

Rahway River Basin, New Jersey
Coastal Storm Risk Management Feasibility Study

Appendix A.2
Section 404 (b)(1) Evaluation

Rahway River Basin Coastal Storm Risk Management Feasibility Study, Union and Middlesex Counties, New Jersey

Section 404 (b)(1) Evaluation

I. Introduction

This 404(b)(1) summarizes the evaluation of effects the proposed action will have on water resources pursuant to the Clean Water Act Section 404(b)(1) guidelines. The proposed action involves the implementation of nonstructural measures and a levee/floodwall in the City of Rahway, the Borough of Carteret and the Township of Woodbridge, Union and Middlesex Counties, New Jersey. For a full description of the project, existing conditions and environmental impacts, refer to the Feasibility Report/Environmental Assessment (FR/EA).

PROJECT DESCRIPTION

- a. Location: Woodbridge Township and Borough of Carteret, Middlesex County, New Jersey.
- b. General Description: Construction of a levee and floodwall system and compensatory wetland mitigation.
- c. Authority and Purpose: The Coastal Storm Risk Management study was authorized by the Disaster Relieve Appropriation Act of 2013 (P.L. 113-2).
- d. General Description of Fill Material:
 - 1) Characteristics of Material: Material to be used to construct the levee include clay to create an impervious inner core, embankment fill, and a concrete drainage structure.
 - 2) Quantity of Material: Levee: Approximately 18,625 cy yards of embankment material, 10,430 cy of clay material that will serve as the inner core. The floodwall will consist of concrete. Approximately 16 cubic yards of riprap will be placed within Casey's Creek for energy dissipation for the two pipes extending through the floodwall.
 - 3) Source of Material: Fill that meets the construction specifications for the levee will be obtained from a state approved and permitted commercial source.
- e. Description of the Proposed Discharge Sites
 - 1) Location: The discharge site is located within tidal marsh wetlands along the Rahway River and Casey's Creek, a tidally influenced tributary of the Rahway River within the marsh wetland complex in Woodbridge Township, Union County and Carteret Borough, Middlesex County.
 - 2) Size: Construction of a levee and floodwall system approximately 4,488 ft long with a top width of 12 ft. The average height of the levee is approximately 10.2 ft with the floodwall component ranging from 4 ft to 16 ft. In addition, On-site compensatory wetland and open water mitigation. The wetland mitigation will consist of approximately 1.29 acres of low marsh restoration, 1.13 acres of high marsh, and 1.14 acres of deciduous scrub shrub wetland. The open water mitigation will consist of restoration of 200 linear feet of tidal creek equaling to 0.10 acres and 0.14 acres of mudflat.
 - 3) Type of Site: The site is a combination of a Middlesex County owned park space (Joseph Medwick Memorial Park), private residences and private businesses.
 - 4) Types of Habitat: Habitat type within the vicinity of the proposed levee includes phragmites dominated marsh, low tidal marsh, deciduous scrub shrub wetland, and

developed uplands. The aquatic habitat for of Casey's Creek, a tidal marsh classified as Saline Estuary (SE) 3 by the NJDEP.

- 5) Time and Duration of Disposal: Construction of the levee will take approximately 2 years. All in-water activities are restricted between 1 March and June 30 to comply with the NJDEP fish spawning window.
- f. Description of Disposal Method: Land based construction equipment will be used to construct the project. The project will also be sequenced to minimize in water work to the extent possible. Wetland anti-track mats will be used within the wetland areas to prevent significant disturbance.

II. FACTUAL DETERMINATION

a. Physical Substrate Determinations

- 1) Substrate Evaluation, Sediment Type and Slope: Sediment analyses have not been conducted for the study. However, available information indicates that the substrate consists of finer silts, clays and/or sand material. The slope of the wetlands and Casey's Creek is generally flat.
- 2) Dredged/Fill Material Movement: The excavation and placement of fill in the form of soil and riprap/stone will result in the impact 2.99 acres of wetlands, 100 linear feet of open water and 0.14 acres of mudflat. Soil used to construct the levee will be stabilized with seeding.
- 3) Physical Effects on Stream Bottom: 100 linear feet of Casey's Creek equaling 0.05 acres of tidal channel substrate will be modified by the construction of the levee and installation of a concrete drainage structure.
- 4) Other Effects: N/A
- 5) Actions Taken to Minimize Impacts: Measures to be implemented to minimize adverse impacts to substrate include: a) implementation of erosion and sediment control best management practices; b) on-site restoration of temporary work spaces; c) installation of a flap gate within the levee to maintain flow of Casey's Creek.

