Draft Integrated Interim Response Feasibility Report and Environmental Assessment for Actionable Elements

NEW YORK-NEW JERSEY HARBOR AND TRIBUTARIES COASTAL STORM RISK MANAGEMENT FEASIBILITY STUDY

APPENDIX A-3
EAST RISER ACTIONABLE ELEMENT SITE ENVIRONMENTAL APPENDIX

July 2025

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EXECUTIVE SUMMARY

This Environmental Appendix supports the main text comprising of an Integrated Interim Response Feasibility Report (FR) and Environmental Assessment (EA). The details included herein are presented as a summary in the main text in a more condensed version than what has been detailed here, to simplify the discussion of the main text and provide additional detail where needed specific to each individual Actionable Element Site and the resources of which it may affect. This Appendix focuses primarily on the Existing Conditions of the Actionable Element Site, and the Environmental Effects (both adverse and beneficial) of the Actionable Element Alternatives, including the No Action Alternative. Refer to the Main Text for the introduction, plan formulation, alternatives considered, and other National Environmental Policy Act (NEPA) sections of which this Appendix provides the supporting detail and analyses completed.

The scope of the Interim Response Actionable Element builds upon the September 2022 Draft Integrated Feasibility Report (FR) and Tier 1 (Programmatic) Environmental Impact Statement (EIS), as an interim action while the overall Comprehensive Plan continues to be studied, subject to future funding and appropriations. The Comprehensive Plan is a programmatic assessment described as containing two tiers, with September 2022 Draft Report initiating the Tier 1, or broad-level assessment, with plans for a future Tier 2 containing the detailed site-specific analyses including any design refinements and reasonable alternatives. This Report is not a Tier 2, but rather an Interim Response to the Comprehensive Plan responsive to the larger Coastal Storm Risk Management (CSRM) authorization to assess a 2,500+ square mile radius in the New York-New Jersey Metropolitan Area. This interim response, like Tier 2, assesses the measures at a site-specific level, completing enough design maturity and analyses to disclose the potential effects of the Alternatives, and complete full environmental compliance. Interim responses often arise during the progress of a programmatic study, of which purpose is to respond to an immediate CSRM need in the interim and corresponding with future legislative cycles (e.g. Water Resources Development Act (WRDA), while the more complex measures of the larger NYNJHAT Study require additional analysis, modeling, public engagement, and design maturity to complete. The purpose and need of this action is to manage risk to critical infrastructure in local areas of high susceptibility to storm surge and at-risk communities. This Interim Response action addresses a critical need for CSRM measures in Harlem River, New York, East Riser, New Jersey, and Oakwood Beach, New York.

The Actionable Element documented in this appendix is referred to as East Riser, located in the New Jersey Meadowlands, which falls within the Hackensack/Passaic Planning Region of the Comprehensive Plan, discussed in the Draft Integrated FR/Tier 1 (Programmatic) EIS. This Actionable Element serves as an interim action of the Comprehensive Plan.

The East Riser project initially completed NEPA analyses under a grant with the Federal Emergency Management Agency (FEMA) of which is a Cooperating Agency on this Study, from the Rebuild by Design Meadowlands project. This project has already been issued a Finding of No Significant Impact (FONSI) and obtained several permits to construct, as presented in the Subappendix. As such, in the integration of this project into the NYNJHAT Study, the 2019 East Riser EA has been incorporated herein by reference, noted in *italicize* font throughout this document, supplemented by validating text where needed to confirm, and/or address USACE policy, and any other details to be noted between the issuance of the original FONSI and preparation of this report. The original document can be found at:
https://www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa/environmental-assessment-new-jersey (FEMA 2022)

This document, as it is incorporated by reference, may make mention of the pump station that was originally proposed as part of the project; however, the pump station has already been funded and initiated for construction under the original EA; therefore, this document may mention the pump station for awareness, but primarily focuses on the remaining components of the project such as the channel modifications, bank stabilization, culvert replacements, and railroad bridge replacement.

The purpose and need for the NYNJHAT Study, including the Interim Response action, and the Alternative details for each Actionable Element site are discussed in more depth in the Main report, of which this document is an appendix to. The affected environment and environmental consequences and benefits detailed here, are presented in the Main report in summary format.

This Appendix is organized by Resource Categories, originally identified in the Draft Integrated FR/Tier 1 (Programmatic) EIS. Each Resource Category, if applicable to this AE, includes an existing conditions summary for resources of the Natural Environment and Physical Environment. Each Resource Category also includes an assessment of potential direct and reasonably foreseeable indirect adverse and beneficial effects of the Alternatives. A reasonably foreseeable effects analyses is included in the main report. Any Resource Category not applicable to this Actionable Element Site is stated as such in this document, and does not include any score or associated adverse or beneficial effects analyses, because the resource is not present, or potentially present, in a manner that would incur any kind of effect directly, indirectly, or cumulatively.

1 ACTIONABLE ELEMENT SITE OVERVIEW

1.1 ACTIONABLE ELEMENT LOCATION AND EXISTING CONDITION SUMMARY

The East Riser Actionable Element Site is located in Bergen County, New Jersey, within the Hackensack/Passaic Planning Region of the NYNJHAT Study Area.

The East Riser Actionable Element Site is identified as primarily an existing channel that extends through a heavily industrial area (inclusive of a small residential area nested within) from the Teterborough Airport at its northernmost extent to a tide gate to Berry's Creek at its southernmost extent.

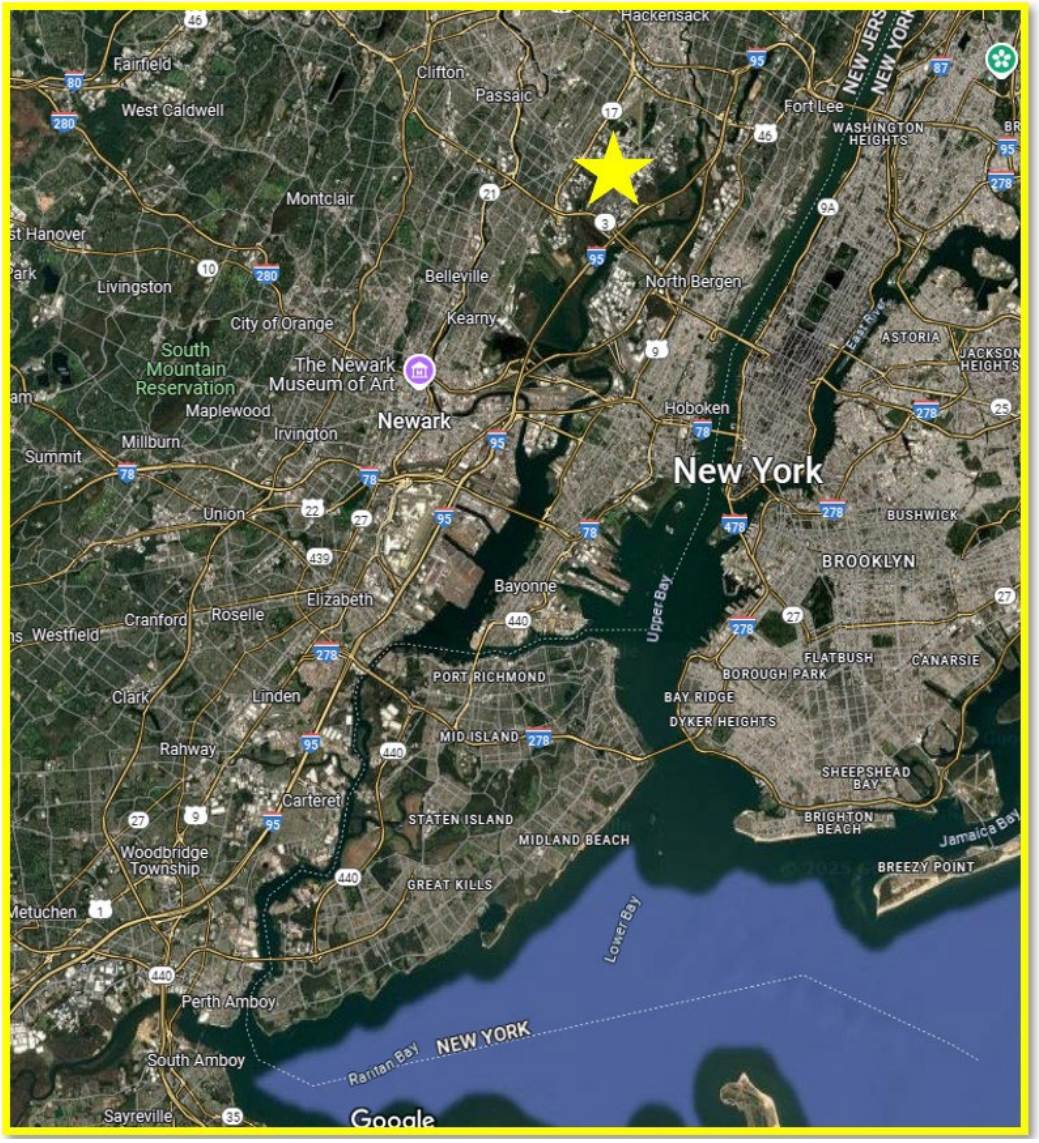

Figure 1. East Riser Actionable Element Site Location

1.2 ACTIONABLE ELEMENT PROJECT DESCRIPTION

The NJDEP, with funding acquired from the FEMA through the New Jersey Office of Emergency Management with a Building Resilient Infrastructure and Communities (BRIC) grant, proposed the East Riser Project as a subset to the larger Rebuild by Design Meadowlands project. When studied, a full suite of alternatives was considered for The East Riser project, to include a “No Action” Alternative and Alternative 2, which ultimately became the recommended plan. As a result of that study, the recommended plan included construction of a pump station, channel modifications to the lower reach of the East Riser Ditch Channel (about 4,150 feet), removal and replacement of two bridge culverts and an upgrade for a railroad bridge in the area. Channel modifications more specifically included widening and deepening, bank stabilization, and replanting of vegetation.

As the pump station has already been funded and is in construction, this Actionable Element Site addresses the remaining project measures including the channel modifications and culvert and railroad bridge replacement.

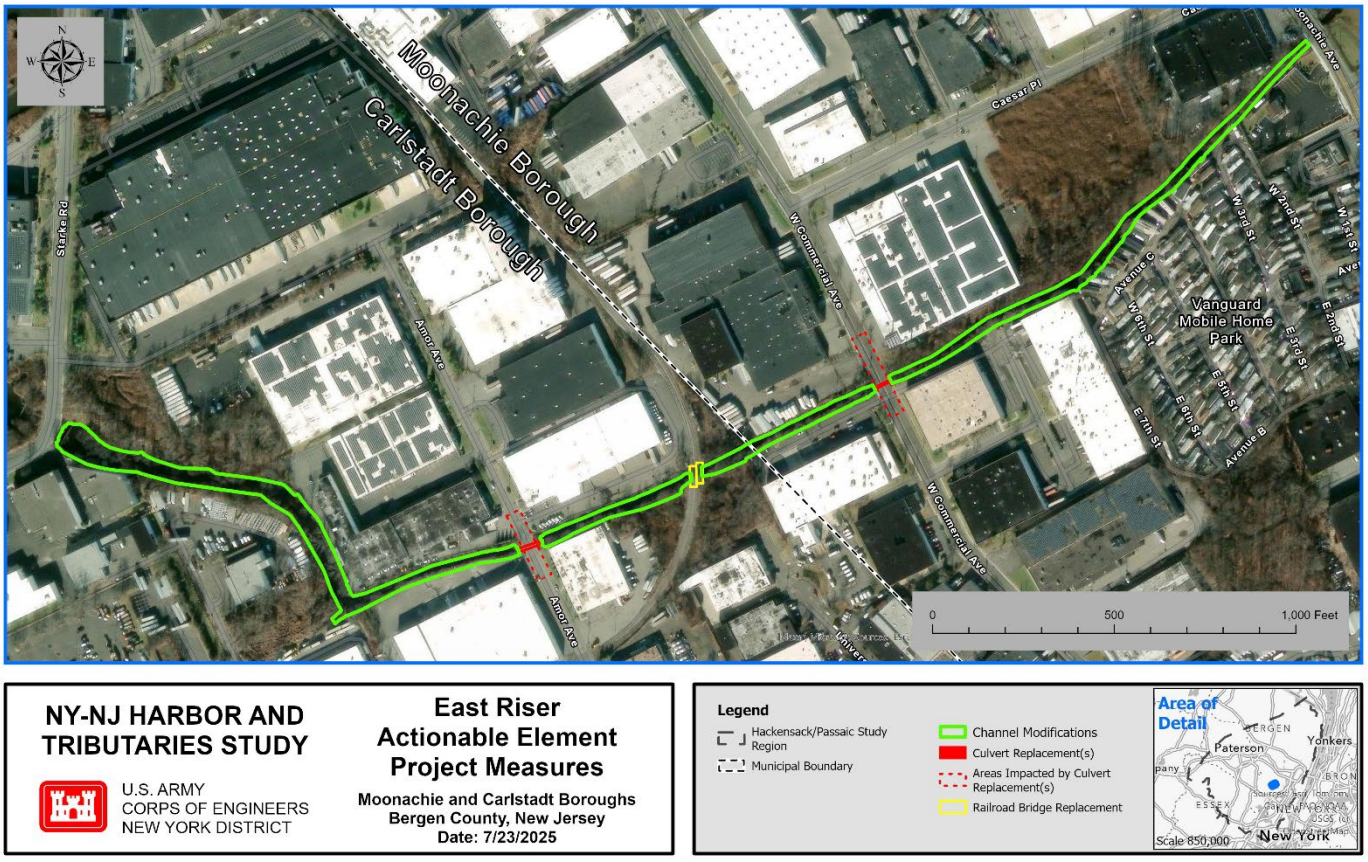

Figure 2. East Riser Actionable Element Site Project Measures

2 EXISTING CONDITIONS AND ENVIRONMENTAL EFFECTS

As presented in the Draft Integrated FR/Tier 1 (Programmatic) EIS, Resource Categories within the Study Area have been reviewed to determine if there is a potential for the Alternatives to effect, either adversely or beneficially, Resource Categories starting with an initial screening to identify *if* there is a potential for adverse effects (Yes – Y; or No – N) by the measures of each Alternative, followed by an assessment of the magnitude of those identified potential adverse effects, rated on a scale of 0 (No Adverse Effects) to minus 5 (–5, Significant Adverse Effects), by Alternative. Each Natural and Physical Resource includes a summary discussion of the anticipated and reasonably foreseeable effects of each Alternative, additionally reflected by qualitative magnitude of effect ratings. Based on comments received following release of the Draft Report, the qualitative rating system and criteria has been revised and expanded upon in the following manner:

- Adverse effects rating criteria ranges from "0" to "–5", with negative (-) markers added to emphasize the anticipated qualitative negative effect.
- Beneficial effects rating criteria was established and presented herein, following a similar structure as the adverse effects rating criteria, except the beneficial effects ranging from 0 to +5, including a positive marker to emphasize the anticipated qualitative beneficial effect.
- The No Action was assessed like the Alternative Actions, with qualitative rating scores accompanying each no action resource description.

2.1 RESOURCE LIST AND POTENTIAL EFFECTS DETERMINATION

This table represents the overview of the Resources identified in the September 2022 Draft Report as potentially occurring within the Study Area to determine the applicability of effects from the Comprehensive Plan. Per the standards and processes described in the Main report, these same resources were again reviewed in the same manner for this Actionable Element Site. The difference between the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS potential to effect determination for the Comprehensive Plan and this Interim Response potential to effect analyses is that:

- This does not include the negative and positive markers to establish the presence/absence of adverse and/or beneficial effects, and is instead is comprised of an overview of the resources that are present in the vicinity of the Actionable Element Site, with the adverse and beneficial effect analyses in subsequent sections for each resource with additional detail. A deviation from this process, is the exclusion of the New York Bight Ecological Model (NYBEM) Developed by the U.S. Army Corps of Engineers, Engineering Research and Development Center, as it is not applicable to these Actionable Element sites but rather the larger Comprehensive Plan as a whole; and,
- This is an assessment of the entire Actionable Element Site inclusive of all measures, and not individual measures of all Alternative plans like the Comprehensive Plan addressed.

RESOURCE	POTENTIALLY PRESENT East Riser Actionable Element Site
NATURAL ENVIRONMENT	
Wildlife	Y
Fish	Y
Migratory Fish	N
Terrestrial Vegetation	Y
Submerged Aquatic Vegetation	N

Invasive and Aquatic Nuisance Species	Y
Threatened and Endangered Species Terrestrial	Y
Threatened and Endangered Species Aquatic	N
Migratory Bird Treaty Act Species and Bald Eagles	Y
Marine Mammal Protection Act Species	N
Sea Turtles	N
Essential Fish Habitat (EFH) and EFH-Designated Species	Y
Wetlands	Y
Floodplains	Y
Wild and Scenic Rivers	N
Designated Critical Habitat	N
Critical Environmental Areas (State)	N
Marine Protected Areas	N
Coastal Zone Management Act Areas	Y
Coastal Barrier Resources System Areas	N
National Park Service Land	N
Wildlife Refuge Land	N
Commercial and Recreational Fishing	N
PHYSICAL ENVIRONMENT	
Topography and Geology	Y
Surface Waters	Y
Sediment	Y
Land Use	Y
Bathymetry	Y
Inland Hydrology	Y
Coastal Hydrology, Currents, and Circulation	Y
Tides, Tidal Exchange, and Tidal Range	Y
Sediment Transport	Y
Water Quality	Y
Regional Air Quality and Clean Air Act	Y
Regional Climate and Relative Sea Level Change	Y
Cultural Resources	Y
Native American Lands	N
Hazardous, Toxic, and Radioactive Waste	Y
Navigation	N
Noise and Vibration	Y
Socioeconomics and Demographics	Y

Notes:

Y – Measures of the Alternative have the potential to affect the resource, either beneficially or adversely.

N – Measures of the Alternative is not anticipated to affect the resource, either beneficially or adversely.

N/A - Not Applicable to the area of effect.

Following the potential to effect analyses, the qualitative magnitude of effect for adverse and beneficial effects is assessed to further identify the significance of any potential effect, described in the Environmental Consequences section of this Appendix.

2.2 QUALITATIVE RATING METHODOLOGY AND SCORING PROCESS

A rating methodology tool was developed by the USACE New York District, and utilized in the preparation of this Appendix to qualitatively assess and compare the adverse and beneficial effects of each resource within the Study Area. A prior version of this tool was presented in the September 2022 Draft Integrated Report and Tier 1 (Programmatic) EIS. Enhancements to the tool since release of the Draft Report include refinements of adverse effects criteria definitions, development of beneficial effects criteria definitions, development of a Cultural Resource rule set, synthesizing the data by additional methods (averaging, as also done in the September 2022 report, numerical computing of the beneficial effects, as well as escalating the highest adverse effect score and highest benefit score for alternative comparison purposes, to inform plan selection, the environmentally preferred alternative, and the wholistic adverse and beneficial effects anticipated by the alternatives of the Actionable Element Site). The applied scoring methodology is provided in the following tables:

Applied Scoring Methodology for Adverse Effects

Adverse Effect Rating Criteria	
Impact Rating and Numerical Score	**Description**
High (-5)	Effects to the resource would have substantial consequences, locally and/or regionally. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would not be enough to reduce the significance of effect and therefore, effects to the resource would not be environmentally acceptable.
Moderate to High (-4)	Effects to the resource would be locally and/or regionally significant. Impacts would be within regulatory standards; however, existing resource conditions are expected to be affected in the near-term, but not necessarily in the long term. Mitigation measures to reduce any potential adverse impacts would be necessary.
Moderate (-3)	Effects to the resource are expected to be moderate in the near-term and localized. Impacts would be within or below regulatory standards, as applicable, and the use of mitigation measures would reduce potential adverse impacts, if applicable.
Low to Moderate (-2)	Effects to the resource are expected to be low to moderate in the near-term and localized. Impacts would be within or below regulatory standards, as applicable, and the use of mitigation measures would reduce potential adverse impacts, if applicable.
Low (-1)	Effects to the resource would either be negligible or, if detectable, have minor temporary impacts locally to the resource. The impacts would be well below regulatory standards, as applicable, and mitigation measures are not necessary to sustain low to no impact to the resource.
No Impact (0)	There would be no adverse effects to the resource because the resource would not be affected.

Applied Scoring Methodology for Beneficial Effects

Beneficial Effect Rating Criteria	
Impact Rating and Numerical Score	**Description**
High (+5)	Effects to the resource would have substantial beneficial effects, locally and regionally in the near-term and long-term, that are measurable and quantifiable in some manner of significance (e.g. manage coastal storm risk for communities and ecosystems and significantly improve area above and beyond existing conditions that is quantifiable and measurable beyond qualitative existing condition.
Moderate to High (+4)	Effects to the resource would have substantial beneficial effects either locally and/or regionally in the near-term or long term, that is noticeably greater and may be quantifiable in some matter (e.g. manage coastal storm risk to communities and ecosystems, additional benefit(s) to the resource that is quantifiable or measurable beyond qualitative existing condition, or that is qualitatively beneficial to a number of related resources).
Moderate (+3)	Effects to the resources would have more substantial beneficial effects, that are localized to the resource, or multiple resources, that is noticeably greater and may be quantifiable in some manner (e.g. managed coastal storm risk for communities and ecosystems and additional benefits to the resource that is measurable beyond existing condition).
Low to Moderate (+2)	Effects to the resources would have additional beneficial effects beyond the prior rating criteria, that are localized to the resource (e.g. manage coastal storm risk for communities and ecosystems and an additional benefit to the resource).
Low (+1)	Effects to the resource would have some beneficial effects, that are localized to the resource, and improves beyond existing condition (e.g. manage coastal storm risk for communities and ecosystems).
No Impact (0)	There would be no anticipated beneficial effects to the resource because the resource would not be affected beyond that of existing condition.

