REBUILD BY DESIGN
MEADOWLANDS

CITIZEN ADVISORY GROUP (CAG) MEETING #8

ALTERNATIVE 1: STRUCTURAL FLOOD REDUCTION CONCEPT DEVELOPMENT
AGENDA

Christopher Benosky, AECOM

Project Status Update and Schedule

Alternative 1
- Screening Process
- Concept Development

Alternative 2
Reviewed during CAG #7 in January
Will be revisited in future CAG meetings

Alternative 3
- 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
- Fieldwork remains ongoing
  - Biological Resource Surveys
  - Topographical and Drainage Surveys
  - Geotechnical Investigations
- Action Plan Amendment
ALTERNATIVE 1: ALIGNMENT
SCREENING PROCESS
CHRISTOPHER BENOSKY, AECOM
SCREENING PROCESS
CONCEPT DEVELOPMENT & SCREENING PROCESS

- INITIAL ALIGNMENT EXPLORATION
- SELECTED A DESIGN BASELINE (7' ALIGNMENT) + ALIGNMENT DEVELOPMENT + PUBLIC REALM DEVELOPMENT
- CURRENT STATUS
  - SCREENING CRITERIA
  - ESC & CAG INPUT
  - STAKEHOLDER INPUT
  - NJDEP INPUT
  - COST
- FINALIZE ALTERNATIVES FOR FEASIBILITY STUDY
- PROTECT FOR RESILIENCE
  - CULTIVATE FOR ECOLOGY
  - ENERGIZE FOR COMMUNITY
ALIGNMENT OPTIONS: 11 PRESENTED IN DECEMBER
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
   - Extends Option 2 north 700ft to connect project to an existing 1500ft segment of high ground protection
   - Creates connection to existing Hackensack Riverwalk

3. Screened out - passive deployable (gate closure) required in evacuation route
   - Provides less protection than 2 & 3

4. 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
   - 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

2. Combined single sheet pile with concrete cap, reinforced double sheet pile, and earthen berms

3. Five new tide gates and three new pump stations at the West Riser and East Riser tide gates
ALTERNATIVE 1: ALIGNMENT

NORTHEAST

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

NORTHEAST

PROXIMITY TO RESIDENTS

PROXIMITY TO MAIN STREET

PROXIMITY TO OPEN SPACE

POTENTIAL OPEN SPACE

WATERFRONT ACCESS

CONNECTION TO THE HACKENSACK RIVERWALK

APPLYING THE “KIT OF PARTS”

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

WALL

BENCH

PLANTER

NORTHERN

Open Space

Water

Residential

Commercial

Industrial

Wetlands

NOT TO SCALE
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

APPLYING THE “KIT OF PARTS”
ALIGNMENT DEVELOPMENT – HACKENSACK TIE-IN
NORTHEAST – OPTION 3

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

APPLYING THE “KIT OF PARTS”
- WALL
- BENCH
- PLANTER
ALIGNMENT DEVELOPMENT – TYPICAL

NORTHEAST

APPLYING THE “KIT OF PARTS”

- Infrastructure improvements continue as the alignment moves south

WALL
BENCH
PLANTER
ALIGNMENT DEVELOPMENT – MULTI-FUNCTIONAL SYSTEM
NORTHEAST
ALIGNMENT DEVELOPMENT – MULTI-FUNCTIONAL SYSTEM

- Model making is used to explore concept ideas
- This study examines site constraints and adjacencies
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

WALL
RIVERWALK
SINGLE SHEET PILE
DOUBLE SHEET PILE
BERM

Wetlands
Open Space
Water
Residential
Commercial
Industrial
ALIGNMENT DEVELOPMENT – FLUVIAL PARK
CENTRAL HACKENSACK NORTH

- 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 CONNECTION
CENTRAL HACKENSACK NORTH

PROPOSED
ALIGNMENT DEVELOPMENT – FLUVIAL WETLAND PARK
CENTRAL HACKENSACK NORTH
ALIGNMENT DEVELOPMENT – FLUVIAL WETLAND PARK
PROCESS MODEL

- Model making is used to explore design ideas
- This study examines grading and the utilization of soft edges as the protection strategy
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
ALIGNMENT DEVELOPMENT – K-TOWN PARK & RIVERWALK
CENTRAL HACKENSACK NORTH

CURRENT
The alignment terminates with a connection to Riverside Park.