b. Water Circulation, Fluctuation and Salinity Determinations

- 1) Water, Consider Effects on:
 - (a) Salinity: No effect
 - (b) Water Chemistry: There may be minor changes to water chemistry as a result of suspended sediment during construction. Long term changes to water chemistry is not expected.
 - (c) Clarity: Water clarity within Casey's Creek may be slightly to moderately impacted during construction of the levee. However, no long-term effect is anticipated. There may be some impact to clarity within the Rahway River during construction of the compensatory mitigation construction. However, the implementation of erosion and sediment control best management practices will minimize the impact.
 - (d) Color: Minor impacts associated with turbidity may affect water color during construction. Erosion and sediment control best management practices including the installation of a temporary diversion to construct the levee within Casey's Creek will be implemented during construction to minimize turbidity.
 - (e) Odor: Excavation and dewatering of excavated sediment from the wetland areas to construct the levee may emit a foul odor as it dries out. This is expected to be temporary.

- (f) Taste: The Rahway River is used as water supply for the City of Rahway. However, the water is withdrawn approximately three miles upstream of the proposed action. Therefore, the proposed action will not have an adverse impact on taste.
- (g) Dissolved Gas Levels: Dissolved oxygen levels may be reduced to some degree during construction, but this will be a temporary effect. The installation of erosion and sediment controls and restoration of the site with vegetation will reduce sedimentation and pollutant runoff which can have detrimental impacts to dissolved oxygen levels.
- (h) Nutrients: Nutrient load to the Rahway River may increase during construction as a result of resuspension of sediments during construction of the levee/floodwall and wetland and tidal creek mitigation. Erosion and sediment control best management practices will be implemented during construction to minimize the suspension of nutrient laden sediment during construction.
- (i) Eutrophication: Eutrophication is not expected to occur during construction due to the tidal nature of the river in this area in addition to the implementation of erosion and sediment control best management practices.
- (j) Others as Appropriate: No other adverse impacts are anticipated from the project.

2) Current Patterns and Circulation:

- (a) Current Patterns and Flow: There will be no significant adverse impacts to river current patterns or flow from implementation of the proposed action. The distance from which the levee/floodwall is set back from the Rahway River ranges from approximately 100 feet to 500 feet. The floodwall will extend over Casey's Creek, however, a drainage structure with a flap gate will be installed to allow the creek to flow unimpeded during normal events.
- (b) Velocity: Velocities are not expected to appreciably increase or decrease as a result of the proposed action.
- (c) Stratification: The project will not impact stratification.
- (d) Hydrologic Regime: The proposed action will not change normal daily water level fluctuations. A flapgate will be installed within the floodwall extending over Casey's Creek which will impact flows during storm events. However, this impact is necessary to provide coastal storm risk management. As Casey's Creek essentially behaves as a drainage ditch on the protected side of the floodwall, significant adverse impacts will not occur .

3) Normal Water Level Fluctuations: The project will not have any permanent adverse impacts on normal water level fluctuations.

4) Salinity Gradients: The proposed action will not adversely impact salinity gradients. Any changes in salinity gradients would be from the restoration of low marsh. This would be viewed as a positive impact as it would reduce the presence of phragmites.

5) Actions Taken to Minimize Impacts: Measures to be implemented to minimize adverse impacts include: a) installation of a flap gate within the floodwall drainage structure to maintain normal tidal flows and b) restoration of 200 linear feet of tidal marsh by enhancing the tidal regime in either Casey's Creek or one of the minor tributaries within the wetland complex.

c. Suspended Particulate/Turbidity Determinations.

1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Sites: Minor increases in particle suspension and turbidity during construction of the levee/floodwall and compensatory wetland/open water mitigation are expected to occur.

2) Effects on Chemical/Physical Properties of the Water Column:

- (a) Light Penetration: Minor adverse impacts may occur within the project area during construction of the channel modifications within Casey's Creek due to turbid conditions.
 - (b) Dissolved Oxygen: Dissolved oxygen levels may be reduced during construction,
 - (c) Toxic Metals and Organics: There is a slight potential that construction activities may disturb sediments contaminated with organics. Erosion and sediment controls such as silt fence, turbidity curtains, and implementing a temporary pipe/culvert diversion in Casey's Creek so work floodwall work can be conducted in dry conditions during construction to minimize the risk.
 - (d) Pathogens: There is a potential that the sediments within Casey's Creek and the wetland complex could contain pathogens such as E coli that could be transported downstream during construction of the floodwall and compensatory wetland/open water mitigation. This potential will be minimized through the implementation of erosion and sediment control practices.
 - (e) Aesthetics: The aesthetics of the project area will be adversely impacted during construction activities. In addition, the levee will obscure the view of the Rahway River and adjacent wetland complexes for patrons of the Joseph Medwick Memorial Park and private property owners located on the landside of the levee. A footpath will be installed on top of the levee to facilitate visual access to the river.
 - (f) Others as Appropriate: Not applicable
- 3) Effects on Biota:
- (a) Primary Production, Photosynthesis: Removal of vegetation reduces amount of organic material within the wetland complex that aquatic species use for food/cover/spawning. This impact will be compensated for by the on-site restoration of a total of 3.56 of marsh and deciduous scrub shrub wetland.
 - (b) Suspension/ Filter Feeders: Construction activities could create turbid conditions that would temporarily impact suspension/filter feeders. Erosion and sediment control best management practices will be implemented during construction to reduce sedimentation to the portion of Casey's Creek downstream of the project area and the Rahway River. No permanent adverse impact is expected.
 - (c) Sight Feeders: There may be temporary adverse impacts to sight feeders during the construction of the levee/floodwall and wetland/open water mitigation. These impacts will be minimized through implementation of erosion and sediment control practices during construction.
- 4) Actions Taken to Minimize Impacts: Measures to be implemented to minimize adverse impacts include: a) implementation of erosion and sediment control best management practices such as turbidity curtains; b) constructing the floodwall over Casey's Creek in in the dry using cofferdams; c) implementation of an in-water work restriction from 1 March – 30 June to protect spawning fish species; and d) compensation of wetland impacts through the on-site restoration of low marsh and deciduous scrub shrub wetland habitats.
- d. Contaminant Determinations: There are no issues with contaminant issues within the study area. All fill material will be clean and will not pose a risk.
- e. Aquatic Ecosystem and Organism Determinations.
- 1) Effects on Plankton: An increase in sedimentation/nutrients during construction may increase some plankton species such as algae. Erosion and sediment control best management practices will be implemented to reduce this potential.

- 2) Effects on Benthos: Project construction will result in the removal of benthic species during levee/floodwall and wetland mitigation construction. However, this impact is expected to be temporary as recruitment of benthic species from undisturbed areas of the wetland complex and Rahway River is expected to occur subsequent of construction. The mitigation component of the proposed action will be designed in a manner to provide similar or better habitat than existing conditions in order to provide long term benefits to benthic species.
- 3) Effects on Nekton: Mobile aquatic life will move from area during construction.
- 4) Effects on Aquatic Food Web: The project will have temporary adverse impacts on the food web as a result of turbidity, and the modification of 100 linear feet of tidal channel from the construction of the levee/floodwall and the restoration of 200 linear feet of tidal creek restoration proposed for mitigation. Permanent significant adverse impacts are not expected from implementation of the project.
- 5) Effects on Special Aquatic Sites:
 - (a) Sanctuaries and Refuges: Not applicable
 - (b) Wetlands - Approximately 1.19 acres of phragmites dominated high marsh, 1.29 acres of low marsh, 0.57 acres of deciduous scrub shrub, and 100 linear ft of tidal creek equaling to 0.05 acres of open water will be permanently impacted by construction of the levee/floodwall. On-site compensatory mitigation of these habitats through restoration of approximately 1.13 acres of high marsh, 1.29 acres of low marsh, and 1.14 acres of deciduous scrub shrub. Approximately 0.99 acres of predominantly phragmites dominated high and low marsh and 0.10 acres of scrub shrub wetland will be subject to temporary disturbance as a result of implementation of the proposed action and will be restored with native high and low marsh species upon completion of the project.
 - (c) Mudflats: Approximately 0.07 acres of mudflat within Casey's Creek will be permanently impacted through construction of the floodwall and drainage structure. Approximately 0.14 acres of mudflat will be restored through on-site mitigation.
 - (d) Vegetated Shallows: Not applicable
 - (e) Coral Reefs: Not applicable
 - (f) Riffle and Pool Complexes: Not applicable.
- 6) Threatened and Endangered Species: The project area contains potential habitat supportive of Indiana and northern long-eared bat, respectively listed as endangered and threatened. Multiple state designated endangered, threatened, and special concern bird species have been documented in the project area. A tree clearing restriction from 1 April through 30 September will be implemented to protect these species. In addition, a shrub and tree clearing restriction from 1 March through 31 August will be implemented to comply with the Migratory Bird Treaty Act will protect these species.
- 7) Other Wildlife: The project will mainly have temporary adverse impacts to wildlife. Minor adverse temporal impacts to wildlife will occur as a result of the removal of mature vegetation that is used for nesting, shelter and foraging. These impacts will be minimized through replanting of vegetation and the use of tree stock ranging from 8-14 ft in height as opposed to saplings in the replanting efforts.
- 8) Actions to Minimize Impacts: Measures to be implemented to minimize adverse impacts include: a) implementation of erosion and sediment control best management practices;