Both rating methodologies analyses and qualitative scoring informed the effects assessments and the EQ account for Plan Selection and identifying the environmentally preferred alternative for each Actionable Element site. Scores for adverse impacts were rated for each resource on a scale of "0" to "–5", with "0" being no impact to the resource, and "–5" being significant impacts to the resource that would be considered not environmentally acceptable.

Example explanation:

Example Score Card

Resource Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+3	-1	+2

O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+3*	*-1*	*+2*
Mitigation (if applicable, otherwise 0)	*0*	*0*	*0*	*0*	*0*	*0*
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**+2**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).

[1] – Sum of the No Action Adverse Effect and Beneficial Effect

[2] – Sum of the Action Adverse Effect and Beneficial Effect

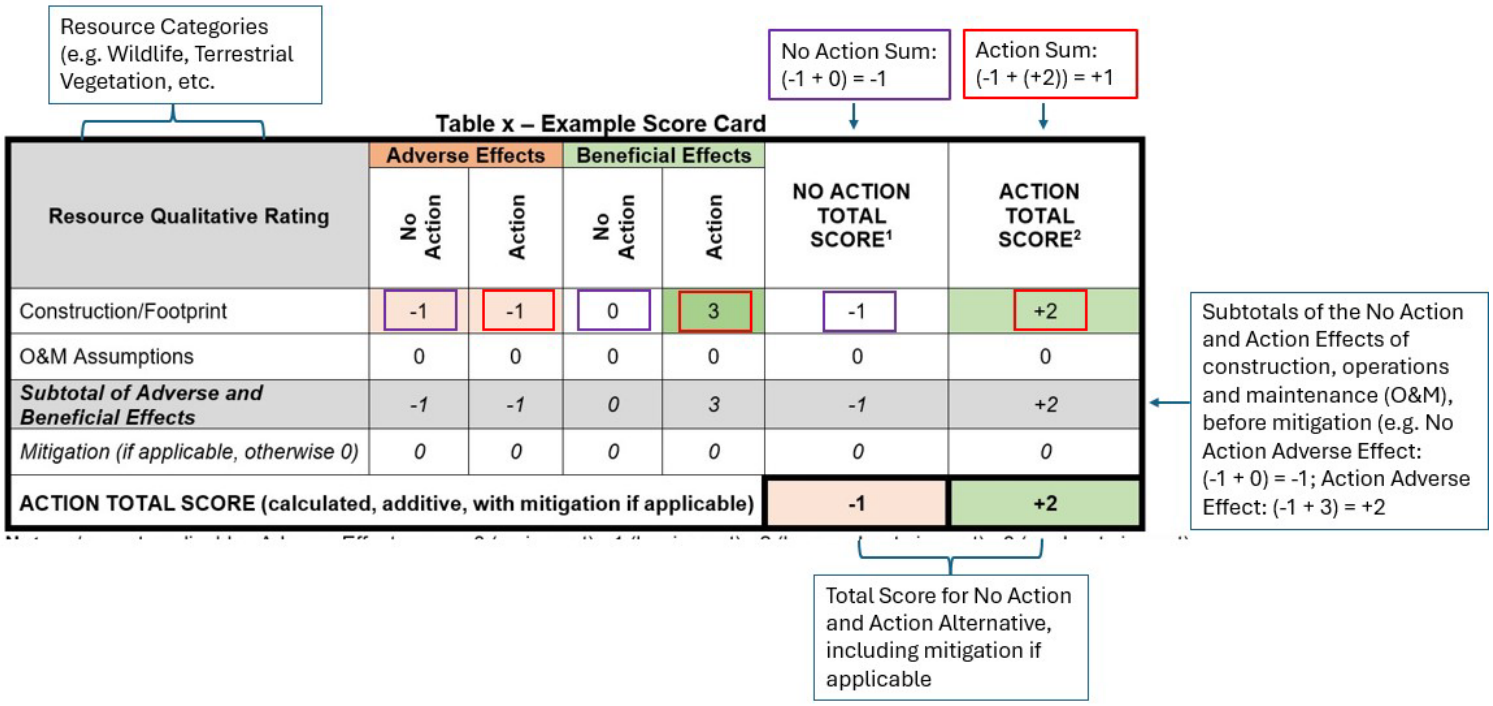

Figure 3. Example Scorecard with Notes

How to read score cards:

Following text descriptions of anticipated effects, each resource will have a score card displaying the Alternatives (No Action and Action(s)) anticipated effects, utilizing the qualitative rating criteria. Each Alternative will be assessed for Construction/Footprint, Operations and Maintenance (O&M) Assumptions as raw impacts. If mitigation is needed or applicable to reduce adverse effects, an additional score for Mitigation will be provided, to represent the reduced effect through mitigation. Mitigation can include avoidance, minimization, and/or compensation for adverse effects. If no mitigation is applicable or necessary to reduce impacts, a score of "0" will be observed in these score cards. The Subtotal Resource Score with mitigation result will show a comparison between the Alternatives inclusive of raw and mitigated impacts. The columns to the far right "No Action Total Score" and "Action Total Score" are sums of the No Action, and Action, respectively for each category: "Construction/Footprint", "O&M Assumptions", "Mitigation" (if applicable), and "Subtotal Resource Score with mitigation".

Construction/Footprint category includes direct and indirect effects of the physical process of pre-construction and constructure of the measures, as well as the measures constructed an in-place.

O&M Assumptions category includes direct and indirect effects of the anticipated operations of the measures, as well as the maintenance of those structures which may include mowing, post construction surveys/inspections, and if applicable, deployment of gate structures.

Action Total Score (calculated, additive, with mitigation) is the sum for each the No Action and Action scores, inclusive of Construction/Footprint, O&M Assumptions, and any mitigation, if applicable. These scores are rolled up into additional resource categories in the Main report, to be utilized for Alternative comparison for environmental acceptability.

Where appropriate and noted, supplementary “frameworks” or “rule books” may be implemented for a particular resource that may require an added level of nuance for scoring anticipated adverse and beneficial effects.

3 NATURAL ENVIRONMENT

The Natural Environment includes a discussion of the existing conditions for wildlife, special status species, special status areas, and other relevant environmental resources within the Study Area, and this Actionable Element Site. This Appendix focuses on the East Riser Actionable Element Site, utilizing and relying heavily on existing readily available data (incorporating by reference) and reports complimented by field observations and discussions with representatives knowledgeable of the area. As this Actionable Element Site originates from the "New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements, Bergen County, New Jersey Environmental Assessment" prepared by FEMA in September 2022, much of the below existing conditions and effects assessment utilizes this information, and incorporates it by reference, as one of the sources of readily available information. Information sourced directly from this report is italicized. Any information that may have changed between September 2022 and now, will be noted, as well as relevant USACE policy. For the purposes of clarity, the term "ERD" in the following sections refers to the project area as "East Riser Ditch". It should be noted that this document contains considerations for the pump station, which is not part of this Actionable Element Site, as it is already funded and in construction

3.1 WILDLIFE AND VEGETATION

This Section primarily addresses terrestrial wildlife including mammals, birds, reptiles, amphibians, and pollinator species (insects). Fish, benthic resources, and special status species, such as Threatened and Endangered Species and Essential Fish Habitat may be mentioned here but these resources are discussed in more depth in other sections of this report.

3.1.1 Wildlife

3.1.1.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The project area includes both terrestrial and aquatic habitats that support a variety of species, as described below.

Terrestrial Species
As described in Section 5.8, the project area is predominantly urbanized. Terrestrial habitats are present along the ERD and include riparian forest, shrublands, and herbaceous habitats (NJDEP 2018b). Terrestrial wildlife present in the project area include many species of migratory birds that use the ERD and associated riparian and shrubland habitats, as described in Section 5.11.

Mammals present in the project area include species common to suburban and/or disturbed environments, including eastern gray squirrel (Sciurus carolinensis), eastern cottontail rabbit (Sylvilagus floridanus), raccoon (Procyon lotor), red fox (Vulpes vulpes), and Virginia opossum (Didelphis virginiana). In addition, little brown bat (Myotis lucifugus) was observed in the project area during biological surveys conducted in 2016 and 2017 (NJDEP 2018b).

Aquatic Species
Within the project's vicinity there are several surface waterways that include the Hackensack River, Berry's Creek, and smaller waterways that support a large complex of marshes and other aquatic habitats. The ERD itself is channelized with steep banks and the substrates are silt and mud. The water in the channel is typically approximately 1-foot deep with occasional small pools associated with culverts and a large pool of unknown

depth at the tide gate at the south end. As a result, the ERD provides limited aquatic habitat. No aquatic vegetation was observed in the ERD during the biological surveys (NJDEP 2018b).

Wildlife associated with the limited aquatic habitat provided by the ERD include common amphibians and reptiles. Common amphibian species present in the project area include the American bullfrog (Lithobates catesbeianus), American toad (Anaxyrus americanus), gray treefrog (Hyla versicolor), green frog (Lithobates clamitans melanota), and Atlantic Coast leopard frog (Lithobates sphenocephalus). Reptiles include painted turtle (Chrysemys picta), red-eared slider (Trachemys scripta elegans), common snapping turtle (Chelydra serpentine), and garter snake (Thamnophis sirtalis). The tide gate located at the confluence of the ERD and Berry's Creek limits fish access to the ERD. Fish present in the ERD are limited to those species tolerant of disturbances from flooding, sedimentation, and lack of natural vegetated cover, such as western mosquitofish (Gambusia affinis)."

3.1.1.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, the ERD would continue to support limited habitat for terrestrial and aquatic wildlife species. Erosion and sedimentation would continue to adversely affect the ERD and downstream habitats by increasing the turbidity of the water and smothering aquatic substrates. Therefore, under the No Action alternative, continued flooding, erosion, and sedimentation could have a long-term minor impact on habitat for wildlife and fish within the project area."

The no action is anticipated to continue to have wildlife vulnerable to coastal flood risk and damages. Coastal storm damages would contribute to continued loss of habitat and food species based on repeated flooding and wind from storms and RSLC. While difficult to predict the adverse effects of such change over an extended period of time beyond the planning horizon of this Study of 100-years, the effects within the 100-year planning horizon would be anticipated to have low adverse impacts due to the infrequency of severe storms (e.g. 1 in 100 years). Evidence following severe storms in the area such as Hurricane Sandy exhibited erosion, tree-felling, severe flooding, and damages felt by many resources throughout the Study Area. Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

3.1.1.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the Proposed Action, terrestrial and aquatic habitats would be affected by construction of the ERD improvements and pump station. Vegetation supporting wildlife habitat, including riparian forested areas, would be removed or disturbed during construction. In addition, there is potential for direct harm to terrestrial and aquatic wildlife from the use of heavy equipment along the ERD. Most of the common wildlife and fish species in the project area would be able to move away from construction equipment, noise, and disturbance. In addition, disturbed areas would be revegetated with native plant species following construction. Therefore, there would

be short-term minor impacts on wildlife habitats in the project area from the construction of the Proposed Action. In the long term, the Proposed Action would have a minor beneficial effect on wildlife and fish because it would increase native vegetative cover in the project area and reduce sedimentation to downstream aquatic habitats."

Direct adverse effects from construction may cause temporary displacement, noise, vibrations, and disturbances that would make existing habitat temporarily unusable. Wildlife are expected to move to areas of nearby suitable habitat and avoid active construction, returning once construction is complete. Indirect effects may cause foraging / food sources to be disturbed and/or removed temporarily but are anticipated to return in frequency and abundance following construction. The transition of non-native habitat to native habitat would be more suitable for native wildlife, but may temporarily deter wildlife that previously were accustomed to the non-native conditions and relevant food sources of the site in its previous state. Therefore, this effects category is representative as low impact, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to wildlife. The site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat, preserving the quality of habitat for wildlife present. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb wildlife, but would be negligible given that species present are likely highly adaptable to urban industrial environments of the area. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

The proposed project would replace non-native terrestrial vegetative habitat with native vegetative habitat more suitable for native wildlife. The increased function and capacity of the CSRM measures would support less frequent and intensive flooding effect to wildlife, and could more naturally support the absorption of flood damages to surrounding communities. Therefore, this effects category is representative as moderate benefit, with a corresponding score of +1.

3.1.2 Wildlife Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Wildlife Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+1	-1	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*0*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

3.1.3 Fish

This Section generally lists fish located within the NYNJHAT Study Area and Hackensack/Passaic Planning Region, within which this Actionable Element site is located. This Section may mention migratory and special status fish; however, refer to subsequent Sections for additional details on migratory fish and special status fish.

There are four main categories of fish found throughout the waters within the NYNJHAT Study Area. The first is Estuarine fishes; they live in tidal waters where fresh and salt waters mix. The salt content varies: water closer to the ocean has a has higher salinity. The shallow water and low wave action of estuaries make them an important nursery for juvenile fish. Examples of Estuarine fishes include bluefish and weakfish. The second is Anadromous fish. Anadromous fish migrate from the ocean to freshwater to spawn. After spawning, adult fish often swim downstream to an estuary and eventually out to sea. Examples of anadromous fish found in the boundaries of the NYNJHAT Study Area include striped bass, shad, and river herring. The next category of fish is Marine or pelagic, these fish spend much time living in the open ocean. These are often large, fast-growing and swift-moving species adapted to living in deep waters. Examples of Pelagic fish that can be found within the NYNJHAT Study Area are: tuna and predatory pelagic sharks. The last is Catadromous fish, they migrate from freshwater to the ocean to spawn. Spawning often takes place offshore and a great distance from waters with the NYNJHAT Study bounds. An example of a Catadromous fish is the American eel (Monmouth County Parks 2015).

The most abundant species of fish in the Hackensack/Passaic Region are mummichog (*Fundulus heteroclitus),* Atlantic silverside (*Menidia menidia*), inland silverside (*Menidia beryllina*), white perch (*Morone americana*), blueback herring (*Alosa aesrivalis*), Atlantic tomcod (*Microgadus tomcod*), brown bullhead (*Ictaluws nebulous*), pumpkinseed (*Lepomis gibbosus*), American eel (*Anguilla rostrata*), bay anchovy (*Anchoa mitchilli*), striped killifish (*Fundulus majalis*), and striped bass (*Morone saxatilis*). Killifish (*Fundulus spp.*) are an important forage species found in this region (USACE 2022).

3.1.3.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Within the project's vicinity there are several surface waterways that include the Hackensack River, Berry's Creek, and smaller waterways that support a large complex of marshes and other aquatic habitats. The ERD itself is channelized with steep banks and the substrates are silt and mud. The water in the channel is typically approximately 1-foot deep with occasional small pools associated with culverts and a large pool of unknown depth at the tide gate at the south end. As a result, the ERD provides limited aquatic habitat. No aquatic vegetation was observed in the ERD during the biological surveys (NJDEP 2018)"

And,

"The tide gate located at the confluence of the ERD and Berry's Creek limits fish access to the ERD. Fish present in the ERD are limited to those species tolerant of disturbances from flooding, sedimentation, and lack of natural vegetated cover, such as western mosquitofish (Gambusia affinis)."

Fish are present more abundantly on the other side of the tide gate within Berry's Creek of which the East Riser channel drains into, including Essential Fish Habitat species, discussed in a subsequent Section. Recreational and commercial fishing is not anticipated within the East Riser channel, due to minimal species presence and limited aquatic habitat; and fishing for consumption is not advisable in Berry's Creek due to the presence of known contamination.

3.1.3.2 No Action

Adverse Effects

No adverse effects are anticipated, due to the minimal species presence, limited aquatic habitat, and tide gate presence within the East Riser channel. Indirectly, low adverse effects may be anticipated to fish beyond the tide gate, as changes in upstream water quality (e.g. salinity and DO) and flow patterns could disrupt fish use and cause a shift in plankton and benthic communities which are food sources for fish species. Although this effect is anticipated to be minimal in comparison to existing conditions in Berry's Creek associated with known contamination. Although the no action would continue on the existing condition trajectory, frequency of storms may increase over time, as may RSLC. Downstream fish and benthic disturbances, displacement, and in severe cases casualties could occur, as could removal of associated habitat for foraging and shelter. While difficult to predict the adverse effects of such change over an extended period of time beyond the planning horizon of this Study of 100-years, the effects within the 100-year planning horizon would be anticipated to have low adverse impacts due to the infrequency of severe storms (e.g. 1 in 100 years). Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages, inclusive of the downstream effects from flood damages and urban runoff during storm conditions. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

3.1.3.3 Action Alternative

Adverse Effects

Low direct adverse effects are anticipated, due to the minimal species presence, limited aquatic habitat, and tide gate presence within the East Riser channel that restricts larger fish access. While fish are not abundantly present within the project site due to a lack of sustaining habitat, small fish that are accustomed to degraded conditions that may be potentially present (such as mosquito fish), and temporarily disturbed during construction of the channel modifications, culvert replacement and railroad bridge replacement over the channel. Direct adverse effects from construction may cause temporary displacement, noise, vibrations, sediment resuspension, and disturbances that would make existing habitat temporarily unusable. Fish are expected to move to areas of nearby suitable habitat and avoid active construction, returning once construction is complete. Downstream indirect effects to fish will be minimized through the utilization of best management practices to reduce turbidity and total suspended solids into Berry's Creek through the tide gate structure. Related temporary disturbances to foraging/food sources may be disturbed by construction temporarily but are anticipated to return in frequency and abundance following construction. Measures and best management practices to reduce potential impacts to fish may be considered on an as needed basis, if deemed necessary. Therefore, this effects category is representative as low impact, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to fish. The site would continue to be monitored (actual duration to be determined as the designs are further refined in PED, currently anticipated to be approximately 5-years), to prevent the return on non-native terrestrial habitat. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb fish, but would be negligible given that species present are likely highly adaptable to urban environments of the New York City Metropolitan Area. Any operations and maintenance activities, including

herbicide applicable, will be done under best management practices, and with the appropriate Federal and/or State permit and regulations. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

No beneficial effects are anticipated, as the action will not create new aquatic habitat, and aside from the physical modifications to the channel and culverts, is not anticipated to increase fish prevalences or presence within the channel due to the existing tide gate structure. Small fish that are accustomed to a degraded environment would be anticipated to still have minimal presence, but not in abundance. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

3.1.4 Fish Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Fish Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	0	-1	-1
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*0*	*-1*	*-1*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**-1**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).

[1] – Sum of the No Action Adverse Effect and Beneficial Effect

[2] – Sum of the Action Adverse Effect and Beneficial Effect

3.1.5 Migratory Fish

Highly migratory fish travel long distances and often cross domestic and international boundaries. These pelagic species live in water of the open ocean, although they may spend part of their life cycle nearshore waters. Continuous disturbances to benthic habitat, littoral environments, and irregular changes to tidal flow change cause irreparable damage to the species within these regions (NOAA 2022). Migratory Fish was assessed in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS; however, is not applicable to this specific site. While migratory fish are present within the Hackensack/Passaic Planning Region, and the adjacent Berry's Creek, due to the presence of the tide gate structure, it is unlikely highly migratory fish are accessing the East Riser channels; therefore, this effects category is not applicable.

3.1.6 Terrestrial Vegetation

3.1.6.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The project area is urbanized and primarily composed of hard infrastructure associated with the surrounding commercial and industrial uses. Based on a survey of vegetation communities conducted for the RBDM EIS (NJDEP 2018b), forested, shrubland, and herbaceous vegetation communities are present in the project area. A narrow corridor of riparian vegetation exists along the ERD and at the location of the proposed pump station. Species found in the riparian community include blackgum (Nyssa sylvatica), eastern cottonwood (Populus deltoides), black cherry (Prunus serotina), pin oak (Quercus palustris), crack willow (Salix fragilis), sweet pepperbush (Clethra alnifolia), arrowwood (Viburnum dentatum), and poison ivy (Toxicodendron radicans).

Patches of shrubland community are also present along the ERD and consist of woody shrubs, forbs, and herbaceous vegetation. Representative species in this community include Amur honeysuckle (Lonicera maackii), arrowwood, eastern baccharis (Baccharis halimifolia), blackberry (Rubus allegheniensis), white snakeroot (Ageratina altissima), Indian hemp (Apocynum cannabinum), late flowering thoroughwort (Eupatorium serotinum), bull thistle (Cirsium vulgare), seaside goldenrod (Solidago semervirens), Japanese knotweed (Fallopia japonica), Virginia creeper (Parthenocissus quinquefolia), poison ivy, and common reed (Phragmites australis). Herbaceous vegetation communities are found in commercial areas and along roads, vacant lots, and other disturbed areas. Species in this community include grasses (Poa sp.), spotted sandmat (Chamaesyce maculate), ground ivy (Glechoma hederacea), bird's-foot trefoil (Lotus corniculatus), and English plantain (Plantago lanceolata)."

3.1.6.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, there would be no construction for flood reduction measures, and therefore, no vegetation removal or revegetation with native plants. The banks of the ERD would continue to erode and degrade riparian vegetation from loss of soils in areas where the bank is failing. Continued erosion and sedimentation may lead to the spread of invasive species as both the erosion and deposition areas result in disturbed area that are more readily recolonized by invasive plants. Therefore, under the No Action alternative, continued flooding would have a long-term minor adverse impact on vegetation within the project area."

Therefore, this effects category is representative as low adverse effect, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no effect, with a corresponding score of 0.