The new open space is a combination of active and passive recreation.
ALIGNMENT DEVELOPMENT – RIVERSIDE PARK & RIVERWALK CENTRAL HACKENSACK NORTH

PROPOSED
ALIGNMENT DEVELOPMENT – RIVERSIDE PARK & RIVERWALK

PROCESS MODEL

- Model making is used to explore design ideas
- This study examines integrated protection strategies at a human scale
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

PROXIMITY TO INDUSTRIAL BUILDINGS

VISUAL ACCESS & ECOLOGICAL BENEFIT

PROXIMITY TO BERGEN COUNTY UTILITIES AUTHORITY

Wetlands
Open Space
Water
Residential
Commercial
Industrial
ALIGNMENT DEVELOPMENT – TYPICAL
CENTRAL HACKENSACK SOUTH

The typical run is composed of floodwalls, sheet pile, and berm where space allows.

A tide gate protects existing treatment plant outfalls.

APPLYING THE “KIT OF PARTS”

- BERM
- SINGLE SHEET PILE
- WALL
- DOUBLE SHEET PILE
- CLOSURE GATE
- EXISTING PUMP STATION
- EXISTING TIDE GATE
- Proposed Tide Gate
ALIGNMENT DEVELOPMENT – WALL
CENTRAL HACKENSACK SOUTH

PROPOSED
ALTERNATIVE 1: ALIGNMENT

SOUTHEAST
CONSIDERATIONS – WHAT GOES WHERE

SOUTHEAST

- Proximity to industrial buildings
- Less public space opportunity
- Potential for visual access and ecological benefit to adjacent wetlands

APPLYING THE “KIT OF PARTS”

- Single Sheet Pile
- Double Sheet Pile
ALIGNMENT DEVELOPMENT – ON COMMERCE BLVD
SOUTHEAST – OPTION 2

- Single sheet pile wall between Commerce Blvd and marsh
- Double sheet pile wall for structural integrity adjacent to existing berm
ALIGNMENT DEVELOPMENT – ON COMMERCE BLVD
SOUTHEAST – OPTION 2

PROPOSED
ALIGNMENT DEVELOPMENT – SOUTHEAST

OPTION 3

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

APPLYING THE “KIT OF PARTS”

- SINGLE SHEET PILE
- DOUBLE SHEET PILE
- PROPOSED FLUVIAL GATE
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

PROXIMITY TO INDUSTRIAL BUILDINGS

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
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

- 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

APPLYING THE “KIT OF PARTS”
ALTERNATIVE 3: HYBRID ALIGNMENT
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

NETWORK MAP
MAXIMIZE PROTECTION
INTEGRATE STORMWATER STRATEGIES

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 EXAMPLE A

POTENTIAL COMBINATIONS

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
ALTERNATIVE 3 – HYBRID EXAMPLE B
POTENTIAL COMBINATIONS

ALT 1: NE 3 + CENTRAL + SE 2
ALT 2: PARKS

- Hybrid options are currently under consideration
- This option combines interior drainage improvements and Hackensack alignment options
NEXT STEPS

CHRISTOPHER BENOSKY, AECOM
NEXT STEPS

NJDEP / AECOM UPCOMING ACTIVITIES

- Prepare Meeting Summary for CAG #8
- Continue developing:
  - Concepts, Alternatives, & Costs
- CAG #9 in Late May
  - Alternative 3 – Hybrid & Biological Resource Update
- Hold Public Hearing on 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 our 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 5, 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 3, 2017
Public Hearing: Action Plan Amendment

Project Website
www.rbd-meadowlands.nj.gov

Project Email
rbd-meadowlands@dep.nj.gov

Question & Answer
THANK YOU!