b) use of wetland anti-tracking mats; c) installation of a temporary diversion in Casey's Creek so construction of the floodwall within the creek will occur in dry conditions; c) adhering to shrub and tree clearing restrictions from 1 March through 31 August to protect migratory bird species; d) adhering to an in-water work restriction from 1 March – 30 June to protect spawning fish species, and e) adhering to a tree clearing restriction from 1 April through 30 September to protect Federally listed bat species.

f. Proposed Disposal Site Determinations

1) Mixing Zone: Not applicable

2) Determination of Compliance with Applicable Water Quality Standards: All fill used to construct the project will be comprised of clean material that meets water quality standards and comes from a state approved and permitted source.

3) Potential Effects on Human Use Characteristic:

(a) Municipal and Private Water Supply: The Rahway River is used as a water supply for the City of Rahway. The location of the treatment plant is located approximately three miles upstream of the proposed levee/floodwall. Therefore, there will be no significant adverse impacts to the water supply.

(b) Recreational and Commercial Fisheries: The portion of the Rahway River in which the project is located is designated as Essential Fish Habitat (EFH) for multiple species. However, the proposed project will not have significant adverse direct or indirect impacts on these species. An EFH Assessment is located in Appendix A.5 with coordination documents with NOAA-Fisheries located in Appendix A.11.

Regarding recreational fisheries, the portion of the Rahway River is not stocked with recreational fish species such as trout. In addition, there are no access points for recreational fishing within the proposed footprint of the levee. Therefore, no significant adverse impacts are expected. The wetlands and tidal creek impacted by the levee/floodwall are being evaluated for potential restoration and will provide better habitat for this species. Therefore significant adverse impacts to recreational and/or commercial fisheries is not expected.

(c) Water Related Recreation: Water based recreation within the project area is limited to observing the Rahway River and associated wetlands from the land; there are no canoe/boat access ramps within the project area. Installation of a footpath on the levee and replacement of the existing wildlife observation deck will preserve the existing water based recreation within the project area. Therefore, there are no significant adverse impacts.

(d) Aesthetics: The proposed levee will block the view of the Rahway River and wetland complexes from park patrons and to approximately seven homes located immediately adjacent to the levee. The footpath on top of the levee, however, will facilitate access to view the river and wetland complexes.

The levee will provide coastal storm risk management to the homes with the blocked viewshed. Therefore, significant adverse impacts to aesthetics is not expected.

(e) Park, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves:

A portion of the levee is located within Joseph Medwick Memorial Park. Park features include a walking trail, playgrounds, tennis courts and athletic fields and wildlife observation decks. The levee overlies a segment of the walking trail and is within the

footprint of one of the wildlife observation decks. To mitigate for the impact, a paved footpath will be created on top of the levee. The wildlife observation deck will be replaced after construction is completed.

Use of park facilities by park patrons, particularly the walking trail, may be limited during construction. The impacts to park use during construction will be minimized to the greatest extent practicable.

The levee/floodwall will manage coastal storm risk for up to the 1% storm event for park facilities.

- g. Determination of Cumulative Effects on the Aquatic Ecosystem: The proposed action will have negligible cumulative impacts on the aquatic ecosystem. Mitigation measures proposed in the above sections will minimize cumulative impacts.
- h. Determination of Secondary Effects on the Aquatic Ecosystem: Adverse secondary effects resulting from construction of the coastal storm risk management features and compensatory mitigation would be minimized through the implementation of best management practices. Indirect/cumulative impacts resulting from the proposed action and known actions taken by others as documented in Chapter 7 of the FR/EA would be negligible.

III. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE.

- a. No significant adaptation of the Section 404(b)(1) guidelines was made relative to this evaluation.
- b. The objective of coastal storm risk management necessitates the construction of a levee/floodwall within a tidal tributary of the Rahway River and within a tidal wetland complex along the Rahway River.
- c. The proposed activity will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.
- d. The proposed disposal operations will not harm any endangered species or their critical habitats under the Endangered Species Act of 1973.
- e. The proposed discharge of fill material will not result in significant adverse effects on human health and welfare, including municipal and private waters supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife will not be significantly affected.
- f. Appropriate steps to minimize potential adverse impacts of the discharge of fill material include the implementation of an erosion and sediment control plan and judicious engineering practices.