3.1.6.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the Proposed Action, existing vegetation would be removed to construct the ERD improvements and pump station. All spoil materials, including vegetation debris, would be disposed of by a licensed facility that would be determined during the development of the Materials Management Plan as proposed in the RBDM EIS (NJDEP 2018b). Riparian areas would be revegetated with native plant species consistent with NJSEA's recommended plants for the Meadowlands District, acceptable to Port Authority of New York and New Jersey and Federal Aviation Administration for planting in the vicinity of Teterboro Airport, and on the species list provided by the Bergen County Audubon Society. Therefore, there would be short-term minor effects on vegetation in the project area from the construction of the Proposed Action."

Therefore, this effects category is anticipated to have low adverse effect, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to terrestrial vegetation, as the site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat, preserving the quality of terrestrial habitat for wildlife present. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb terrestrial vegetation to eliminate non-native or invasive species, but would be negligible given that procedures would be established to avoid such impacts. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

"In the long term, the Proposed Action would have a beneficial minor effect on vegetation because it would increase native vegetative cover in the project area and reduce sedimentation to downstream aquatic habitats by reducing erosion of soils into the ERD."

Therefore, this effects category is representative as moderate benefit, with a corresponding score of +1.

3.1.7 Terrestrial Vegetation Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Terrestrial Vegetation Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+1	-1	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*0*

Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

3.1.8 Submerged Aquatic Vegetation

The project site, although subject to some coastal influences, is entirely within a terrestrial habitat. Aquatic vegetation, such as Submerged Aquatic Vegetation (SAV), was assessed in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS; however, is not applicable to this specific project site. Therefore, a site-specific effects analysis is not applicable.

3.1.9 Invasive and Aquatic Nuisance Species

Invasive species are non-native animal and plant species that can cause harm to the environment, the economy, and human health. Harm caused by invasive non-indigenous species may include habitat degradation and loss, loss of native wildlife and plant species, impacts to recreation, agriculture, livestock, and risks to public health and safety (NYSDEC 2022).

Invasive species Executive Orders (E.O. 13312 and 13751) were enacted, as amended, to ensure Federal agencies do not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that is has prescribed, the agency has determined and made public it's determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species, and that all feasible and prudent measures to manage risk of harm will be taken in conjunction with the actions.

3.1.9.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Invasive species prefer disturbed habitats and generally possess high dispersal abilities, enabling them to out-compete native species. Based on the vegetation survey conducted for the RBDM EIS (NJDEP 2018b), invasive plant species in the project area include the common reed and Japanese knotweed. Monotypic stands of invasive common reed are present along the ERD and in the vicinity of the proposed pump station (NJDEP 2018b)."

Spotted lanternfly, as noted in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS, is found in terrestrial habitats of New York (in addition to several other surrounding States). Spotted lanternfly are attracted to walnut, maple, and birch trees, especially the tree of heaven (*Ailanthus altissima)* which is this species host plant, prompting locals to remove tree of heaven plants, and destroy eggs, nymphs, and adults where found (USACE 2022).

3.1.9.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, there would be no construction for flood reduction measures, and therefore, no vegetation removal or revegetation with native plants. The banks of the ERD would continue to erode and degrade riparian vegetation from loss of soils in areas where the bank is failing. Continued erosion and sedimentation may lead to the spread of invasive species as both the erosion and deposition areas result in disturbed area that are more readily recolonized by invasive plants. Therefore, under the No Action alternative, continued flooding would have a long-term minor adverse impact on vegetation within the project area."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

3.1.9.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the Proposed Action, existing vegetation would be removed to construct the ERD improvements and pump station. All spoil materials, including vegetation debris, would be disposed of by a licensed facility that would be determined during the development of the Materials Management Plan as proposed in the RBDM EIS (NJDEP 2018b)."

And,

"Adverse effects on vegetation due to the spread of invasive plants would be avoided or minimized with the implementation of construction BMPs, including inspection and cleaning of equipment (NJDEP 2018b)."

Direct impacts of construction would result in complete removal of non-native plants within the areas of effect and replace with native plants. This would result in temporary removal of existing vegetative habitat during construction. Therefore, this effects category is representative as low impact, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated, as the site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb terrestrial vegetation to eliminate non-native or invasive species but would be negligible given that procedures would be established to avoid such impacts. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Revegetation with native plants would reduce the potential for invasive plants to recolonize work areas following construction. Therefore, the Proposed Action would have minor beneficial effects on vegetation communities related to invasive plants."

Therefore, this effects category is representative as moderate benefit, with a corresponding score of +1.

3.1.10 Invasive and Aquatic Nuisance Species Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Invasive and Aquatic Nuisance Species Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+1	-1	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*0*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

3.2 SPECIAL STATUS SPECIES

3.2.1 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 was passed to protect and recover imperiled species and the ecosystems upon which they depend. The ESA is administered by the USFWS and the National Marine Fisheries Service (NMFS). Under the ESA, species may be listed as either endangered or threatened, whereby species are either in danger of extinction through all, or a significant portion, of its range (endangered) or are species that are likely to become endangered within the foreseeable future (threatened). The ESA prohibits the "take" of protected species, including harassment, hunting, capturing, collecting, or killing.

3.2.1.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Information on the presence of threatened and endangered species was obtained from the USFWS Information for Planning and Consultation (IPaC) system, accessed May 5, 2022, and the findings of biological surveys conducted in the project area (NJDEP 2018b). The IPaC system reported one federal candidate species, the monarch butterfly (Danaus plexippus), as potentially present in the general area. The species may be found in a variety of habitats but requires milkweed (Asclepias sp.) as a host plant for larval development. Critical habitat has not been designated for any species in the project area. According to the RBDM EIS (NJDEP 2018b), coordination with NMFS confirmed that no listed species under their jurisdiction are present in the Hackensack River or its tributaries. No federally listed species were observed during biological surveys in the project area (NJDEP 2018b).

While not identified on IPaC, two federally listed bat species—the northern long-eared bat (Myotis septentrionalis), a federally threatened species, and the Indiana bat (Myotis sodalis), a federally endangered species—have a low potential to occur in the project area. The nearest known winter hibernaculum is located approximately 22 miles west at Hibernia Mine (Conserve Wildlife Foundation of New Jersey 2022). In spring and summer, these species may be found roosting underneath tree bark, in cavities, or within crevices of trees. Breeding occurs in late spring and summer, with maternity colonies typically located in large snags having abundant exfoliating bark and high solar exposure within a mature forested wetland complex. The forested wetlands along the ERD may provide a low potential for roosting habitat for northern long-eared bats or Indiana bats, but it is unlikely that any tree along the ERD in the project area would support a maternity colony of bats. During biological surveys conducted in 2016 and 2017 (NJDEP 2018b), no recordings of either bat species were tentatively identified. In addition, the consultation conducted with the USFWS for the RBDM EIS did not identify any bat species of concern (NJDEP 2018b).

A number of state-listed threatened and endangered species also have the potential to occur in the project area (NJDEP 2018b). Because of the urbanized nature of the project area, and the channelized and disturbed nature of the ERD, habitat for state-listed threatened and endangered species is limited to the narrow riparian forest and shrublands located along the ERD. During biological surveys conducted for the RBDM EIS, several state-listed, bird species were observed, including American kestrel (Falco sparverius), bald eagle (Haliaeetus leucocephalus), black-crowned night-heron (Nycticorax nycticorax), northern harrier (Circus cyaneus), osprey (Pandion haliaetus), black skimmer (Rynchops niger), peregrine falcon (Falco peregrinus), pied-billed grebe (Podilymbus podiceps), and Savannah sparrow (Passerculus sandwichensis) (NJDEP 2018b)."

The USFWS IPaC database and NMFS Section 7 Mapper was reviewed again in preparation of this Appendix, accessed June 24, 2025. Two federally-listed species were identified as the tricolored bat (*Perimyotis subflavus – Proposed Endangered*) and the monarch butterfly (*Danaus plexippus – Proposed Threatened*). No critical habitats were identified at this location. No aquatic threatened and endangered species was identified as potentially present. Additional species of concern may be identified during coordination of the Draft Integrated Response FR/EA with USFWS, NMFS, and NJDEP.

3.2.1.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Because there is no suitable habitat for listed species, there would be no effect on federally listed species under the No Action alternative. The ERD would continue to support very limited habitat for state threatened and endangered species. Continued flooding, erosion, and sedimentation would have a negligible impact on the state's threatened and endangered species and their habitats through continued habitat degradation."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no effect, with a corresponding score of 0.

3.2.1.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the Proposed Action, there would be no effect on federally listed species because there is no suitable habitat for threatened and endangered species. Through consultation with USFWS, as described in the RBDM EIS, the U.S. Department of Housing and Urban Development determined that there was no potential for effects on bat species (NJDEP 2018b). Although the Proposed Action would remove trees in the riparian zone, the project area would be revegetated with native species. Construction BMPs described in the RBDM EIS to protect migratory birds during vegetation clearing could also provide protection for state-listed bird species (Section 5.11)."

The ESA prohibits the "take" of protected species, including harassment, hunting, capturing, collecting, or killing. Direct impacts from construction are not anticipated to result in a "take" of a regulated wildlife species due to the limited presence of these species at the project site. Should species be identified as present, or potentially present, avoidance is the primary mitigation action to prevent adverse effects to these species. Potential indirect effects may include the temporary disturbance and/or removal of habitat for foraging species and prey during construction. Although the threatened and endangered species will be avoided, there may be ancillary disturbances that cannot be avoided that may deter species, such as noise and vibrations although those are anticipated to be temporary, low, and addressed through no-construction windows. Therefore, this effects category is representative as low adverse effect, represented by a corresponding rating criteria score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to threatened and/or endangered species, as the site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat, preserving the quality of habitat for wildlife present. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb wildlife to eliminate non-native or invasive species, but would be negligible given that procedures would be established to avoid such impacts. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"In the long term, the area may provide slightly improved habitat conditions for state-listed species."

Therefore, this effects category is representative as moderate benefit, with a corresponding score of +1.

3.2.2 Threatened and Endangered Species Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Terrestrial Threatened and Endangered Species Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+1	-1	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*0*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

There are no aquatic threatened and endangered species present at the Actionable Element Site; therefore, an effects assessment and associated scoring is not applicable.

3.2.3 Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act Species

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, was implemented for the protection and conservation of migratory birds. The MBTA prohibits, unless permitted by regulations, actions that could cause detrimental effects to migratory birds. Under the MBTA, it is illegal to possess, import, export, transport, sell, purchase, barter or offer for sale migratory birds, including their parts, feathers, nests, and eggs. The law additionally makes it illegal to engage in a "take", or to "pursue, hunt, shoot, wound, kill, trap, capture or collect, or any attempt to carry out these activities" of migratory birds including their parts, feathers, nests, and eggs (USFWS 2022a).

The Bald and Golden Eagle Protection Act of 1940, as amended, prohibits, unless under permit issued by the Secretary of the Interior, actions that could disturb or cause detrimental effects to bald and golden eagles. Under this Act, and similar to the MBTA, it is illegal to possess, import, export, transport, sell, purchase, barter or offer for sale, including their parts, feathers, nests and eggs. The law additionally makes it illegal to engage in a "take", or to "pursue, hunt, shoot, wound, kill, trap, capture or collect, or any attempt to carry out these activities" of bald and golden eagles, including their parts, feathers, nests and eggs (USFWS 2022a).

3.2.3.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Many species of migratory birds use the project area for foraging, roosting, and nesting. Habitat for migratory birds in the project area is primarily associated with the narrow riparian corridor and shrublands located along the ERD. However, migratory birds can utilize any vegetation, including trees located in commercial lots and along roadways, for foraging and nesting. Based on avian surveys conducted in 2016 and 2017 (NJDEP 2018b), bird species commonly found in the project area include Canada goose (Branta canadensis), double-crested cormorant (Phalacrocorax auritus), ring-billed gull (Larus delawarensis), mallard (Anas platyrhynchos), American robin (Turdus migratorius), and red-winged blackbird (Agelaius phoeniceus). Raptor species observed during surveys included northern harrier, red-tailed hawk (Buteo jamaicensis), and American kestrel.

Bald eagles have been observed in the project area, but suitable nesting habitat is not present, and no nests were observed during biological surveys (NJDEP 2018b). Golden eagles are known to migrate through New Jersey; however, there is no suitable golden eagle habitat for resting or foraging within or near the project area."

3.2.3.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, there would be no construction of flood reduction measures and the ERD would continue to support habitat for migratory birds. Continued flooding, erosion, and sedimentation would have a negligible impact on migratory birds within the project area by potentially reducing some of the available riparian habitat."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages, and the non-native phragmites dominance, and further degradation of existing habitat would persist. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

3.2.3.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the Proposed Action, habitats that support migratory birds, including riparian and shrubland habitats along the ERD, would be removed or disturbed by construction of the ERD improvements and pump station. If construction activity occurs during the migratory bird breeding season, construction activities that could result in the destruction of nests, eggs, or young birds in the nest. Construction BMPs identified in the RBDM EIS would include scheduling vegetation removal and disturbance outside of the nesting season. Where construction timing cannot be altered to avoid the breeding and nesting season, preconstruction surveys for nesting activity would be conducted by qualified avian biologists, and no-disturbance buffers would be instituted around active nests (NJDEP 2018b). In addition, areas where vegetation is removed would be revegetated with native plant species following construction. Therefore, with implementation of BMPs, the Proposed Action would have a minor impact on migratory birds.

There are no known bald eagle nests in or near the project area; thus, there would be no impact on bald eagles under the Proposed Action."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to migratory birds. The site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat, preserving the quality of habitat for stop over migrations. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb migratory species, but would be negligible given that species that frequently utilize the area are likely highly adaptable to urban environments of the New York City Metropolitan Area. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As described in the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project, although the Action would remove trees in the riparian zone, construction related disturbances will also remove non-native terrestrial vegetation and replace with native vegetation that would be more suitable habitat for stop over migrations, foraging, roosting, and nesting. Therefore, this effects category is representative as moderate benefit, with a corresponding score of +1.

3.2.4 Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act Species Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act Species Vegetation Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+1	-1	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*0*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

3.2.5 Marine Mammal Protection Act Species

The Marine Mammal Protection Act (MMPA) of 1972 establishes a national policy to prevent marine mammal

species and population stocks from declining beyond the point where they cease to be significant functioning element of the ecosystems of which they are a part. The NOAA, USFWS, and Marine Mammal Commission share responsibility for implementing the MMPA (NOAA 2022). All marine mammals, such as whales, dolphins, porpoises, seals, sea lions, walruses, polar bears, sea otters, manatees, and dugongs, are protected under the MMPA, some of which are also protected under the ESA (NOAA 2022). Similar to the ESA and MBTA, and with a few exceptions, the MMPA prohibits the "take" of marine mammals, including harassment, hunting, capturing, collecting, or killing. Additionally, the MMPA makes it illegal to import marine mammal products into the United States without a permit (NOAA Fisheries 2022).

Marine Mammal Protection Act Species is a resource that was reviewed and assessed in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS due to the size of the Study Area. The Actionable Element Site, although with coastal influences, is situated entirely behind a tide gate, with no access for marine mammals, and very few aquatic species. As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to the Actionable Elements Interim Response sites and determined to not apply to this specific Actionable Element Site. Therefore, an effects analysis is not applicable.

3.2.6 Sea Turtles

Four species of sea turtles can be found in the lower part of the NYNJHAT Study Area including green (threatened), Kemp's ridley (endangered), leatherback (endangered), and loggerhead (threatened) sea turtles. Warmer waters starting in late spring and early summer provide more suitable temperatures for sea turtle presence, typically between the months of May through November, and particularly within the coastal bays, Long Island Sound (NYSDEC 2022), and Jersey shore. In 2018, Kemp's ridley sea turtles were observed nesting on the Rockaway Peninsula within the Gateway National Recreation Area (NPS 2018). Due to concerns for extreme high tides, the NPS excavated the nests and incubated the recovered eggs from those nests. Later that year, 96 Kemp's ridley sea turtle hatchlings were released at West Beach (NPS 2018). Sea turtles, including the Kemp's ridley, are under threat of human and environmental disturbances, such as vessel strikes, marine water pollution (e.g. plastics), climate change (e.g. cold-stunning), illegal harvesting, and entrapment in fishing gear (NYSDEC 2022 and NPS 2018).

As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to the Actionable Elements Interim Response sites and determined to not apply to this specific Actionable Element Site. Therefore, an effects analysis is not applicable.

3.2.7 Essential Fish Habitat and EFH-Designated Species

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended, was first passed in 1976 for the purpose of preventing overfishing, rebuilding overfished stocks, increase long-term economic and social benefits, ensure safe and sustainable supply of seafood, and protect habitat that fish need to spawn, breed, feed, and grow to maturity (NOAA Fisheries 2022). The MSA Reauthorization Act of 2007 amended the MSA to include annual catch limits and accountability measures, promote market-based management strategies (e.g. catch shares), strengthened peer-reviewed science, and enhance international cooperation to address illegal, unregulated, and unreported fishing (NOAA Fisheries 2022). The Sustainable Fisheries Act of 1996, as amended, strengthened the requirements to prevent overfishing and rebuilding overfished fisheries, set standards for fishery management plants to specific objectives and measurable criteria of stock status, added national standards for fishing vessel safety, fishing communities, and bycatch, new requirements for fishery management councils to identify and describe Essential Fish Habitat (EFH), to protect, conserve and enhance EFH, to designate Habitat Areas of Particular Concern, and establish a federal EFH consultation process that advises federal agencies to avoid, minimize, mitigate, or offset adverse effects to EFH (NOAA Fisheries 2022).

The NOAA Fisheries EFH Mapper is a tool that allows users to discover where managed fish species spawn, grow, or live in a chosen location on the map: (https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper). The EFH mapper displays EFH, EFH areas protected from fishing, habitat areas of particular concern (HAPC), fishery management plans, and NOAA nautical charts.

Consultation with NOAA Fisheries is required for any Federal action that may adversely affect EFH. An adverse effect includes direct or indirect physical, chemical, or biological alternations to waters or substrate, species and their habitat, other ecosystem components, and quality and quantity of EFH. Consultation requires the preparation of an EFH Assessment (50 CFR Part 600.905).

3.2.7.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project, the neighboring:

"Berry's Creek is designated EFH for Winter Flounder, Little Skate, Atlantic Herring, Red Hake, Windowpane Flounder, Winter Skate, Clearnose Skate, Longfin Inshore Squid, Bluefish, Atlantic Butterfish, and Summer Flounder. The tide gate at the confluence of the ERD and Berry's Creek prevents semi-diurnal tidal fluctuation in the ERD; therefore, the ERD is not designated as EFH."

The NOAA Fisheries EFH Mapper database was reviewed again in preparation of this Appendix, accessed July 17, 2025. Based on a review of the EFH Mapper for the New England / Mid-Atlantic and Atlantic Highly Migratory Species Councils, EFH species of various life stages that may be present in the vicinity are listed on the following table:

Common Name	Scientific Name	Life Stage	Habitat Association	Fishery Management Plan
Winter Flounder	*Pseudopleuronectes americanus*	E, L, J, A	Demersal	Amendment 14 to the Northeast Multispecies FMP
Little Skate	*Leucoraja erinacea*	J, A	Demersal	Amendment 2 to the Northeast Skate Complex FMP
Atlantic Herring	*Clupea harengus*	L, J, A	Pelagic	Amendment 3 to the Atlantic Herring FMP
Red Hake	*Urophycis chuss*	E, L, J, A	Egg/Larvae: Pelagic; Juvenile/Adult: Demersal	Amendment 14 to the Northeast Multispecies FMP
Windowpane Flounder	*Scophthalmus aquosus*	E, L, J, A	Egg: Pelagic; Larvae/Juvenile/Adult: Demersal	Amendment 14 to the Northeast Multispecies FMP
Winter Skate	*Leucoraja ocellata*	J, A	Demersal	Amendment 2 to the Northeast Skate Complex FMP
Clearnose Skate	*Raja eglanteria*	J, A	Demersal	Amendment 2 to the Northeast Skate Complex FMP
Bluefish	*Pomatomus saltatrix*	J, A	Pelagic	Bluefish
Longfin Inshore Squid	*Loligo pealeii*	E	Egg: Demersal/Somewhat Structure Oriented;	Atlantic Mackerel, Squid,& Butterfish Amendment 11

			Juvenile/Adult: Pelagic	
Atlantic Butterfish	*Peprilus triacanthus*	L	Pelagic	Atlantic Mackerel, Squid,& Butterfish Amendment 11
Summer Flounder	*Paralichthys dentatus*	L, J, A	Demersal	Summer Flounder, Scup, Black Sea Bass

Additional species of concern maybe identified during coordination of the Draft Integrated Response FR/EA with NOAA NMFS.

3.2.7.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, flooding of the ERD would continue to adversely affect downstream habitats, including designated EFH in Berry's Creek, by carrying sediments, [urban runoff] contaminants, and debris that could be harmful to EFH species. Therefore, under the No Action alternative, continued flooding would have a long-term minor impact on EFH downstream of the project area."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

3.2.7.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"there is potential for stormwater runoff during construction to impact water quality in Berry's Creek. To reduce the risk of erosion, sedimentation, and associated water quality impacts, a project-specific SWPPP would be implemented (Section 5.4). During operation, flows from the pump station would be conveyed through a below-grade pipe to Berry's Creek. An energy dissipation structure would be installed at the outfall from the pump station to avoid scour in Berry's Creek. Therefore, impacts on EFH in Berry's Creek would be negligible."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to EFH. The site would continue to be monitored for establishment of the native habitat. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb fish, but would be negligible given that species present are likely highly adaptable to urban environments of the New York City Metropolitan Area. Any operations and maintenance activities, including herbicide applicable, will be done under Best Management Practices, and with the appropriate Federal and/or State permit and regulations. Therefore,

operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The Proposed Action would stabilize the banks of the ERD, which would reduce the amount of silt in the waters of the ERD over the long term. This would have a minor beneficial effect on water quality and EFH in Berry's Creek."

Therefore, this effects category is representative as moderate benefit, with a corresponding score of +1.

