLVD
SOUTHEAST – OPTION 2

APPLYING THE “KIT OF PARTS”
- Single sheet pile wall between Commerce Blvd and marsh
- Double sheet pile wall for structural integrity adjacent to existing berm

CURRENT
**ALIGNMENT DEVELOPMENT – ON COMMERCE BLVD**

**SOUTHEAST – OPTION 2**

**PROPOSED**

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**ALIGNMENT DEVELOPMENT – SOUTHEAST**

**OPTION 3**

**APPLYING THE “KIT OF PARTS”**

- Double sheet pile for structural integrity
- Existing berm and maintenance access remain

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**REBUILD BY DESIGN MEADOWLANDS**

CAG Meeting // March 29, 2017
ALTERNATIVE 1: ALIGNMENT

BERRY’S CREEK

CONSIDERATIONS – WHAT GOES WHERE

BERRY’S CREEK

APPLYING THE “KIT OF PARTS”

- Proximity to industrial buildings and Berry’s Creek
- Less public space opportunity
- Potential for visual access and ecological benefit

WALL
SINGLE SHEET PILE
DOUBLE SHEET PILE
BERM

Wetlands
Open Space
Water
Residential
Commercial
Industrial
ALIGNMENT DEVELOPMENT – SURGE BARRIER

BERRY’S CREEK - OPTION 1

- 118’ wide dual-gate opening with short “t-wall” and earthen berms to prevent flanking (water flowing around surge barrier)
- Gate preserves low-clearance navigation through channel

APPLYING THE “KIT OF PARTS”

ALIGNMENT DEVELOPMENT – EAST

BERRY’S CREEK - OPTION 2

- Combined single sheet pile with concrete cap + reinforced double sheet pile + earthen berms
- Two new tide gates near Peach Island Creek and two new pump stations at the West Riser and East Riser tide gates
ALIGNMENT DEVELOPMENT – EAST & WEST
BERRY’S CREEK – OPTION 3

APPLYING THE "KIT OF PARTS"
• Combined single sheet pile with concrete cap + reinforced double sheet pile + earthen berms
• Five new tide gates
• Three new pump stations at the West Riser and East Riser tide gates

BERM
WALL
EXISTING TIDE GATE
PROPOSED PUMP STATION
PROPOSED TIDE GATE

ALTERNATIVE 3:
HYBRID ALIGNMENT
CHRISTOPHER BENOSKY, AECOM
ALTERNATIVE 3 – DEVELOPING THE HYBRID
COMBINING ALTERNATIVES 1 & 2

PROTECT
FOR RESILIENCE

Establish effective combination of structural and stormwater strategies.

CULTIVATE
FOR ECOLOGY

Ecologically enhance both strategies to maximize variety of habitat and program.

ENERGIZE
FOR COMMUNITY

Public realm improvements integrated into the strategies energize communities.

ALTERNATIVE 3 – DEVELOPING THE HYBRID
HYBRID APPROACH

• Understand cost implications, analyze community feedback, and identify level of protection
• The benefit cost analysis will assist in determining best approach to achieve maximum benefits for the community overall

ALTERNATIVE 1

COST ESTIMATE
COMMUNITY INPUT
LEVEL OF PROTECTION
CONSIDERATION OF BENEFIT COST

ALTERNATIVE 2

COST ESTIMATE
COMMUNITY INPUT
LEVEL OF PROTECTION
CONSIDERATION OF BENEFIT COST

ALTERNATIVE 3
HYBRID

NETWORK MAP
MAXIMIZE PROTECTION
INTEGRATE STORMWATER STRATEGIES
ALTERNATIVE 3 – DEVELOPING THE HYBRID
POTENTIAL OPTIONS

ALT 1: SURGE BARRIER @ BERRY’S CREEK

ALT 2: EAST RISER + MAIN STREET DRAINAGE IMPROVEMENTS + OPEN SPACE

- Hybrid options are currently under consideration
- This option combines interior drainage improvements and a surge barrier at Berry’s Creek

POTENTIAL OPTIONS
NEXT STEPS

CHRISTOPHER BENOSKY, AECOM

NJDEP / AECOM UPCOMING ACTIVITIES

- Prepare Meeting Summary for CAG #8
- Continue developing:
  - Concepts, Alternatives, & Costs
- Hold Public Hearing on Action Plan Amendment
- CAG #9 in Late May
  - Alternative 3 – Hybrid & Biological Resource Update
PUBLIC HEARING – ACTION PLAN AMENDMENT

- HUD requires that all RBD projects create an Action Plan Amendment that documents the proposed use of funds, and publish it for public input.
- The Action Plan Amendments for all RBD projects are required to be submitted to HUD before June 1st of this year.
- This Action Plan Amendment will be publicly noticed in local newspapers and on the DCA and DEP project website.
- The Action Plan Amendment will also be open to public comment and the State will hold a public hearing on May 3, 2017 from 5pm to 8pm

NEXT STEPS
CAG: CALL TO ACTION

- Submit comments from CAG #8 meeting by April 05, 2017
- Share information from this meeting with friends and neighbors
- Continue to build interest in the Project
- Ensure the public knows about upcoming information (to be posted on Project website)
NEXT STEPS
CRITICAL INFORMATION

May 05, 2017
Public Hearing: Action Plan Amendment

Project Website
www.rbd-meadowlands.nj.gov

Project Email
rbd-meadowlands@dep.nj.gov

Question & Answer

THANK YOU!