3.2.8 Essential Fish Habitat and EFH-Designated Species Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Essential Fish Habitat and EFH-Designated Species Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+1	-1	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*0*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

3.3 SPECIAL STATUS AREAS

3.3.1 Wetlands

Wetlands are defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands are transitional areas between open water and dry land and are often found along bays, lakes, rivers, and streams (USACE 2022b). Executive Order 11990, Protection of Wetlands, states that Federal agencies must avoid undertaking or providing assistance for new construction in wetlands unless there is no practical alternative to such construction and the proposed action

includes all practicable measures to minimize harm to the wetland. Wetlands are essential for maintaining biodiversity, mitigating flooding, and protecting water quality.

The USFWS maintains Federally listed wetlands records on the National Wetlands Inventory Mapper online database and New Jersey maintains State-listed wetlands records on the NJDEP Land Resource Protection Web Application. Federal and/or State wetland code classifications include, but are not limited to, those listed in parathesis below (e.g. PFO1R). Note: there is no attempt to define the limits of proprietary jurisdiction of any federal, state, or local government, or to establish the geographical scope of the regulatory programs of government agencies.

3.3.1.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

*"The project area lies within the Meadowlands District, which includes a portion of one of the largest tidal wetland complexes within the Hudson-Raritan Estuary, encompassing approximately 5,800 acres of estuarine wetlands (USFWS 2007). According to the USFWS National Wetland Inventory (USFWS 2022b) maps, there are 5.35 acres of wetlands in or immediately adjacent to the project area (**Appendix A, Figure 5**). Furthermore, these wetland features are broken into three distinct wetland types ([Table 1]).*

Table 1. National Wetland Inventory (NWI) Wetland Classifications Within and Adjacent to the Project Area Wetland Type

Wetland Type	***NWI Code***	***Area (Acres)***
Palustrine Forested Seasonally Flooded	*PF01E*	*3.19*
Palustrine Emergent Seasonally Flooded – Tidal	*PEM5R*	*0.87*
Estuarine Subtidal Unconsolidated Bottom	*E1UBLx6*	*1.31*
Total Federal Wetlands	*–*	***5.37***

*"Field investigations performed for the RBDM project were completed in 2016 and 2017 to characterize wetland habitats throughout the project area. A 0.4-acre freshwater emergent wetland, not mapped on the NWI, was identified adjacent to the ERD, just east of Grand Street (**Appendix A, Figure 5**). The wetlands present in the project area are all located in an area of commercial and industrial use and are considered habitats of moderate ecological value owing to anthropogenic perturbation and the presence of invasive and nuisance species (NJDEP 2018b). A large estuarine and marine complex, with wetlands (48.41 acres) and deep water habitat (12.76 acres) is located west of Grand Street and receives hydrological input from the ERD. Field investigations in 2016 and 2017 indicated that this is a habitat of moderate ecological value because it is largely dominated by a monoculture of common reed."*

State-listed wetlands in the project area include the following:

Table 2. State-listed Wetlands in the Project Area

Wetland Type	**Area (Acres)**
Deciduous Scrub/Shrub	0.47
Phragmites Dominate Interior	0.55
Deciduous Scrub/Shrub	0.49
Deciduous Wooded	0.14
Total State Wetlands	**1.65**

3.3.1.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, the risk of flooding in and beyond the project area would not be substantially reduced. The wetlands adjacent to the ERD receive runoff from surrounding industrial and commercial land use areas, resulting in these wetlands trapping [urban runoff] contaminated sediment from stormwater... Future repeated flood events could cause erosion, carrying even more [urban runoff] contaminated sediment into these wetlands, further degrading their function and value. Because of the already degraded nature of the wetlands, the No Action alternative would have a long-term, minor, adverse impacts on wetlands within and around the project area."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

3.3.1.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

*"Under the Proposed Action, short-term, minor impacts on 0.88 acres of wetlands would occur during construction as a result of temporary fill, vegetation removal, and grading activities (**Appendix A, Figure 5**). Temporary fill and vegetation removal would result in physical and biological effects from alteration of drainage, physical loss of wetlands, and/or interruption of tidal exchange (Shuldiner and Cope 1979). The Proposed Action would require dewatering for the construction of the pump station* (not part of this proposed Alternative, as was already funded and in construction)*, culvert/railroad crossings, and dredging of the ERD. These activities could increase turbidity in adjacent wetlands for the duration of dewatering activities. The Proposed Action would revegetate disturbed areas with native, deeply rooting plant species to stabilize the soil and prevent soil erosion that could impact wetlands. Following construction, localized areas of temporary wetland impacts would be restored to preconstruction conditions and would be expected to recover within a short period of time.*

Although not part of this proposed Alternative but included herein for awareness, [a] *total of 0.37 acres of freshwater emergent wetlands would be permanently filled as a result of the construction and operation of the ERD pump station under the Proposed Action. The Subapplicant would be required to provide wetland mitigation for this permanent impact on wetlands in compliance with the CWA and any required USACE permit conditions.*

For remaining portions of the project, that are part of this proposed Alternative, [i]*mplementation of the Proposed Action would result in short-term minor impacts on wetlands from the placement of permanent fill needed to construct the ERD pump station that would be mitigated to result in no net loss of wetland functions or acres."*

Therefore, this effects category is representative as low adverse effect, with a corresponding score of -1 for the temporary disturbances of the freshwater emergent wetlands. Mitigation required for the permanent impacts to wetlands as a result of the prior authorized pump station are not part of this proposed action.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to wetland vegetation, as the site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat, preserving the quality of terrestrial habitat for wildlife present. Maintenance may

include non-native plant management, such as herbicide application and removal which could temporarily disturb terrestrial vegetation to eliminate non-native or invasive species, but would be negligible given that procedures would be established to avoid such impacts. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Implementation of the Proposed Action is anticipated to have long-term, moderate, beneficial impacts on wetland functions and services in and around the project area as a result of improved bank stabilization and the addition of native plantings along the ERD. The Proposed Action would reduce the occurrence of severe flooding events in and around the project area, reducing the amount of sediment and [urban runoff] that could be transported to surrounding wetlands."

Therefore, this effects category is representative as moderate benefit, with a corresponding score of +3.

3.3.2 Wetlands Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Wetlands Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+3	-1	+2
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+3*	*-1*	*+2*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**+2**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

3.3.3 Floodplains

The Federal Emergency Management Agency (FEMA) provides an online public source for flood hazard information. The FEMA maintains and updates data through the Flood Insurance Rate Map and risk assessments, utilizing data statistics for river flow, storm tides, hydrologic/hydraulic analyses, rainfall, and

topographic surveys. The FEMA online Flood Mapper is found at https://msc.fema.gov/portal/home (FEMA 2022).

Executive Order 11988 Floodplain Management was issued in 1977 to ensure Federal Agencies "assert leadership in reducing flood losses and losses to environmental values served by floodplains; avoid actions located in or adversely affecting floodplains unless there is no practicable alternative; take action to mitigate loses if avoidance is not practicable;" and to establish "a process for flood hazard evaluation based upon the 1% floodplain base flood standard of the National Flood Insurant Program (NFIP). It also direct[s] Federal agencies to issue implementing procedures; provide[s] a consultation mechanism for developing the implementing procedures; and provide[s] oversight mechanism" (FEMA 2021). FEMA's implementing guidelines for Executive Order 11988 utilizes an eight-step process for identifying and assessing impacts to floodplains. Refer to Chapter 8 for more information regarding how the NYNJHAT Study is implementing the eight-step process (Engineering Regulation 1165-2-26). For context in the following Sections, an area with 1% chance of annual flood (Zone AE) is known as the "100-year floodplain" or "base floodplain", and an area with 0.2% chance of annual flood (Zone X, where shaded on the FEMA Fire Insurance Rate Map) is known as the "500-year floodplain". Any area that is outside the 0.2% floodplain is also referred to as Zone X, or Zone C, but are unshaded on The FEMA Fire Insurance Rate Map.

3.3.3.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

*"The project area is in FEMA Flood Zone AE, an area with a 1-percent chance of being inundated within any given year (**Appendix A, Figure 6**), as shown on FIRM map panel 34003C0254H, effective August 28, 2019 (FEMA 2021). Major sources that contribute to flooding in the area include tidal backflows from Berry's Creek and stormwater runoff from the high proportion of impervious cover in the majority of the project area coupled with the shallow groundwater that prevents rainfall infiltration. Current flood protection measures include a tide gate at the confluence of the ERD and Berry's Creek that is currently in disrepair."*

3.3.3.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The No Action alternative would have no direct impact on floodplains because construction for flood reduction measures would not occur. However, the risk of flooding in and beyond the floodplains of the project area would not be reduced, and additional construction, repairs, or mitigation efforts may be required in the future to address damage after flooding. It is anticipated that the amount of land subject to inland flooding surrounding the ERD would increase due to an increase storm frequency, intensity, and duration, as well as from sea level rise (Section 5.3). The increased flooding could cause an increase in sediment buildup in downstream structures such as culverts, and further increase flood risk by impeding flow. As discussed in Section 5.19, structures and residences surrounding the project area would continue to be at risk of loss of life and property damage during future storm events. Because the occurrence of flooding is expected to increase owing to climate change and sea level rise, this alternative would have a minor, long-term, adverse impacts on people and property within the floodplain as well as on the natural floodplain function depending on the extent and duration of flooding."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

3.3.3.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Construction of the Proposed Action would affect floodplains through changes in vegetation, sedimentation, hazardous materials exposure, and floodplain capacity. The Proposed Action would temporarily remove vegetation, adversely affecting floodplain functions in the short term. However, revegetation with native plants would improve and benefit floodplain functions and values in the long term (Section 5.8). Construction could result in accidental releases of hazardous waste from previously unknown underground sources or minor leaks from construction equipment, and ground disturbance could cause sediment to run off into the floodplain and result in minor adverse impacts on water quality, aquatic life, and hazardous materials. The Subapplicant would implement a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the general stormwater permit for construction activities (Section 5.4) and a site-specific Erosion and Sediment Control Plan (Section 5.1). These measures would be required by the state and local permits would be required for construction (to avoid and minimize impacts). Therefore, construction of the Proposed Action would have negligible short-term impacts on the floodplain."

Therefore, this effects category is representative as no impact, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to the floodplain, as the site would be monitored for wetland establishment. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

*"The improvements to the ERD would provide increased flood protection for up to approximately 141 structures (**Appendix A, Figure 7**). Implementation of the Proposed Action would reduce the extent of flooding in the project area and reduce the risk of future flood damage to surrounding structures. A reduction in the occurrence of severe floods would improve floodplain function because the floodplain would not be inundated with sediment- and [urban runoff]. Therefore, the Proposed Action would have a long-term, moderate, beneficial impact on floodplain function.*

*FEMA completed an eight-step checklist for the Proposed Action, which indicated that implementation of this project would have more beneficial than detrimental impacts on floodplains and that there is no practicable alternative to conducting the project within the floodplain. The eight-step checklist is provided in **Appendix B, Document 1**."*

Therefore, this effects category is representative as moderate benefit, with a corresponding score of +3.

3.3.4 Floodplains Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Floodplains Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+3	-1	+2
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+3*	*-1*	*+2*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**+2**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

3.3.5 Wild and Scenic Rivers

Wild and Scenic Rivers Act was enacted by the U.S Congress in 1968 to preserve and protect certain rivers with scenic, natural, cultural, and recreational values for the enjoyment of present and future generations (Public Law 90-542; 16 U.S.C. 1271 et seq.). New York has approximately 73.4 miles out of approximately 51,790 miles of river designated as wild and scenic (NWSRS 2022).

Wild and Scenic Rivers was a resource that was reviewed and assessed in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS due to the size of the Study Area. During review, it was determined that no Wild and Scenic Rivers were present within the Study Area. As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to the Actionable Elements Interim Response sites and determined to not apply to this specific Actionable Element Site. Therefore, an effects analysis is not applicable.

3.3.6 Designated Critical Habitat

Designated Critical Habitat is defined as habitat needed to support the recovery of threatened and endangered listed species under the ESA. Although an area may be designated as Critical Habitat, that does not necessarily also designate that area as a Critical Environmental Area, Marine Protected Area, Wildlife Refuge, wilderness reserve, preservation, or other conservation area (NOAA Fisheries 2022).

Designated Critical Habitat was a resource that was reviewed and assessed in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS. As reported, no USFWS Designated Critical Habitat is present; however, NOAA ESA Critical Habitat is present within the Study Area of Atlantic Sturgeon. As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to the AE

Interim Response sites and determined to not apply to this specific Actionable Element site. No Designated Critical Habitat is present within this Actionable Element Site. Therefore, an effects analysis is not applicable.

3.3.7 Critical Environmental Areas (State)

A State designated Critical Environmental Area (CEA) is defined by NJDEP (known as Critical Environmental Sites or Natural Heritage Program sites in New Jersey) as a habitat critical to threatened, endangered or other rare wildlife, and by NYSDEC under 6 NYCRR 617.14(g) as:

"a geographic location within exceptional or unique character with respect to one or more of the following:

> *1. A benefit or threat to human life;*
> *2. A natural setting such as fish and wildlife habitat, forest and vegetation, open space, and areas of important aesthetic or scenic quality;*
> *3. Agricultural, social, cultural, historic, archaeological, recreational, or educational values; or,*
> *4. An inherent ecological, geological, or hydrological sensitivity that may be adversely affected by any change."*

Critical Environmental Areas (State) was a resource that was reviewed and assessed in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS. As reported, no USFWS Designated Critical Habitat is present within the Study Area; however, NOAA ESA Critical Habitat is present within the Study Area for Atlantic Sturgeon. As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to the Actionable Element Interim Response sites and determined to not apply to this specific Actionable Element site. No Critical Environmental Areas (State) is present within this Actionable Element Site (USACE 2022). Therefore, an effects analysis is not applicable.

3.3.8 Marine Protected Areas

Marine Protected Areas (MPA) are defined as "a place in our ocean, estuaries, or Great Lakes where human activities are managed to protect important natural or cultural resources" (NOAA 2025). Depending on the type of MPA, depends on the level of protection to that area; for example, a marine reserve (also known as a "no take" is the most protective type of MPA in which removing or destroying natural or cultural resources is prohibited (NOAA 2020). NOAA maintains an online publicly available mapper of U.S. MPA boundaries and additional information, on the NOAA MPA Center website:

https://marineprotectedareas.noaa.gov/dataanalysis/mpainventory/mpaviewer/

As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to the Actionable Elements Interim Response sites and determined to not apply to this specific Actionable Element Site. Therefore, an effects analysis is not applicable.

3.3.9 Coastal Zone Management Act Areas

The Coastal Zone Management Act (CZMA) was enacted in 1972 and is administered by the NOAA to manage the Nation's coastal resources, including the Great Lakes (NOAA n.d.). CZMA, as amended, declares a national policy to "preserve, protect, develop, and where possible, to restore or enhance, the resources of the [N]ation's coastal zone" for current and succeeding generations. NOAA maintains federally mapped CZMA boundaries and, as excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"NJDEP incorporates CZMA consistency reviews via permits through their NJDEP Division of Land Use Regulation permit programs. Federal agencies may consult directly with NJDEP on certain types of projects to address compliance with CZMA.

The project area is located within a special coastal zone area called the New Jersey Hackensack Meadowland District (NJHMD) as defined by NJSA 13:17-4. Pursuant to the Hackensack Meadowlands Reclamation and Development Act (NJSA 13:17-1 et seq.), the New Jersey Sports and Exposition Authority (NJSEA) has the lead responsibility for planning and permitting, regulating development, and conservation within the Meadowlands District. Implementation is through compliance with the NJSEA Master Plan (NJSEA 2020). NJDEP and NJSEA coordinate the review of proposed development and other activities within the NJHMD through the process outlined in NJAC 7:7-9.43 and a Memorandum of Agreement between the two agencies dated November 9, 2005. As specified in the State's Coastal Zone Management rules, the NJSEA's Master Plan serves as an element of the State of New Jersey's Coastal Management Program for areas within the NJHMD."

3.3.9.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The Project Area is primarily located within the limits of the NJHMD boundary which is located in Hudson and Bergen Counties in northeastern New Jersey, containing more than 16,000 acres (NJDEP 2018b). The NJHMD, under Coastal Zone Rules, is considered a Special Area that is "so naturally valuable, important for human use, hazardous, sensitive to impact, or particular in their planning requirements, as to merit focused attention and special management rules" (NJAC 7:7E- 3.1(a)). The area is designated as a geographic area of particular concern pursuant to 16 U.S.C § 1455. The NJHMD regulations detail requirements for all building construction and include provisions to minimize impacts of flooding. In addition, the NJHMD regulations under the NJSEA Master Plan set provisions for the identification of redevelopment areas, which are areas deemed in need of revitalization and suitable for redevelopment.

NJDEP developed a coastal consistency statement that evaluated each alternative's impact on New Jersey Coastal Zone Management Rules (NJAC 7:7-16). The consistency statement assesses how each alternative would comply with the broader goals and supplemental policies of the New Jersey Coastal Management Program as listed under NJAC 7:7-1.1(c). See Appendix M of the RBDM EIS for the consistency statement (NJDEP 2018b). The coastal consistency statement conducted for the RBDM EIS also determined consistency with the NJSEA Master Plan (NJDEP 2018b)."

3.3.9.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, there would be no construction for flood reduction measures, and there would be no construction-related impacts on coastal resources. The No Action alternative would be consistent with the CZMP, but it would not advance the goals of the policy (NJDEP 2018b). In particular, the No Action Alternative would not advance the Flood Hazard area goal (NJAC 7:7-9.25) because flood risk within the project area would not be reduced (see Section 5.6). Continued and increased flooding in the project area could have an adverse effect on coastal resources and coastal area uses by altering the natural coastal zone's area of special concern and increasing long-term risks to coastal resources.

The No Action alternative would be consistent with some rules of the CZMP, but it would not advance the goals of improving coastal resources. Those resources include improvements to riparian zones per NJAC 7:7-9.25

(see Section 5.5), historic and archaeological resources per NJAC 7:7-9.34 (see Section 5.13), public space per NJAC 7:7-9.38 (see Section 5.15), and transportation per NJAC 7:7-15.5 (see Section 5.17). The No Action alternative would also be consistent with the NJSEA Master Plan but would not advance the goals of that plan. Applicable goals, or strategies, within the NJSEA Master Plan include System 1: Natural Environment, Strategy 2 managing and restoring wetlands; and System 5 Community Facilities, Strategy 3 support emergency planning. The No Action would not restore wetlands and could continue to degrade wetland quality (see Section 5.5) and would continue to limit emergency response and safety (see Section 5.19) (NJSEA 2020). Therefore, the No Action alternative would be consistent with New Jersey CZMP, but it would not advance the goals and would therefore have a minor long-term, adverse impact on coastal resources."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

3.3.9.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the Proposed Action, construction activity would have a negligible effect on coastal resources as long as all mitigation measures identified in Section 4.18.4 of the RBDM EIS are followed (NJDEP 2018b). Construction, access, and staging would result in disturbance of riparian zone vegetation, but most areas would be revegetated with native vegetation once construction is completed. Therefore, construction activities would be consistent with the New Jersey CZMP.

Post construction, the Proposed Action would be consistent with, and advance, the flood hazard area goals of the CZMP (NJAC 7:7-9.26) by reducing flood risk in the project area (see Section 5.6). Some riparian vegetation would be permanently replaced with the pump station infrastructure and the permanent access road (see Section 5.5). However, there would be a net gain in native vegetation throughout the project area, which would advance the goals of the riparian zone (NJAC 7:7-9.26) and wetland buffer (NJAC 7:7-9.27) rules. Additionally, flood mitigation would protect historic resources per NJAC 7:7-9.34 (see Section 5.13) and protect transportation infrastructure in the area per NJAC 7:7-15.5 (see Section 5.17). Lastly, the Proposed Action would be consistent with NJAC 7:7-12 and in compliance with general water area policies for work in water (see Section 5.4). This would include the use of fill (NJAC 7:7-12.11), installation dams and impoundments (NJAC 7:7-12.17), installation of outfalls and intakes (NJAC 7:7 12.18), and the realignment of water areas (NJAC 7:7-12.19). Prior to conducting any working, the Subapplicant would coordinate with the NJDEP Division of Land Use Regulation to acquire applicable permits for work within the NJHMD and comply with permit conditions.

The Proposed Action would be consistent with and would advance the goals of the NJSEA Master Plan by restoring and adding wetland vegetation in compliance with System 1, Strategy 2 (see Section 5.5) and protecting emergency services in compliance with System 5, Strategy 3 (see Section 5.19) (NJSEA 2020)."

Therefore this effects category is anticipated to have no impact, represented by a corresponding rating criteria score of 0.

No direct or indirect adverse effects from operation and maintenance of the Site are anticipated to CZMA, as the site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native

habitat. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb terrestrial vegetation to eliminate non-native or invasive species, but would be negligible given that procedures would be established to avoid such impacts. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"As long as all conditions and mitigation measures of the RBDM EIS and any potential CZMA permits are implemented, the Proposed Action would have a minor beneficial long-term effect on Coastal Resources."

Therefore, this effects category is representative as moderate benefit, with a corresponding score of +1.

3.3.10 Coastal Zone Management Act Areas Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Coastal Zone Management Act Areas Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE	ACTION TOTAL SCORE
	No Action	Action	No Action	Action		
Construction/Footprint	-1	0	0	+1	-1	+1
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*0*	*0*	*+1*	*-1*	*+1*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**+1**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).

[1] – Sum of the No Action Adverse Effect and Beneficial Effect

[2] – Sum of the Action Adverse Effect and Beneficial Effect

3.3.11 Coastal Barrier Resources Act Areas

The Coastal Barrier Resources Act (CBRA) was enacted in 1982 to prohibit most Federal expenditures and financial assistance within CBRA designated areas, and to encourage the conservation of storm-prone and dynamic coastal barriers that have historically been subsidized for development on coastal barriers, resulting in the loss of natural resources, threats to human life, health, and property, and the expenditure of millions of tax dollars each year (USFWS 2022). Approximately 1.4 million acres of land encompass the 588 System Units and 2.1 million acres of land encompass 282 Otherwise Protected Areas designated under CBRA throughout the United States and associated territories along the Atlantic, Gulf of Mexico, Great Lakes, U.S. Virgin Islands, and

Puerto Rico coasts, including associated aquatic habitats (USFWS 2022). CBRA established the John H. Chafee Coastal Barrier Resources System (CBRS) which defines CBRA System Units and Otherwise Protected Areas.

A CBRA System Unit is primarily comprised of privately owned areas, or area held for conservation and/or recreation. Most Federal expenditures and financial assistance, including Federal flood insurance, are prohibited within System Units unless the action is covered under and exemption (USFWS 2019). Exceptions to the CBRA System Unit restrictions include General Exception 16 U.S.C. §3505(a)(2) (maintenance or construction of improvements of existing federal navigation channels), and specific exceptions 16 U.S.C. §3505(a)(6)(A) (projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats) and 16 U.S.C. §3505(a)(6)(G) (nonstructural projects for shoreline stabilization). A CBRA Otherwise Protected Area is a category of coastal barriers that is primarily protected for conservation and/or recreation. Otherwise Protected Areas contain a "P" at the end of the unit number. The only Federal spending prohibited in Otherwise Protected Areas is related to Federal flood insurance (USFWS 2019).

The USFWS maintains an online mapping tool for official (and proposed draft) maps of CBRS Units and Otherwise Protected Areas: https://www.fws.gov/program/coastal-barrier-resources-act/maps-and-data. Refer to the Draft Integrated FR/Tier 1 (Programmatic) EIS for more information.

Coastal Barrier Resources Act Areas was a resource that was reviewed and assessed in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS due to the size of the Study Area. As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to this Actionable Element Site. No System Units or Otherwise Protected Areas were identified at this specific Actionable Element site (USFWS 2025). Therefore, an effects analysis is not applicable.

3.3.12 National Park Service Land

National Park Service Land was a resource that was reviewed and assessed in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS due to the size of the Study Area. As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to this Actionable Element Site. No National Park Service Land was identified at this specific Actionable Element site. Therefore, an effects analysis is not applicable.

3.3.13 Wildlife Refuge Land

Wildlife Refuge Land was a resource that was reviewed and assessed in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS due to the size of the Study Area. As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to the Actionable Elements Sites. No wildlife refuge land was identified in the vicinity of this Actionable Element Site (USACE 2022). Therefore, an effects analysis is not applicable.

3.3.14 Commercial and Recreational Fishing

Commercial and Recreational Fishing was a resource that was reviewed and assessed in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS due to the size of the Study Area. As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to the Actionable Element Sites. Commercial and Recreational Fishing was determined to not apply to this specific Actionable Element Site, as the Site does not contain substantive fish populations conducive to recreational or commercial fishing behind the tide gate. Furthermore, fishing is restricted on the Berry's Creek, due to presence of known contamination. Therefore, an effects analysis is not applicable.

Figure 4. Photograph taken at the East Riser Actionable Element Site

4 PHYSICAL ENVIRONMENT

The Physical Environment includes a discussion of topography, surface waters, water quality, land use, cultural resources, hazardous, toxic, and radioactive waste, navigation, noise, socioeconomics and demographics, and other relevant environmental and human resources within Planning Region not listed under the Natural Environment. This Appendix focuses on the East Riser Actionable Element Site, utilizing and relying heavily on existing readily available data and reports complimented by field observations and discussions with representatives knowledgeable of the area. As this Actionable Element Site originates from the "New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements, Bergen County, New Jersey Environmental Assessment" prepared by FEMA in September 2022, much of the below existing conditions and effects assessment utilizes this information, and incorporates it by reference, as one of the sources of readily available information. Information sourced directly from this report is italicized. Any information that may have changed between September 2022 and now, will be noted, as well as relevant USACE policy. For the purposes of clarity, the term "ERD" in the following sections refers to the project area as "East Riser Ditch". It should be noted that this document contains mention and considerations for the pump station, which is not part of the proposed Alternative of this Actionable Element Site, as it has already been funded and advanced for construction.

4.1 PHYSICAL RESOURCES

The following Sections discuss the physical resources relevant within the Study Area, including the topography and geology, surface water resources, sediment, and land use.

4.1.1 Topography and Geology

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The New Jersey Soil Erosion and Sediment Control Act of 1975 was established to protect the environment from land disturbances associated with urban development in the State (New Jersey Statutes Annotated [NJSA] 4:24-39 et seq.). During construction, soil erosion can become a serious problem, resulting in water pollution and damage to other important natural resources. The act establishes standards for the control of erosion and sedimentation that must be followed during any project disturbing 5,000 square feet or more, including the preparation of a Soil Erosion and Sediment Control Plan."

4.1.1.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The project area is within a subdivision of the Newark Basin, which was formed during the initial Pangaea rifting stages of the late Triassic. Erosion of older rocks from the Paleozoic and Precambrian ages formed sediments and created consolidated rocks that include red siltstones, sandstones, and conglomerates (NJDEP 2016). Sedimentary rocks in the Passaic Formation comprise the bedrock that underlies the Meadowlands District at a depth of approximately 100 feet (NJDEP 1959).

The project area is nestled in a valley with typical elevations from 1 to 6 feet above sea level. The areas immediately surrounding the valley are characterized by much greater variations in elevation, whereas the topography within the valley is relatively flat (USGS 2014b). The United States Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey classifies the soil in the project area as urban land. ***Appendix A, Figure 3*** *shows the soil types found in and surrounding the project area. The project area is largely*

composed of urban soil types, which are characterized by disturbed and natural soil materials that are covered by pavement, concrete, buildings, and other structures."

4.1.1.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, there would be no impact on geology or soils from construction of flood reduction measures. Flood impacts would not be reduced under the No Action alternative, but there would be no impact on bedrock from flooding due to its depth. Continued flood events would physically damage soils by eroding surface soils and carrying them downstream, thereby destroying beneficial fungi and other microbes, limiting gas exchange, and destroying the structure of soil aggregates (Ponnamperuma 1984). Loss of vegetation as a result of flooding along the riparian area surrounding the ERD would also result in increased soil erosion in the flooded areas. This could lead to slight increases in the amounts of sediments, nutrients, and [urban runoff] contaminants transported into waterbodies and nearby wetlands. Additionally, ongoing soil erosion has the potential to lead to changes in topography. The severity of these impacts would be limited, as more than 95 percent of the soil in the project area is considered low-quality, developed urban land; thus, a reduction in the soil's physical quality as a result of ongoing flooding would not be of high importance. Additionally, the amount of soil that is undeveloped and susceptible to erosion is small and the topography is generally flat, so the impact of erosion on topography would be negligible. Therefore, the No Action alternative would have a long-term negligible adverse impact on soils and topography in the project area."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.1.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Excavation would occur during construction of the Proposed Action. The channel would be widened and deepened to a maximum of 12 feet from the top of the bank, and the pump station complex would disturb approximately 1 acre with excavation to 10 feet deep. However, there would be no overall change in the topography of the project area. There would be no impacts on bedrock from excavation because construction actives would not reach the depth of the bedrock.

The Proposed Action would have minor, short-term adverse impacts on soils and topography from ground-disturbing activities during construction. Construction effects would be temporary, and the Subapplicant would implement a site-specific Soil Erosion and Sediment Control Plan, reviewed and certified by the Bergen County Soil Conservation District, to ensure that appropriate best

management practices (BMPs) are used to minimize impacts on soil resources. The Proposed Action would include bank stabilization measures such as geolifts and riprap placed along channel banks to reduce erosion. In addition, channel banks and adjacent riparian areas (approximately 9.5 acres) would be planted with deep-rooted species to stabilize the soil and prevent soil erosion."

Therefore, this effects category is representative as low to moderate adverse effect, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to topography and geology, as the site would continue to be monitored for establishment of the native habitat, with erosion control measures such as riprap. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb terrestrial vegetation to eliminate non-native or invasive species, but would have no effect on the topography and geology. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

Overall, the Proposed Action would reduce the frequency of flood events in the project area, resulting in a reduced potential for soil erosion in the long term. Because most of the project area is currently developed, the magnitude of this beneficial effect would be small. Therefore, the Proposed Action would have a long-term, negligible beneficial impact on soils and no effect on topography."

Therefore, this effects category is representative as low benefit, with a corresponding score of +1.

4.1.2 Topography and Geology Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Topography and Geology Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+1	-1	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*0*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).

[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.3 Surface Waters

4.1.3.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Within the project's vicinity there are several surface waterways that include the Hackensack River, Berry's Creek, and smaller waterways that support a large complex of marshes and other aquatic habitats. The ERD itself is channelized with steep banks and the substrates are silt and mud. The water in the channel is typically approximately 1-foot deep with occasional small pools associated with culverts and a large pool of unknown depth at the tide gate at the south end. As a result, the ERD provides limited aquatic habitat. No aquatic vegetation was observed in the ERD during the biological surveys (NJDEP 2018b)."

4.1.3.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The No Action alternative would not reduce the risk of flooding, and floodwaters would continue to result in erosion and runoff that pollutes surface waters by carrying sediments, [urban runoff] contaminants, and debris into the ERD and adjacent wetlands. Water would continue to inundate the area during flood events, entering the drainage system and causing backwater conditions, surcharging, and flow reversal in some locations. Receding floodwaters have the potential to transport debris, petroleum-based pollutants (e.g., motor oil), sediments, and… sewage to surface waters. [F]loodwater that contains bacteria (e.g., fecal coliform and enterococcus) could be conveyed into surface waters and result in public health threats (EPA 2012). Sewage [discharge] also contributes to excess nutrients, such as phosphorus, which can result in algae growth that could result in lower dissolved oxygen levels that affect aquatic life (Minnesota Pollution Control Agency 2009). In addition, the occurrence of flood events is anticipated to increase in the future because of sea level rise… which could increase [surface runoff] loads in the ERD and Berry's Creek, making it difficult to reach future TMDL standards. The No Action alternative would have a moderate, long-term, adverse impact on water quality."

Therefore, this effects category is representative as moderate impact, with a corresponding score of -3.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.3.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Prior to any construction activities occurring within the channel, the ERD would be dewatered using temporary cofferdams. The water diversion equipment would be used to establish adequate flow conveyance around the cofferdams' in-channel construction sites. Once the channel sections have been dewatered, construction activities would include adding temporary fill and grading for the pump station construction, culvert/railroad crossing replacements, and dredging of the ERD. These activities would alter surface water flow, specifically during dredging activities in the ERD, where approximately 20,020 cy of sediment would be removed. There would be a minor short-term impact on water quality with the implementation of the mitigation measures and BMPs listed in the RBDM EIS. Measures such as sediment filtration and water diversion would reduce the amount of sediment and other potential [urban runoff] pollutants from reaching Berry's Creek from construction-related equipment and activities.

During vegetation removal and grading activities, surface water quality would be temporarily impacted by increases in suspended sediment. Construction activities typically introduce [urban runoff] to surface waters (EPA 2009). Because the project area is in an urbanized industrial setting, construction may expose [sediment impacted by historical anthropogenic activity]… to nearby surface waters. Construction activities could increase [surface runoff] loads in the ERD and Berry's Creek, making it more difficult to reach future TMDL standards. Construction activities have the potential to temporarily mobilize sediment… to off-site locations; however, construction BMPs associated with the NPDES permitting requirements for erosion and sediment control (e.g., turbidity curtains and silt fences) would be implemented to minimize these potential impacts. The Subapplicant would follow all mitigation measures and BMPs, as listed in the RBDM EIS, and any potential CWA permit conditions to thereby reduce effects on water resources.

Operation of the ERD pump station could transport sediment and [urban runoff] contaminants by increasing the amount of water discharged around the tide gate into Berry's Creek. Under the existing condition, floodwaters blocked from draining into Berry's Creek by the tide gate would be expected to deposit some of their sediment and [urban runoff] contaminant load into the ERD. In addition, the discharge of water through the pump station outlet to Berry's Creek could result in scour, thus increasing the mobilization of sediments and contaminants within Berry's Creek. In order to minimize scour, water would be pumped through a below-grade pipe into an energy dissipation structure with an exit velocity not exceeding 1.8 feet per second. Operational impacts would be localized and would not substantially diminish water resources throughout the project area. As such, operation of the Proposed Action would result in long-term, minor, adverse impacts on water quality during intermittent emergency use."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to surface waters, as the site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat. Maintenance may include non-native plant management, such as herbicide application and removal, but this would not be anticipated to affect surface water. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The Proposed Action would reduce the frequency of severe flood events in the project vicinity, resulting in a long-term, moderate, beneficial impact on surface water flow, quality, and [urban runoff load] downstream by decreasing stormwater and [urban runoff] pollutant loading. In the event of a flood, floodwaters would inundate a smaller area and would therefore be less likely to transport [urban runoff] pollutants such as oils, fuels, and sewage from the surface into the channel. The ERD channel improvements and installation of the pump station would increase stormwater conveyance capacity, thereby reducing the frequency of flooding events upstream."

Therefore, this effects category is representative as moderate benefit, with a corresponding score of +3.

4.1.4 Surface Waters Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Surface Waters Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-3	-1	0	+3	-3	+2
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-3*	*-1*	*0*	*+3*	*-1*	*+2*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-3**	**+2**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.5 Sediment

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The New Jersey Soil Erosion and Sediment Control Act of 1975 was established to protect the environment from land disturbances associated with urban development in the State (New Jersey Statutes Annotated [NJSA] 4:24-39 et seq.). During construction, soil erosion can become a serious problem, resulting in water pollution and damage to other important natural resources. The act establishes standards for the control of erosion and sedimentation that must be followed during any project disturbing 5,000 square feet or more, including the preparation of a Soil Erosion and Sediment Control Plan."

4.1.5.1 Existing Conditions

Sediment conditions have been presented several times within this document in detail in prior Sections for Topography and Geology and Surface Waters. In accordance with NEPA (40 CFR 1501.12) and the Paperwork Reduction Act (44 S. USC 3501-3521), this discussion has not been repeated here; however, Sediment related adverse and beneficial effects determinations have been made based upon this information.

4.1.5.2 No Action

Adverse Effects

Based upon the information presented in Topography and Geology and Surface Waters Sections relevant to Sediment conditions at this Actionable Element Site, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.5.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Prior to any construction activities occurring within the channel, the ERD would be dewatered using temporary cofferdams. The water diversion equipment would be used to establish adequate flow conveyance around the cofferdams' in-channel construction sites. Once the channel sections have been dewatered, construction activities would include adding temporary fill and grading for the pump station construction (not part of this proposed Alternative)*, culvert/railroad crossing replacements, and dredging of the ERD. These activities would alter surface water flow, specifically during dredging activities in the ERD, where approximately 20,020 cy of sediment would be removed. There would be a minor short-term impact on water quality with the implementation of the mitigation measures and BMPs listed in the RBDM EIS. Measures such as sediment filtration and water diversion would reduce the amount of sediment and other potential [urban runoff] pollutants from reaching Berry's Creek from construction-related equipment and activities."*

"During vegetation removal and grading activities, surface water quality would be temporarily impacted by increases in suspended sediment."

"Construction activities have the potential to temporarily mobilize sediment… to off-site locations; however, construction BMPs associated with the NPDES permitting requirements for erosion and sediment control (e.g., turbidity curtains and silt fences) would be implemented to minimize these potential impacts."

And,

"[T]he Subapplicant would implement a site-specific Soil Erosion and Sediment Control Plan, reviewed and certified by the Bergen County Soil Conservation District, to ensure that appropriate best management practices (BMPs) are used to minimize impacts on soil resources."

Therefore, this effects category is representative as low adverse effect, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to sediment quality. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb terrestrial vegetation to eliminate non-native or invasive species, but would be negligible given that procedures would be established to avoid such impacts. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The Proposed Action would reduce the frequency of severe flood events in the project vicinity, resulting in a long-term, moderate, beneficial impact on surface water flow, quality, and sediment… transport downstream by decreasing stormwater and [urban runoff] pollutant loading. In the event of a flood, floodwaters would inundate a smaller area and would therefore be less likely to transport [urban runoff] pollutants such as oils, fuels, and sewage from the surface into the channel. The ERD channel improvements and installation of the pump station would increase stormwater conveyance capacity, thereby reducing the frequency of flooding events upstream."

Any identified contaminated sediments, as discussed in the HTRW Subappendix, will be removed at 100% nonfederal sponsor cost prior to construction, and replaced with clean sand, further improving sediment quality. Therefore, this effects category is representative as moderate benefit with a corresponding score of +2.

4.1.6 Sediment Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Sediment Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+2	-1	+1
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+2*	*-1*	*+1*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**+1**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).

[1] – Sum of the No Action Adverse Effect and Beneficial Effect

[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.7 Land Use

4.1.7.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

*"The proposed project area encompasses 4,150 feet of the ERD channel, and downstream tide gates and a pump station at the confluence with Berry's Creek. Adjacent land uses are predominantly zoned industrial and commercial with a residential area near the north end of the project area, occupied by two residential mobile home parks (**Appendix A, Figure 9**) (Moonachie 2022; Carlstadt 2022). Small patches of undeveloped land are scattered across the project area, including the site of the proposed ERD pump station. A portion of the site of the proposed ERD pump station site is zoned as environmental conservation. The Teterboro Airport is to the northwest of the project area located on land zoned as aviation facilities."*

4.1.7.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, construction of flood reduction measures would not occur and there would be no temporary impact on access to existing buildings, parking, or use of facilities, and no temporary changes to zoning would occur. Thus, there would be no short-term impact on land use and planning. In the long term, continued flooding could reduce access to roadways and structures, damage facilities, or result in the temporary or permanent evacuation of facilities. Reduced access, increased flood-related costs, and evacuation of facilities would reduce the ability of property owners to use the land for its existing or intended purpose and thus would not align with the land use and zoning plans of the Boroughs of Moonachie and Carlstadt. Hence, there could be a minor long-term adverse impact on land use and planning from reduced access, flood damage, and evacuation of facilities depending on the extend of flooding."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.7.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the Proposed Action, construction activity would require temporary easements of land directly adjacent to the project site for the staging and use of equipment. As specified in the RBDM EIS, temporary easement agreements would be established with each landowner and specify details, terms, and requirements (NJDEP 2018b). The use of temporary easements would not impact the overall land use of any individual parcel and no demolition of structures would occur. Therefore, there would be a minor short-term impact on land use from the use of temporary easements. Post-construction, the currently undeveloped site of the proposed ERD pump station, partially zoned as industrial and partially zoned as environmental conservation, would be converted to public utility and service uses. This would require a change in zoning; however, this zoning change would be isolated and would be unlikely to impact adjacent land uses or zoning designations. Land adjacent to the west bank of the ERD channel, that is currently undeveloped or parking areas and zoned as industrial or commercial, would be converted to an operations and maintenance road."

Therefore this effects category is representative as low adverse effect, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to land use, as the site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb terrestrial vegetation to eliminate non-native or invasive species, but would be negligible given that procedures would be established to avoid such impacts. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"This would align with existing land uses and zoning. In the long term, the Proposed Action would provide existing and future land uses in the project area with increased protection against flooding. The risk of flooding would be reduced, including any associated lack of access, costs for flood-related repairs, or evacuation of facilities. Thus, there would be a minor, long-term, adverse effect from the land use and zoning change for the ERD pump station and a minor, long-term, beneficial effect from the reduced risk of flooding."

Therefore, this effects category is representative as moderate benefit, with a corresponding score of +1.

4.1.8 Land Use Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Land Use Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+1	-1	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*0*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).

[1] – Sum of the No Action Adverse Effect and Beneficial Effect

[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.9 Bathymetry

4.1.9.1 Existing Conditions

Hydrological and bathymetric conditions have been presented several times within this document in detail in prior Sections for Topography and Geology, Surface Waters, and Sediments. In accordance with NEPA (40 CFR 1501.12) and the Paperwork Reduction Act (44 S. USC 3501-3521), this discussion has not been repeated here; however, bathymetry related adverse and beneficial effects determinations have been made based upon this information.

4.1.9.2 No Action

Adverse Effects

Based upon the information presented in Topography and Geology, Surface Waters, and Sediment Sections relevant to Sediment conditions at this Actionable Element Site, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.9.3 Action Alternative

Adverse Effects

Based upon the information presented in Topography and Geology, Surface Waters, and Sediment Sections relevant to Sediment conditions at this Actionable Element Site, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

Based upon the information presented in Topography and Geology, Surface Waters, and Sediment Sections relevant to Sediment conditions at this Actionable Element Site, this effects category is representative as low benefit, with a corresponding score of +1.

4.1.10 Bathymetry Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Bathymetry Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+1	-1	0
O&M Assumptions	0	0	0	0	0	0

Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*0*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.11 Inland Hydrology

4.1.11.1 Existing Conditions

Topographic gradients generally dictate surficial and shallow groundwater flow patterns, where hydrogeologic gradients typically follow, under normal ambient conditions, towards the nearest major body of water (e.g. Hackensack River or Atlantic Ocean); however, inland hydrology of urban environments are heavily influenced by impervious surfaces, stormwater runoff, drains and discharge points, CSO, WWTP discharges, culverts, drainage basins, retention ponds, navigation channelization, groundwater use, and other human-influenced hydrological alternations.

The East Riser Actionable Element site is largely a man-made channel with culverts that discharges through a tide gate to Berry's Creek.

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

*"The project area is in the Hackensack-Passaic Watershed, in Hydrologic Unit Code 02030103, and lies west of the Hackensack River. Tributaries that flow to the Hackensack River from the project area include the ERD and Berry's Creek. The ERD is a 4.2-mile-long tributary that originates from springs in an area of historical wetlands and terminates at Berry's Creek (**Appendix A, Figure 4**). The project area lies in an urbanized watershed that is impacted by residential, commercial, and industrial development. Much of this development is along tributaries to the Hackensack River and has increased the amount of [urban runoff] pollutants entering waterways. Additional vehicle traffic, combined with the increase in paved surfaces, result[s] in increased [urban] runoff… such as motor oil, sediments, and salts during winter months. The portion of the ERD included in the project area receives significant urban runoff from surrounding roads and parking lots, and contamination from heavy metals (including mercury) has been recorded (Hobble et al. 2015)."*

4.1.11.2 No Action

Adverse Effects

The no action is anticipated to continue to have the surrounding area vulnerable to the effects of inland and coastally-influenced flood risk and damages. Although the no action would continue on the existing condition trajectory, frequency of storms may increase over time, as may RSLC. Inland hydrological influences such as surficial runoff, stormwater discharges, WWTP effluent, etc. could affect, or accelerate, erosion overtime, and even more so with high flood events; however, these would remain unchanged from existing conditions. While difficult to predict the adverse effects of such change over an extended period of time beyond the planning horizon of this Study for 100-years, the effects within the 100-year planning horizon would be anticipated to have negligible adverse impacts due to the infrequency of severe storms (e.g. 1 in 100 years). Therefore, this effects category is representative as negligible impact, with a corresponding score of 0.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.11.3 Action Alternative

Adverse Effects

Direct impacts of construction would result in an expanded channel with culvert modifications increasing the surface water capacity of the channel. Erosion control measures would be installed to protect the newly develop channels including cofferdams and turbidity curtains supportive to both inland and coastal influences. Temporary construction related adverse effects would be anticipated during active construction, but would be managed through best management practices such as SWPPPs, turbidity curtains and cofferdams. Permanent inland hydrology adverse effects would result from the permanent filling of existing wetlands as relevant to inland hydrogeologic process; however, mitigation for the permanent impact will result in no net loss of wetland functions or acres. Therefore this effects category is representative as low adverse effect, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to inland hydrology, as the site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat. Maintenance may include non-native plant management, such as herbicide application and removal, but this would not be anticipated to affect bathymetric values. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Implementation of the Proposed Action is anticipated to have long-term, moderate, beneficial impacts on wetland functions and services in and around the project area as a result of improved bank stabilization and the addition of native plantings along the ERD. The Proposed Action would reduce the occurrence of severe flooding events in and around the project area, reducing the amount of sediment and [urban runoff] that could be transported to surrounding wetlands."

Inland hydrologically functions would be anticipated to have similar beneficial effects. Therefore, this effects category is representative as moderate benefit, with a corresponding score of +3.

4.1.12 Inland Hydrology Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Inland Hydrology Qualitative Rating	Adverse Effects	Beneficial Effects		ACTION

	No Action	Action	No Action	Action	NO ACTION TOTAL SCORE[1]	TOTAL SCORE[2]
Construction/Footprint	0	-1	0	+3	0	+2
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*0*	*-1*	*0*	*+3*	*0*	*+2*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**0**	**+2**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.13 Coastal Hydrology, Currents, and Circulation

Generally, coastal hydrology, currents, and circulation are influenced by the rise and fall of the tides, wind, and thermohaline (water density that is controlled by differences in temperature and salinity) (NOAA 2022). Currents form from tides in oceans, along shorelines, and within coastal bays and estuaries, are referred to as tidal currents and are considered predictable as they form in regular patterns (NOAA 2022). Surface currents driven by wind are typically measured in knots or meters per second. Thermohaline circulation occurs both at the surface and below surface, usually at a slower pace than tidally influenced currents and surface currents, as a function of water density where warmer waters lower in salinity form shallow currents and as those currents cool, they fall below surface forming a deeper and more saline currents (NASA 2022).

While Coastal hydrogeological conditions are present at this Actionable Element Site, their natural processes are insulated and are restricted by the existing tide gate between the East Riser Actionable Element Site and Berry's Creek. As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to the Actionable Elements Sites. Given the existing conditions of the Site, Coastal Hydrology, Currents, and Circulation is not applicable to this Actionable Element Site. Therefore, an effects analysis has not been completed.

4.1.14 Tides, Tidal Exchange, and Tidal Range

4.1.14.1 Existing Conditions

Tidal constituents are forces that contribute to the tides. The two tidal constituents are Earth's rotation and the gravitational force of the sun and moon. Because of the proximity of the moon to Earth, the gravitational pull is greater than that of the sun and this is the main attribute to tides, tidal exchange, and tidal range (NOAA 2022). Tidal range is known as the difference between a high and low tide. The Study Area encompasses an estuarian waterbody with freshwater sources throughout, mixing with salt water from the nearby Atlantic Ocean.

The principal gateway of tides into the lower NYNJHAT Study Planning Regions is through the Lower Bay region where the Ambrose Channel is located as the entrance of vessels entering the Port of New York and New Jersey (Marmer, pg. 17). A semi-diurnal tidal fluctuation is experienced within these regions with relatively strong tidal

currents that generate vertical turbulent mixing and partially mixes the water column along the separation between the two layers. The upstream edge of this separation is called the salt front (USACE 2020b). The Upper Bay region begins at the entrance to the Hudson River and has connections to Newark Bay and the Arthur Kill channel, via the Kill Van Kull. The Upper Bay exchanges brackish water with the Long Island Sound, via the East River. Within the regions outlined above, the range of tidal fluctuation in surface elevation is about five feet. In Newark Bay, tidal elevation influence has been seen propagating upstream as far as the barrier at Dundee Dam under low freshwater (Upper Passaic River) flow conditions (USACE 2020b).

The East Riser Actionable Element Site is hydrologically connected to Berry's Creek of which is tidally influenced through the Hackensack River that connects to Newark Bay. A tide gate structure is present at the convergence with Berry's Creek, restricting flow into the East Riser channel. As the tide ebbs to high tide, the tide gate structure closes, and likewise when the tide flows to low tide, the tide gate structure opens again.

4.1.14.2 No Action

Adverse Effects

The no action is anticipated to continue to have the surrounding area vulnerable to the effects of coastal flood risk and damages; however, tides, tidal exchange, and tidal range would continue as natural functions with little effect. During high tide and storm conditions, the tide gate has been prone to overtopping and/or flanking that pushes storm surge to the northern side of the tide gate into the East Riser channel, where it gets stuck and has little movement to dissipate. The pump station that is already planned and funded for construction by New Jersey will be in place and working, but requires the remaining portions of this plan in order to function at its fullest capacity to pump storm water out of the channel and back into Berry's Creek during and post storm. Therefore, this effects category is representative as low impact, with a corresponding score of 0.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.14.3 Action Alternative

Adverse Effects

Direct impacts of construction would result in an expanded channel, culverts replacement, and bank stabilization network within the East Riser Channel, more effectively conveying stormwater to the pump station and a greater capacity. The action will support preventing tidal and storm influenced overtopping and flanking of the tide gate, and convey these waters to the pump station. Erosion control measures will be implemented during construction to reduce sediment transport and resuspension during construction. These effects are temporary, and given the presence of the tide gate, should have no effect on tides, tidal range, or tidal exchange. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated, as the site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat. Maintenance may include non-native plant management, such as herbicide application and removal, but this would not be anticipated to affect bathymetric values. Existing conditions of the tide gate and pump station structure would be unaffected. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

The increased function and capacity of the CSRM measures would be designed to more easily handle tidal influences and storm surge during storm conditions, that could more naturally support the absorption of flood

damages, and would be more readily able to disperse storm flood waters from the surrounding communities. Therefore, this effects category is representative as moderate benefit, with a corresponding score of +1.

4.1.15 Tides, Tidal Exchange, and Tidal Range Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Tides, Tidal Exchange, and Tidal Range Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	0	0	0	+1	0	+1
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*0*	*0*	*0*	*+1*	*0*	*+1*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**0**	**+1**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.16 Sediment Transport

4.1.16.1 Existing Conditions

Sediment conditions have been presented several times within this document in detail in prior Sections including Topography and Geology, Surface Waters, and Sediment. In accordance with NEPA (40 CFR 1501.12) and the Paperwork Reduction Act (44 S. USC 3501-3521), this discussion has not been repeated here; however, Sediment Transport related adverse and beneficial effects determinations have been made based upon this information.

4.1.16.2 No Action

Adverse Effects
The no action is anticipated to continue to have the surrounding area vulnerable to the effects of coastal flood risk and damages, in addition to the considerations listed in previous sections. Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects
No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.16.3 Action Alternative

Adverse Effects

Direct impacts of construction would result in an expanded channel, culverts replacement, and bank stabilization network within the East Riser Channel, more effectively conveying stormwater to the pump station and a greater capacity. Erosion control measures will be implemented during construction to reduce sediment transport and resuspension during construction. Therefore, this effects category is representative as low impact, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to sediment quality, as the site would continue to be monitored for establishment of the native habitat. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb terrestrial vegetation to eliminate non-native or invasive species, but would be negligible given that procedures would be established to avoid such impacts. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The Proposed Action would reduce the frequency of severe flood events in the project vicinity, resulting in a long-term, moderate, beneficial impact on surface water flow, quality, and sediment… transport downstream by decreasing stormwater and [urban runoff] pollutant loading. In the event of a flood, floodwaters would inundate a smaller area and would therefore be less likely to transport [urban runoff] pollutants such as oils, fuels, and sewage from the surface into the channel. The ERD channel improvements and installation of the pump station would increase stormwater conveyance capacity, thereby reducing the frequency of flooding events upstream."

Therefore, this effects category is representative as low to moderate benefit, with a corresponding score of +2.

4.1.17 Sediment Transport Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Sediment Transport Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+2	-1	+1
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*+1*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0

ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)	-1	+1

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.18 Water Quality

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The Clean Water Act (CWA) of 1977, as amended, regulates discharge of pollutants into water with sections falling under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and EPA. Section 404 of the CWA establishes the USACE permit requirements for discharging dredged or fill materials into waters of the United States including traditional navigable waterways. Under the National Pollution Discharge Elimination System (NPDES), EPA regulates both point and nonpoint pollutant sources, including stormwater and stormwater runoff, via a permitting system. Activities that disturb one or more acres of ground are required to apply for a NPDES permit through NJDEP, as authorized by EPA.

Relevant state regulations include the New Jersey Ground Water Quality Standards (New Jersey Administrative Code [NJAC] 7:9C), New Jersey Surface Water Quality Standards (NJAC 7:9B), New Jersey Water Pollution Control Act (NJSA 58: 10A-1 et seq.), New Jersey Stormwater Management Rules (NJAC 7:8), and Pollutant Discharge Elimination System Rules (NJAC 7:14A), and New Jersey Stormwater Management Rules (NJAC 7:8). These regulations maintain the quality of ground and surface water by controlling pollution and ensuring that new developments meet stormwater management design standards."

4.1.18.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

*"The project area is in the Hackensack-Passaic Watershed, in Hydrologic Unit Code 02030103, and lies west of the Hackensack River. Tributaries that flow to the Hackensack River from the project area include the ERD and Berry's Creek. The ERD is a 4.2-mile-long tributary that originates from springs in an area of historical wetlands and terminates at Berry's Creek (**Appendix A, Figure 4**). The project area lies in an urbanized watershed that is impacted by residential, commercial, and industrial development. Much of this development is along tributaries to the Hackensack River and has increased the amount of [urban runoff] pollutants entering waterways. Additional vehicle traffic, combined with the increase in paved surfaces, result[s] in increased [urban] runoff…, such as motor oil, sediments, and salts during winter months. The portion of the ERD included in the project area receives significant urban runoff from surrounding roads and parking lots, and contamination from heavy metals (including mercury) has been recorded (Hobble et al. 2015).*

[The neighboring] Berry's Creek is listed as impaired by the New Jersey 2020 303(d) List and requires a Total Maximum Daily Load (TMDL) restoration plan to be developed by the state; although, no plan has yet been developed to protect or restore water quality. Berry's Creek does not currently support the water quality goals for aquatic life (impaired by cadmium, copper, and lead) or fish consumption (impaired by arsenic, benzo[a]pyrene, heptachlor epoxide, and the following substances in fish tissue: chlordane, DDT, dieldrin, mercury, and PCBS) (NJDEP 2020b).

Field investigations for the RBDM project were completed in 2016 through 2018 and assessed stream characteristics throughout the project area. As evaluated under the Stream Visual Assessment Protocol (detailed in the RBDM EIS), the ERD received a poor rating and is deemed to be low quality (NJDEP 2018b).

The ERD received this poor rating because the portion of the ERD that is present in the project area receives significant urban runoff from surrounding roads and parking lots. In addition, the limited riparian area surrounding the ERD lacks vegetative diversity, and significant silt deposits on the banks and in the channel indicate erosion and active downcutting of the upstream embankments (NJDEP 2018b)."

4.1.18.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The No Action alternative would not reduce the risk of flooding, and floodwaters would continue to result in erosion and runoff that pollutes surface waters by carrying sediments, [urban runoff] contaminants, and debris into the ERD and adjacent wetlands. Water would continue to inundate the area during flood events, entering the drainage system and causing backwater conditions, surcharging, and flow reversal in some locations. Receding floodwaters have the potential to transport debris, petroleum-based pollutants (e.g., motor oil), sediments, and… sewage to surface waters. [F]loodwater that contains bacteria (e.g., fecal coliform and enterococcus) could be conveyed into surface waters and result in public health threats (EPA 2012). Sewage [discharge] also contributes to excess nutrients, such as phosphorus, which can result in algae growth that could result in lower dissolved oxygen levels that affect aquatic life (Minnesota Pollution Control Agency 2009). In addition, the occurrence of flood events is anticipated to increase in the future because of sea level rise… which could increase [surface runoff] loads in the ERD and Berry's Creek, making it difficult to reach future TMDL standards. The No Action alternative would have a moderate, long-term, adverse impact on water quality."

Therefore, this effects category is representative as low impact, with a corresponding score of -3.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.18.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Prior to any construction activities occurring within the channel, the ERD would be dewatered using temporary cofferdams. The water diversion equipment would be used to establish adequate flow conveyance around the cofferdams' in-channel construction sites. Once the channel sections have been dewatered, construction activities would include adding temporary fill and grading for the pump station construction, culvert/railroad crossing replacements, and dredging of the ERD. These activities would alter surface water flow, specifically during dredging activities in the ERD, where approximately 20,020 cy of sediment would be removed. There would be a minor short-term impact on water quality with the implementation of the mitigation measures and BMPs listed in the RBDM EIS. Measures such as sediment filtration and water diversion would reduce the

amount of sediment and other potential [urban runoff] from reaching Berry's Creek from construction-related equipment and activities.

During vegetation removal and grading activities, surface water quality would be temporarily impacted by increases in suspended sediment. Construction activities typically introduce [urban runoff] to surface waters (EPA 2009). Because the project area is in an urbanized industrial setting, construction may expose [sediment impacted by historical anthropogenic activity]… to nearby surface waters. Construction activities could increase [surface runoff] loads in the ERD and Berry's Creek, making it more difficult to reach future TMDL standards. Construction activities have the potential to temporarily mobilize sediment… to off-site locations; however, construction BMPs associated with the NPDES permitting requirements for erosion and sediment control (e.g., turbidity curtains and silt fences) would be implemented to minimize these potential impacts. The Subapplicant would follow all mitigation measures and BMPs, as listed in the RBDM EIS, and any potential CWA permit conditions to thereby reduce effects on water resources.

Therefore, this effects category is representative of low impact, with a corresponding score of -1.

Operation of the ERD pump station could transport sediment and [urban runoff] contaminants by increasing the amount of water discharged around the tide gate into Berry's Creek. Under the existing condition, floodwaters blocked from draining into Berry's Creek by the tide gate would be expected to deposit some of their sediment and [urban runoff] contaminant load into the ERD. In addition, the discharge of water through the pump station outlet to Berry's Creek could result in scour, thus increasing the mobilization of sediments and contaminants within Berry's Creek. In order to minimize scour, water would be pumped through a below-grade pipe into an energy dissipation structure with an exit velocity not exceeding 1.8 feet per second. Operational impacts would be localized and would not substantially diminish water resources throughout the project area. As such, operation of the Proposed Action would result in long-term, minor, adverse impacts on water quality during intermittent emergency use."

Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of -1.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The Proposed Action would reduce the frequency of severe flood events in the project vicinity, resulting in a long-term, moderate, beneficial impact on surface water flow, quality, and [urban runoff load] downstream by decreasing stormwater and [urban runoff] pollutant loading. In the event of a flood, floodwaters would inundate a smaller area and would therefore be less likely to transport [urban runoff] pollutants such as oils, fuels, and sewage from the surface into the channel. The ERD channel improvements and installation of the pump station would increase stormwater conveyance capacity, thereby reducing the frequency of flooding events upstream."

Therefore, this effects category is representative as moderate benefit, with a corresponding score of +3.

4.1.19 Water Quality Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Water Quality Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE	ACTION TOTAL SCORE
	No Action	Action	No Action	Action		
Construction/Footprint	-3	-1	0	+3	-3	+2
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-3*	*-1*	*0*	*+3*	*-3*	*+2*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-3**	**+2**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.20 Air Quality

The Clean Air Act (CAA) is a federal law that regulates air emissions from stationary and mobile sources. This law authorized the USEPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and welfare, to regulate emissions of certain hazardous pollutants, and to designate geographical areas as in "attainment", "non-attainment", or "maintenance" for criteria air pollutants. Examples of stationary sources include coal-fired power plants, glass manufacturing plants, cement manufacturing plants, and petroleum refineries. Mobile sources may include vehicles, generators, mowers, ocean vessels, and large ships. An attainment area is defined as a geographic area in which levels of a given criteria of air pollutant (e.g. ozone, CO, particulate matter (PM), sulfur dioxide (SO2), nitrogen oxide (NO), and lead (Pb meet or is lower than the health-based NAAQS. A non-attainment area is a geographic area in which air pollutant(s) do not meet/exceeds the health-based NAAQS (USEPA 2023a and 2023b). It is possible for a geographic area to be in attainment for one or more pollutant, and at the same time be in non-attainment for other pollutant(s). Maintenance areas are geographical areas that have been redesignated after having historically been in nonattainment and were subsequently brought into attainment and are under an attainment maintenance plan.

General Conformity (40 CFR 51 and 93) "prohibits a federal agency from interfering with the ability of a state or tribe to achieve the [NAAQS]" (USEPA 2010 and 2024a). Only actions that cause emissions in designated non-attainment and maintenance areas are subject to these regulations. A vast majority of federal actions do not result in a significant increase in emissions and therefore, include several exemptions. Applicability to General Conformity is determined by:

1. Whether the action will occur in a non-attainment or maintenance area,
2. Whether one or more of the specific exemptions apply to the action,
3. Whether the federal agency has included the action on its list of "presumed to conform" actions,
4. Whether the total direct and indirect emissions are below or above the *de minimis* levels, and/or,
5. Where the facility has an emission budget approved by the state or tribe as part of the state implementation plan (SIP) or Tribal Implementation Plan, the federal agency determines if the emissions from the proposed action are within the budget.

The *de minimis* threshold quantities within non-attainment and maintenance areas are defined as follows:

Table 3. De Minimis Quantities within Non-Attainment and Maintenance Areas (USEPA 2024b)

CRITERIA POLLUTANT	TONS/YEAR
Non-Attainment Areas (NAAs)	
Ozone (VOC or NOx):	
Serious NAA's	50
Severe NAA's	25
Extreme NAA's	10
Other NAA: Outside an Ozone Transport Region:	100
Other NAA: Inside an Ozone Transport Region:	
VOC	50
NOx	100
Carbon Monoxide: (all maintenance areas)	100
SO2 or NO2: (all NAA's)	100
PM10:	
Moderate NAA's	100
Serious NAA's	70
PM2.5 (direct emissions, Sox, NOx, VOC, and Ammonia)	
Moderate NAA's	100
Serious NAA's	70
Lead (Pb): All NAA's	25
Maintenance Areas	
Ozone (NOx), SOx or NOx:	
All maintenance areas	100
Ozone (VOCs)	
Maintenance inside an OTR	50
Maintenance outside an OTR	100
Carbon Monoxide:	
All maintenance areas	100
PM10:	
All maintenance areas	100
PM2.5 (direct emissions, Sox, NOx, VOC, and Ammonia)	100
All maintenance areas	100
Lead (Pb):	
All maintenance areas	25

Projects within non-attainment or maintenance areas that emit criteria pollutants, but do not have annual emissions exceeding these thresholds are considered exempt from General Conformity and in compliance with the SIP, as applicable.

4.1.20.1 Existing Conditions

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"According to EPA's Green Book, Bergen County is designated as a moderate nonattainment area for 8-hour ozone and a maintenance area for carbon monoxide. All other criteria pollutants (sulfur dioxide, PM2.5, PM10, nitrogen dioxide, and lead) are in attainment for Bergen County (EPA 2022b)."

4.1.20.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, temporary construction-related emissions would not occur because flood reduction measures would not be implemented. Therefore, there would be no short-term adverse impacts on air quality.

In the long term, continued flood events could result in road closures, causing traffic congestion and diversion of vehicles away from flooded areas. Additionally, construction equipment would be used to repair flood damage resulting from the continued flood events. Emissions from equipment used for flood-related repairs and additional vehicle emissions generated by flood-related road detours could result in negligible emissions of criteria pollutants within a nonattainment area. However, these emissions would not result in a NAAQS exceedance, change the status of the maintenance area, or conflict with applicable air quality plans. Hence, there would be a negligible adverse impact on air quality from vehicle and equipment emissions resulting from continued equipment use for flood-related repairs and additional vehicle emissions generated by flood-related road detours. Because the frequency and duration of flooding is expected to increase as a result of sea level rise and climate change, the No Action alternative would have a negligible long-term adverse impact on air quality."

Therefore, this effects category is representative as low adverse effect with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.20.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Construction activities for the Proposed Action could generate airborne dust, a source of particulate matter, from ground-disturbing activities, as well as pollutants from the use of diesel-powered equipment (EPA 2022c). Additionally, there may be vehicular delays due to the temporary lane closures along West Commercial Avenue and Amor Avenue (Section 5.17) that could increase vehicle emissions. Particulate matter, nitrogen dioxide, and carbon monoxide would be the primary air pollutants of concern during construction. The operation of construction equipment would follow local, state, and federal regulations. Therefore, the Proposed Action would have minor short-term impacts on air quality from equipment and vehicle use.

The Proposed Action would include a new pump station with diesel-powered standby generators that would be used to operate the pump station under emergency conditions up to 2 days at a time. Because the pump station would be used only during emergencies, emissions from the diesel-powered generators would only occur intermittently. Operation of the diesel-powered plant in emergency conditions would be done in compliance with state and local permits and would result in short-term, negligible to minor impacts on air quality. These emissions are expected to be below de minimis levels (NJDEP 2018b).

A general conformity applicability analysis was completed for the RBDM EIS to determine the potential levels of nonattainment criteria or maintenance pollution that may be emitted under the larger RBDM project (NJDEP 2018b). Based on the projected annual estimated emissions for the study area, it was determined that temporary construction and periodic use of the diesel-powered generators at the pump station during emergency conditions would not exceed the annual de minimis levels for criteria pollutants under general conformity (Section 4.9.4 of the RBDM EIS). The Proposed Action is partially a component of the larger RBDM project and would not involve as much construction as the larger RBDM project; therefore, construction- and operations-related emissions under the Proposed Action would also be below de minimis levels.

Construction activities would be temporary, and the Subapplicant would follow all mitigation measures and BMPs listed in the RBDM EIS to reduce emissions. Therefore, the Proposed Action would have a minor short-term adverse impact on air quality in the project area from temporary construction-related emissions… There would be a negligible, long-term, adverse impact on air quality resulting from the emergency use of the diesel-powered generators at the pump station. Overall, the Proposed Action would have negligible to minor impacts on air quality in the project area."

Although all of these activities would fall under the SIP, temporary emissions may have localized low adverse effect to neighboring communities during active construction, and will return to ambient conditions once construction is complete. Therefore, this effects category is representative as low adverse effect with a corresponding score of -1.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"There would be a negligible, long-term, beneficial impact from the reduced risk of flooding that would avoid flood-related emissions from roadway detours and the use of construction equipment for repairs."

Therefore, this effects category is representative as moderate benefit, with a corresponding score of +1.

4.1.21 Air Quality Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses. As stated above, emissions from construction of the Action Alternative are below the de minimis levels on a yearly basis. The sold impact producing factor to air quality is regulated air emissions, which will be below General Conformity significance. Therefore, all qualitative scores are rated "0" for no effect.

Air Quality Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+1	-1	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*0*

Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).

[1] – Sum of the No Action Adverse Effect and Beneficial Effect

[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.22 Climate and RSLC

4.1.22.1 Existing Conditions

The climate of the lower NYNJHAT Study Area, including the Hackensack/Passaic Planning Region, is characterized as warm and temperate, with four months of summer (June through September). The average annual temperature is approximately 52.9 degrees F, ranging from an average of 29.5 degrees F to 75.7 degrees F, although winter temperatures below freezing and summer temperatures above 80 are common. January is recorded as the coldest month. Rainfall and snowfall can be significant with approximately 45 inches of precipitation each year. Humidity is relatively stable throughout the year, ranging from an average of approximately 63 to 71%.

Hurricane Sandy caused extensive damage along the Atlantic shoreline, within coastal wetlands and freshwater surface waters within the NYNJHAT Study area, and relevant Lower Bay Planning Region. The Atlantic shoreline, including Coney Island in New York, Sandy Hook, and areas south to Manasquan Inlet in New Jersey, experienced changes to the shore profile and loss of beach fill and erosion, with an estimated average drop in beach elevation of five to 10 feet. Locations which previously supported dunes prior to the storm lost up to 100% of existing dunes (including dune vegetation), which is critical habitat for nesting seabirds, and feeding and roosting migratory shorebirds (USACE 2020b). Significant amounts of sand overwashed into the streets of many coastal residential areas at least 60 to 150 feet inland, including the Borough of Atlantic Highlands, New Jersey, the private community of Sea Gate, New York, and Staten Island Borough (USACE 2020b). Sandy Hook was exposed to the full power of the tidal surge and the worst of the storm's winds. The shore profile was completely changed and sand dunes along the peninsula were pushed up to several hundred feet west. Many dunes were completely flattened, uprooting and dispersing the beach grass normally found on them and likely affecting the bird species that use them for breeding. In addition to the overwash of sand and beach erosion, many coastal areas, such as Coney Island, were inundated and sustained damages to residential buildings and waterfront structures including boardwalks, concrete walls, roads, and other coastal infrastructure. In the private community of Sea Gate, the waterfront bulkhead and the first row of residential buildings were severely damaged by storm waves (USACE, 2012). Coastal wetlands within Raritan Bay and on Staten Island experienced damage caused by the tidal surge and debris. Reportedly, small mammal populations were eliminated in many areas, creating a food shortage for northern harriers, a New York State threatened species, and New Jersey State endangered hawk species (USACE 2020b). Approximately 100,000 tons of debris was deposited in Cheesequake State Park. This debris layer, composed mostly of reeds and other vegetation, combined with tires, duck blinds, and other manmade structures is expected to inhibit vegetation growth, impacting invertebrate communities (e.g., fiddler and marsh crabs) as well as kingfishers, herons, gulls, and other marsh-dependent birds that feed upon them (ALS, 2012). Maritime holly (*Illex opaca*) and red cedar (*Juniperus virginiana*) forests in Sandy Hook survived the storm. However, there was extensive damage to Atlantic white cedar (*Chamaecyparis thyoides*) swamp forests in Cheesequake State Park, including saltwater intrusion, blow-down trees, and the creation of canopy gaps. More than 300 trees were lost, including 100-year-old oaks and numerous Atlantic white cedars (USACE 2020b).

RLSC can compound with the effects of intense storms as time advances, with area of effects varying depending on what direction the storm advances from, how it hits landfall, and duration of storm surge and rain. Storms typically lose their intensity as they move across land masses, and with RSCL considerations, area of land effect would be anticipated to encroach further inland. USACE projects must consider RSLC when planning and designing projects, per Engineering Regulation (ER) 1100-2-8162 (December 31, 2013). ER 1100-2-8162 requires that future RSLC projections must be incorporated into the planning, engineering design, construction, and operation of all civil works projects. Below are three figures depicting the low, intermediate, and high RSLC scenarios for the East Riser Actionable Element Site for comparison purposes:

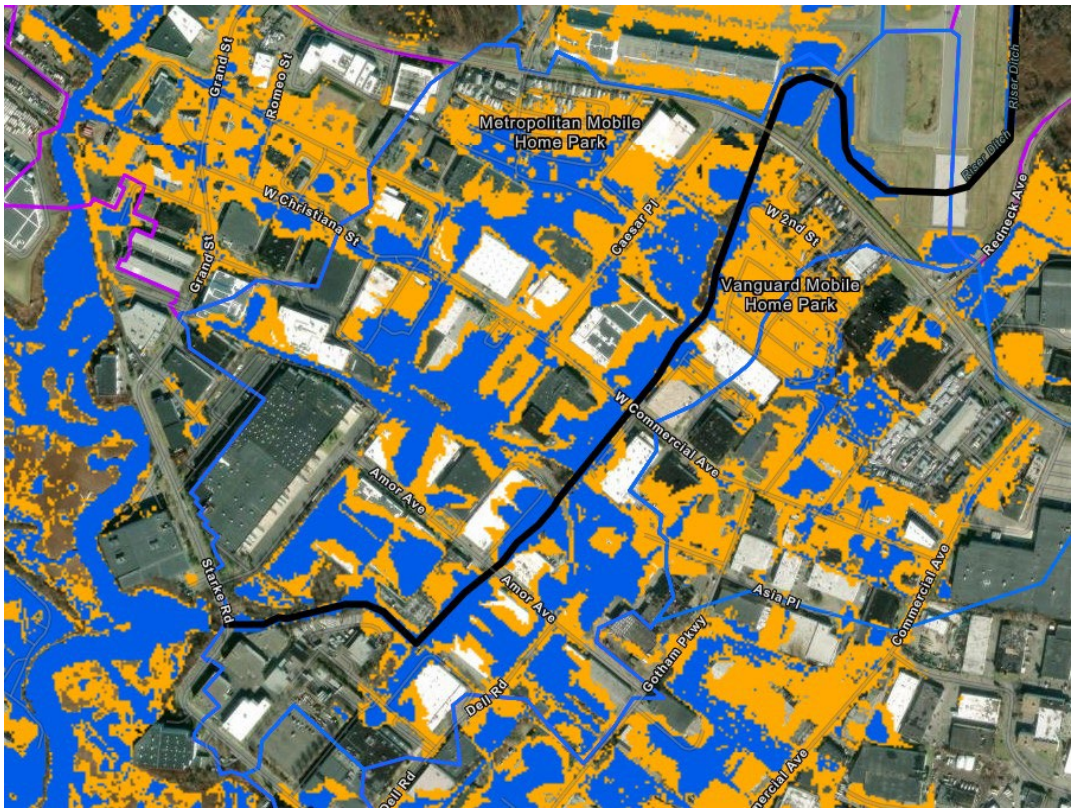

Figure 5. Low RSLC Scenario Projection for East Riser Actionable Element Site (1-foot)

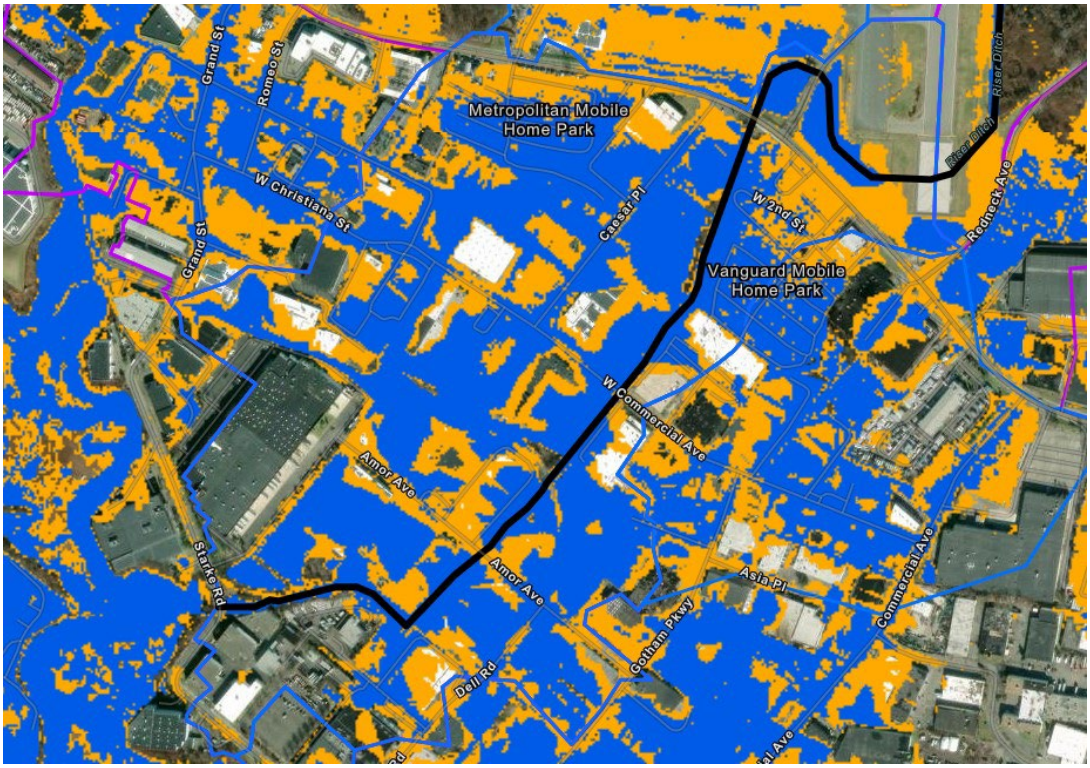

Figure 6. Intermediate RSLC Scenario Projection for East Riser Actionable Element Site (2 feet)

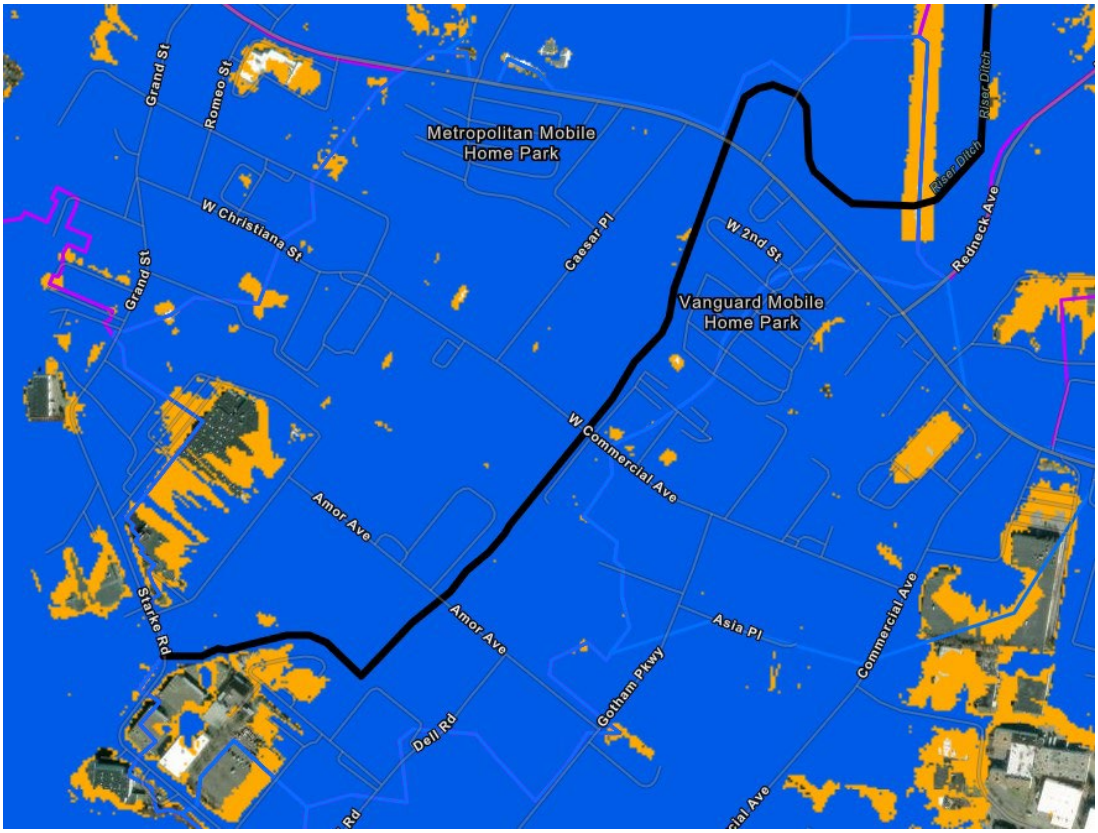

Figure 7. High RSLC Scenario Projection for East Riser Actionable Element Site (5 feet)

4.1.22.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The project area has an extensive history of both inland and coastal flooding. Since 1900, a variety of factors, including climate change, have contributed to a 12-inch rise in sea level in the northeast region of the United States, compared to the global average sea level rise of 8 inches (Horton et al. 2014). By 2050, New Jersey will likely experience sea level rise of at least 0.9 to 2.1 feet above Year 2000 levels… By 2070, sea levels are expected to increase by 1.4 to 3.1 feet above Year 2000 levels under a moderate emissions scenario (NJDEP 2020). Berry's Creek is tidally influenced and is affected by rising sea levels.

In addition to sea level change, existing and future changes in precipitation frequency, intensity, and amounts could impact inland flooding in the project area. The total amount of precipitation and the frequency of heavy precipitation events has also increased; between 1958 and 2012, the northeast portion of the United States experienced a greater than 70-percent increase in the amount of rainfall measured during heavy precipitation events. U.S. Global Change Research Program projections indicate that precipitation will continue to increase, especially in the winter and spring (EPA 2016b). Future increases in precipitation could result in increased frequency, depth, and duration of inland flooding."

And,

"No construction of flood reduction measures would occur under the No Action alternative. However, periodic construction related to repairs following floods would create construction-related impacts. Therefore, this alternative would continue to have minor, short-term, intermittent, adverse impacts on climate in the long term. Increased precipitation events and sea level rise are anticipated to increase the frequency, duration, and extent of both inland and coastal flooding in the project area. Larger, more frequent flood events in the area have the potential to contribute to property damage and loss. The No Action alternative would not effectively protect against these adverse effects of climate change; therefore, minor to moderate impacts of climate change on the project area would occur as a result of this alternative."

A comparison of the low, intermediate, and high RSLC projection scenarios over the next 100-years exhibit exponential threat from the low scenario of which estimates the Actionable Element Site and surrounding area permanently flooded, the intermediate scenario estimates additional areas of the site and vicinity would be under water, while the high scenario which estimates much of the entire area would be entirely under water. Therefore, this effects category is representative as low impact, with a corresponding score of -2.

Beneficial Effects

No beneficial effects of no action are anticipated to existing habitat present at the Site, as under each RSLC scenario projection, habitat changes would be anticipated, and the area would continue to be vulnerable to coastal flood risk and damages. However, there could be a benefit to new habitat created from RSLC, although that is difficult to quantify given the uncertainty of new habitat value. As RSLC persists under any project scenario, a corresponding reduced risk of wildfire would be incurred because portions of the Site would be underwater. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.22.3 Action Alternative

Adverse Effects

Throughout the life of the project, RSLC is anticipated to increase mean water elevation and climate-driven effects is anticipated to increase storm severity and frequency. Appropriately defining the design condition related to the expected RSLC scenario is important. Since 1900, relative sea level has risen by more than a foot within the NYNJHAT Study Area due to global conditions and local land subsidence (NPCC 2013). According to the NYS 2100 Commission Report (2013), RSLC in NYC and Long Island is projected to be as much as six feet within the next 90 years. Coastal storms will cause flooding at increased heights and over larger areas than in the past as RSLC continues, and frequency and intensity of coastal storms is anticipated to increase (NPCC 2013). USACE projections for the Battery, NY range from an increase of 0.7 feet for the low scenario, increase of 1.8 feet for the intermediate, and up to 5 feet for the high scenario through 2100.

Alternatives are evaluated in consideration of the "low", "intermediate", and "high" potential rates of future RSLC for both "with" and "without project" conditions. ER 1100-2-8162 considers the historic rate of RSLC as the low rate. The intermediate and high rates are computed from the modified National Research Council (NRC) Curve I and III respectively, considering both the most recent IPCC projections and modified NRC projections with the local rate of vertical land movement added.

Direct impacts of construction would result in channel modifications and culvert replacements that would more easily handle the increased capacity of surface water discharges of the surrounding vicinity. These changes may alter the RSCL projection areas and pattern of water infiltration at the site, as those figures are generated based on current topographic conditions. It's possible, however, that if the high RSLC projection scenario comes to pass, the entire site will still be inundated with water, changing the condition entirely. Therefore, this effects category is representative as no adverse effect, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated as the site would continue to be monitored for establishment of the native habitat, to prevent the return on non-native habitat. Maintenance may include non-native plant management, such as herbicide application and removal which could temporarily disturb terrestrial vegetation to eliminate non-native or invasive species, but would be negligible given that procedures would be established to avoid such impacts. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The Proposed Action would increase the Boroughs of Moonachie and Carlstadt's resilience to the impacts of climate change, particularly inland flooding events, by improving the ERD's ability to manage increased water flow from precipitation events. Thus, the Proposed Action would result in minor, long-term, beneficial impacts on climate resiliency in the project area."

Therefore, this effects category is representative as low benefit, with a corresponding score of +1.

4.1.23 Climate and RSLC Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Climate and RSLC Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-2	-1	0	+1	-2	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-2*	*-1*	*0*	*+1*	*-2*	*0*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-2**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).

[1] – Sum of the No Action Adverse Effect and Beneficial Effect

[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.24 Cultural Resources

As a federal agency, USACE has certain responsibilities for the identification, protection and preservation of cultural resources that may be located within the Area of Potential Effect (APE) associated with the proposed project. Present statutes and regulations governing the identification, protection and preservation of these resources include the National Historic Preservation Act of 1966, as amended; the National Environmental Policy Act of 1969; Executive Order 11593; and the regulations implementing Section 106 of the National Historic Preservation Act of 1966 (36 Code of Federal Regulations Part 800, Protection of Historic Properties, August 2004). A historic property is defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on, the National Register of Historic Places (NRHP), including artifacts, record, and material remains related to such a property or resource.

Cultural resources include historic properties as well as other cultural aspects of the human environment. This work is done in coordination with the State Historic Preservation Offices of New Jersey, federally recognized Tribes, and interested parties. The New York District carried out a review of existing surveys and historical documentation as part of both the Tier I EIS as well as the current EA, to identify cultural resources within the Planning Region including previously recorded historic properties and properties with the potential to be eligible for the National Register of Historic Places to inform an initial assessment of potential impacts that the proposed undertaking may have on cultural resources within the APE.

In July 2016, the New Jersey Department of Community Affairs (NJDCA), Sandy Recovery Division, initiated consultation with the New Jersey Historic Preservation Office (NJHPO) for the RBD Meadowlands Flood Protection Project on behalf of the U.S. Department of Housing and Urban Development (HUD). Subsequently, NJDEP conducted a Phase IA Archaeological Survey (Walker et al. 2018) and a Historic Structures Survey (Everett 2018) to identify historic properties that could potentially be affected by the proposed alternatives. The NJDEP subsequently provided NJHPO with the draft Phase 1A Archaeological Survey Report and the draft Historic Structures Survey Report for review in January 2018.

In a letter dated 19 March 2018, the NJHPO provided Section 106 concurrence with the APEs and requested additional information (Appendix A). The Phase IA Archaeological Survey and Historic Structures Survey reports

were revised and resubmitted in May 2018, and the NJHPO concurred with the findings in June 2018 (Appendix A). Both reports are included in this Sub-Appendix. One historic resource, the ca. 1960 Rail Bridge over the ERD, was deemed ineligible for listing in the State and National Registers of Historic Places (SRHP/NRHP), and the APE was assessed as having low archaeological sensitivity for pre-contact Native American and historic archaeological sites. In email correspondence dated December 3, 2018, the NJHPO approved NJDEP's proposed phased assessment of effects of the Project, in accordance with 800.5(a)(3), owing to difficulties in gaining access to Caesar Place Park, which abuts the ERD, and Avanti Park, where Phase IB archaeological surveys were recommended (Walker et al. 2018). Improvements within these properties are not included as part of the Project and no Phase IB survey have yet to be conducted for Caesar Place Park or Avanti Park. In June of 2018, NJHPO concurred with the NJDEP's determination that the ERD and pump station APE has low archaeological sensitivity.

An Environmental Impact Statement (EIS) and Feasibility Study for the RBD Meadowlands Project was completed in 2018, establishing the NJDEP's decision to select the Alternative 3 Build Plan for implementation of the Proposed Project in compliance with the National Environmental Policy Act (NEPA). The Alternative 3 Build Plan was also determined to be the Environmentally Preferred Alternative. As part of the Section 106 process, a Programmatic Agreement (PA) was executed among the NJHPO, FEMA, HUD, New Jersey Office of Emergency Management, and the Advisory Council on Historic Preservation (ACHP) in 2018.

4.1.24.1 Existing Conditions

4.1.24.2 Cultural Resources within the 100-meter Direct APE

Cultural resources are vulnerable to the impacts of storm surges, flooding, and sea-level rise. These types of exposures can diminish the physical and historic integrity of archaeological sites, historic buildings, and cultural landscapes through physical damage or destruction. Integrity is essential for historic properties to retain their designations as National Historic Landmarks, State / National Register listed or eligible resources, and / or NPS parks or site units, examples of all of which are present throughout the study area.

Based on an examination of historic sites maps and NJHPO data, USACE has identified five (5) recorded historic properties in the Study Area, one of which, the Gethsemane Cemetery, is NRHP and SRHP listed. The Gethsemane Cemetery is a mid-nineteenth century African American burial ground located on Liberty Street just north of US Route 46 in the Borough of Little Ferry. In 1860, this 1-acre site was set aside for Hackensack's African American population. Burial and health records document that it was mainly a family cemetery for the local African American population, but it also served as a potter's field. Approximately 28 gravestones exist, and a ground-penetrating radar survey conducted in 1990 suggested the presence of 238 burials (Geismar 1993). The cemetery was NRHP and SRHP listed in 1994.

Four other historic resources have been previously inventoried within the Study Area, including the US Route 46 Bascule Bridge, which has been determined eligible for individual listing on the NRHP. The US Route 46 Bascule Bridge in the Borough of Little Ferry was designed in 1934 by John Waddell and Shortridge Hardesty, who were known for their innovative bridge designs. The span is one of only two double-leaf bascule spans constructed in the 1930s in Bergen County (KFS 1997).

The other three historic properties in the Study Area – the Outwater Cemetery, the Moonachie Streetscape, and 69 Bruno Street in the Borough of Moonachie – have yet to be evaluated for NRHP or SRHP eligibility. One recorded historic district, the Vanguard Associates Mobile Home Park, also known as the Rogers Trailer Park, has been identified in the Study Area. The district has not yet been evaluated for NRHP or SRHP eligibility. The district and the five historic properties are provided in Table 2.

The eighteenth-century Outwater Cemetery is located in the Borough of Carlstadt, on Washington Avenue. It was inventoried as part of the Washington Avenue widening project in the late 1980s and was found to be

ineligible for the NRHP (NJDOT 1987). Attempts to relocate the cemetery in 2003 were unsuccessful, and researchers hypothesized that it was partially or completely destroyed during the widening of Washington Avenue (Kodlick 2003).

The Moonachie Streetscape is a 17-property historic residential streetscape along Moonachie Road that forms the gateway to the Borough of Moonachie at its border with Little Ferry. This historic streetscape was first identified in the 1980-1981 Bergen County Historic Sites Survey as part of an eight-block area bounded by Albert Street, Joseph Street, Moonachie Road, and the Little Ferry Border and later in the reduced two-block Moonachie Road/Ramella Avenue area identified in the 2005 update (Trevisan 2005; Niederer 1981). The streetscape area is comprised of modest, one-and-a-half and two-story, end gable, brick and frame structures constructed during the first quarter of the twentieth century. Their roof form, raised basements, consistent setbacks and regular rhythm of one-story front porches lend a cohesive feeling to the northeastern-most end of Moonachie Road.

The dwelling at 69 Bruno Street was individually identified in the 2005 update of the Bergen County Historic Sites Survey (Trevisan 2005). The one-and-a-half story, end-gable, brick dwelling at 69 Bruno Street was constructed circa 1911 in the Washington Park neighborhood of the Borough of Moonachie. With its unpainted red brick walls and tan brick accents, it stands on a corner lot among largely circa 1980 split-level frame dwellings as a distinctive and easily recognizable remnant of an earlier era of development.

NJDEP (2018) identified two additional cultural resources in the Study Area that have not yet been formally recorded with the NJHPO. The first, recognized by the American Institute of Aeronautics and Astronautics, is the Bendix Aviation Factory Complex at Teterboro Airport as a national historic site in the aerospace industry (NJDCHA 2005). The second resource is Maple Grove Cemetery, originally called New York Cemetery of the Dutch Reform Church of New York, which is located along the northern portion of the Project Area. In 2003, over 4,000 remains were removed from a historic potter's field in Secaucus, New Jersey, and brought to Maple Grove Park Cemetery to be honored and remembered (Louis Berger Group 2005).

4.1.24.3 Cultural Resource Impact Evaluation Framework

While environmental impact frameworks provide a broad lens for evaluating project effects, cultural resources require a more nuanced and specialized approach due to their historical, archaeological, and intangible values. Environmental models often emphasize biophysical metrics such as land use, hydrology, or emissions, which can overlook the complex regulatory, contextual, and community-based significance of cultural resources. Under Section 106 of the National Historic Preservation Act, federal undertakings must consider not only physical alterations but also visual, auditory, and contextual impacts to historic properties and archaeological sites. Therefore, a more refined framework tailored to cultural resources is essential to adequately assess both adverse and beneficial effects, guide meaningful mitigation, and ensure compliance with federal preservation mandates. This approach enables more precise evaluations and protects cultural heritage in ways that environmental scoring systems alone cannot achieve.

Cultural Resources Impact Evaluation Framework

Resource Categories:
Above-Ground: Historic structures, viewsheds, cultural landscapes
Below-Ground: Archaeological sites (terrestrial and submerged)
Project Phases Considered: Construction, Operations & Maintenance
Impact Types: Adverse (negative) Effects, and Beneficial (positive) Effects

Evaluation Factors:
Impact Magnitude (Intensity/Extent)

Geographic Scope (Local/Regional)
Temporal Scope (Shore-/Long-Term)
Regulatory Thresholds (e.g. NEPA, NRHP eligibility, Section 106 Compliance)
*Mitigation Potentia*l (Avoidance, Minimization, Treatment, Enhancement)

Adverse Effects Rating Table (With Mitigation Evaluation Built In)

Impact Rating	Score	Description	Example	Mitigation Category
High	-5	Permanent destruction of resource; exceeds regulatory thresholds; mitigation **insufficient** to reduce impact to an acceptable level.	Demolition of an NRHP-listed building without documentation or alternatives.	**No effective mitigation possible**; total loss of integrity/significance.
Mod–High	-4	Significant adverse effect; mitigation **necessary and substantial**, but cannot eliminate loss of integrity.	Cut through historic landscape with unavoidable impacts.	**Partial mitigation** (e.g., detailed documentation, interpretive signage, data recovery).
Moderate	-3	Impact is localized and within thresholds; mitigation **can fully address** resource loss or damage.	Archaeological site disturbed by utilities, but full data recovery is planned.	**Effective mitigation** (e.g., redesign, excavation, relocation, HABS/HAER documentation).
Low–Mod	-2	Minor adverse impact; mitigation **simple and sufficient** to avoid significance loss.	Short-term construction next to historic structure with vibration monitoring.	**Standard BMPs** or buffer zones.
Low	-1	Temporary, negligible effects; no mitigation required.	Minor access near site boundary.	**No mitigation necessary**.
No Impact	0	No effect on cultural resources.	Boring in fully disturbed, tested area.	Not applicable.

Beneficial Effects Rating Table (With Enhancement Evaluation)

Benefit Rating	Score	Description	Example	Mitigation / Enhancement Category
High	+5	Regionally significant enhancement of a cultural resource or site; measurable, long-term improvement; promotes public engagement.	Adaptive reuse of a historic building as public space with interpretation.	**Preservation + Public Benefit** (e.g., funding, easements, partnerships).

Mod–High	+4	Strong enhancement locally or regionally; mitigation or restoration improves condition or setting.	Viewshed restoration at a historic site through invasive species removal.	**Restoration + Setting Rehabilitation**.
Moderate	+3	Measurable benefit to one or more cultural resources; increased protection or documentation.	Phase III recovery with public education materials produced.	**Public interpretation, research access, stewardship agreements**.
Low–Mod	+2	Some improvement beyond existing condition; resource protected or documented more completely.	HABS documentation of vulnerable site.	**Archival mitigation + limited outreach**.
Low	+1	Minor benefit, such as improved access, visibility, or documentation.	Signage for nearby unmarked historic feature.	**Minimal enhancement**.
No Impact	0	No beneficial effect beyond current condition.	Routine maintenance in non-sensitive areas.	Not applicable.

4.1.24.4 No Action

Adverse Effects

The No Action or No-Build Alternative was assessed in relation to the project's purpose and need. Under this scenario, no measures would be implemented to address future flood risks, which are anticipated to worsen due to relative sea level rise. As a result, this alternative would leave existing aesthetic, visual, historical, and cultural resources vulnerable to damage. Cultural resources within the study area face the risk of deterioration or destruction from coastal flooding and sea-level rise

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.24.5 Action Alternative

Adverse Effects

The construction activities associated with the East Riser Alternative—including channel modifications, culvert replacements, and the replacement of a railroad bridge, are expected to result in low adverse effects on cultural resources. The Area of Potential Effect (APE) is primarily confined to existing roadways, paved surfaces, and previously disturbed corridors such as road shoulders and graded embankments, which significantly limits the likelihood of encountering intact archaeological deposits. Based on background research, historic maps, and aerial photographs, both prehistoric and historic archaeological sensitivity within the APE is low. The most sensitive areas are those near map-documented buildings, which may warrant monitoring during construction. Additionally, one historic district (the Vanguard Associates Mobile Home Park) is located within 300 meters of the APE, but is not directly affected. Therefore, while potential impacts are limited, minor adverse effects could result from construction near previously undocumented or poorly mapped cultural features.

Beneficial Effects

Despite its low overall sensitivity, the East Riser Alternative presents opportunities for beneficial effects on cultural resource management. The project footprint's location in previously disturbed areas provides a high potential for avoiding significant archaeological resources through informed design and targeted monitoring. If

implemented, cultural resource protection measures (such as archaeological monitoring near map-documented buildings or pre-construction survey in less-disturbed sections) would support compliance with Section 106 of the National Historic Preservation Act (NHPA), enhancing preservation planning without major changes to the project. These activities contribute to long-term cultural resource stewardship and help document areas with little prior survey coverage, and work occurs within already disturbed corridors with minimal changes to the surrounding setting and character. Additionally, no long-term or operational effects on cultural resources are anticipated following construction, ensuring continued preservation of nearby historic properties such as the Vanguard Associates Mobile Home Park.

4.1.24.6 Cultural Resources within Visual Impact Area (Indirect Effects)

The measures included in the study will enhance existing viewscapes, depending on location and scale. Construction of nature based measures may positively affect scenic byways, improve existing residential views, and/or increase access to historic coastal sites (USACE 2019). Aesthetic valuation, a judgement of value based on appearance of an object and emotional responses, of the public is ongoing and will be updated as stakeholder input is aggregated, but was not used to determine the preliminary impact rating.

Aerial photographs, LiDAR and field observations were analyzed for each alternative of visual effect, that will later be considered in determining the build alternative. This includes project visibility and viewsheds from neighbors and travelers as well the influence of topography, vegetation, and structures. An inventory of existing landscape character, viewers and visual quality is the baseline for this documentation. Characterization of visual quality of landscape compositions based on intrinsic characteristics of natural, and existing roadway features; stakeholder values, public interest, real estate and scenic designations may be altered by the implementation of the proposed structural measures but will greatly manage the impact from coastal storms. Generally, implementing the alternatives could provide direct benefits by reducing the severity of damage to coastal sites and residences.

In support of the aesthetic viewshed analysis, USACE undertook a preliminary identification of known cultural resources that could be visually affected by the project in accordance with the New Jersey Historic Preservation Office's (2004) Guidelines for the Preparation of Cultural Resource Management Archaeological Reports; and the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation (48FR4473437), and the USACE NYNJHATS OSE Report (2022). Visual analysis, as a component of the NEPA and Section 106 analyses, includes a broad look at the potential impacts to historic properties. By definition, a visual effect occurs whenever a proposed undertaking will be visible from an historic property. The mere existence of a visual effect does not automatically imply that the effect is adverse.

Background research for the project included a review of existing cultural resource reports, management plans, archaeological site files, historic maps, and nominations to the National Register of Historic Places (NRHP). The analysis takes into consideration the resource's geographical distance and the effect of topography on whether the Alternative is visible from historic resources. A visibility analysis that takes the built environment and vegetation into account are beyond the scope of the Study. Additional discussion and evaluation of the visual impacts from each Alternative is available in the following Sections.

Measures proposed for the AE will not involve the construction of structures that have a potential to indirectly affect historic properties, there are no historic properties impacted by the Action Alternative, and will not alter the visible environment (i.e., setting) of those resources. For this study, the visual impact study area (Indirect APE) includes those places within one mile (1.6 km) of proposed measures for the alternative that are in the potential viewshed (based on topography). This Visual Impact Area, or Zone of Visual Influence (ZVI), primarily encompasses parts of the New Jersey Hackensack Meadowlands District.

4.1.25 Cultural Resources Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Cultural Resources - Historic Structures Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	0	-1	-1
O&M Assumptions	0	0	0	+1	0	+1
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*-1*	*+1*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**0**	**+1**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

Cultural Resources – Viewshed/Historic Setting Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	0	0	0	-1	0
O&M Assumptions	0	0	0	+1	0	+1
Subtotal of Adverse and Beneficial Effects	*-1*	*0*	*0*	*+1*	*-1*	*+1*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**+1**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

	Adverse Effects	Beneficial Effects		ACTION

Cultural Resources – Terrestrial Archaeological Resources Qualitative Rating	No Action	Action	No Action	Action	NO ACTION TOTAL SCORE[1]	TOTAL SCORE[2]
Construction/Footprint	-1	-1	0	0	-1	-1
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*0*	*-1*	*-1*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**-1**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

Cultural Resources – Submerged Archaeological Resources Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	0	0	0	0	0	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*0*	0	*0*	*0*	*0*	*0*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**0**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.26 Native American Land

Native American Lands, or Indian Land, is typically either fee land purchased by tribes or land held in trust by the U.S. government. Federally Recognized Tribes whose ancestral lands include all or a portion of the Study Area include the Delaware Nation, the Delaware Tribe of Indians, and the Stockbridge Munsee Community Band of Mohican Indians. The Delaware Nation is based today in Anadarko, Oklahoma, the Stockbridge Munsee Community Band of Mohican Indians is situated in Shawano County, North central Wisconsin, and the Delaware Tribe of Indians in Bartlesville, Oklahoma. At present a list of properties of traditional religious and cultural importance (Traditional Cultural Properties) has not been quantified for the Study Area.

The Stockbridge Munsee consider Papscanee Island, located on the Hudson River just two miles south of Albany and within the Capital District Region, to be a traditional historic property of religious and cultural significance and the New York State Office of Parks, Recreation and Historic Preservation has, under those criteria, determined the site eligible for the National Register of Historic Places.

There are no Native American lands within or near the Actionable Element Site; therefore, an effects analysis is not applicable.

4.1.27 Hazardous, Toxic, and Radioactive Wastes

Hazardous, toxic and radioactive waste (HTRW) is defined by Engineer Regulation 1165-2-132 as:

> *"Except for dredged material and sediments beneath navigable waters proposed for dredging… hazardous, toxic and radioactive waste includes any material listed as a "hazardous substance" under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. 9601 et eq (CERCLA)."*

CERCLA, commonly known as Superfund, was enacted by the U.S Congress on December 11, 1980, and provides the U.S. Environmental Protection Agency the funds and authority to remediate contaminated sites where there is no identifiable responsible party. CERCLA was enacted to provide the necessary funds to protect human health and the environment, identify responsible parties to pay for remediation of sites, involve communities in the process, and return contaminated sites to productive uses (USEPA 2020a).

The NYNJHAT Study Area predominantly covers the NYC Metropolitan Area, where many Federal and State listed known contaminated sites, and other related sites of interest, are prevalent throughout. Engineer Regulation 1165-2-132 states that HTRW collocated within the proposed project footprint must be avoided where feasible, and where it cannot be avoided, those sites must be remediated at 100% nonfederal cost prior to construction. The costs and complexities of remediation will likely impact the local sponsors' ability to expedite plan features located within HTRW sites. HTRW sites were assessed by: 1) reviewing existing and readily available Federal and State records of contaminated sites within or near the Study Area; 2) identifying contaminated sites that are collocated within or near the areas of the proposed project; and 3) determining if collocated or nearby contaminated sites may affect or be affected by the project. Below is a brief summary of HTRW sites within the vicinity of proposed project features. Refer to the HTRW Subappendix for additional details and figures with approximate locations of mapped sites in the vicinity of this Actionable Element Site.

4.1.27.1 Existing Conditions

The Study Area exists in an urbanized portion of the New York Metropolitan Area that has been subject to a history of anthropogenic activity and other uses with the potential to affect the subsurface or otherwise impact the project. Through the evaluations contained within this HTRW Report, several relevant collocated environmental listings or other environmental concerns have been documented, including:

- Documented sediment contamination within the Study Area. Available reports, including the 2020 Sediment Investigation Report prepared by HDR, indicated the presence of elevated levels of mercury, methyl mercury, PCBs, and other analytes within sediments proposed to be dredged or excavated as part of project implementation. Based on further evaluation of the data, certain sediments had total mercury concentrations in excess of the TCLP rule of 20 indicating the potential to fail the toxicity characteristic for hazardous waste.
- The adjacent Ventron/Velsicol NPL Site (ID# NJD980529879) and impacted Berry's Creek. This NPL Site was historically a mercury processing plant with ercury, methyl mercury, and PCBs as the primary

contaminants. They have been found at elevated levels throughout the surface water, sediment and biota in the area.

- NPL Sites within a one-mile radius of the Study Area with the potential to impact the adjacent Berry's Creek including:
  - Universal Oil Products (Chemical Division) (ID# NJD002005106)
  - Scientific Chemical Processing (ID# NJD070565403)
- Various RCRA listings, most notably:
  - Amor Realty Site (ID# NJR000022079)
  - LPS Industries LLC Site (ID# NJD064329436)
  - WNBC Moonachie Garage Facility Site (ID# NJR000074716)
- NJDEP NJ-GeoWeb listings, most notably:
  - Caesar Palace Pump Station (ID# 019870)
  - S & J Manufacturing Corp (ID# 005538)
  - 650-662 Dell (ID# 933991)
  - Pictorial Offset Corp (ID# 705250)
  - Industrial Building @ 350 Starke Road (ID# 499089)
  - Morris Park Avenue Incorporation (ID# G000026213)
  - President Container Inc (ID# 013804)
  - Elco Solvents Corps Site (ID# G000001197)
  - Documented historic fill throughout the Study Area

Environmental listings and concerns are ubiquitous with the New York Metropolitan Area, particularly in areas of historic heavy industrialization. As the proposed project progresses into the Pre-Construction Engineering and Design (PED) a subsurface planning investigation will take place to further characterize the subsurface conditions. This investigation will inform any potential HTRW risks associated with construction and implementation of the proposed project.

4.1.27.2 No Action

Adverse Effects

The no action is anticipated to continue to have the surrounding area vulnerable to coastal flood risk and damages. Storm damage to a significantly urbanized area, such as the Hackensack/Passaic Planning Region, can cause new releases of petroleum and/or hazardous substances, further spread historical contaminated soils and sediment, increase potential risk of exposure, and extend time and increase costs for addressing HTRW sites. Although the no action would continue from the existing condition trajectory, frequency of storms and severity of storms may increase over time, as may RSLC. While difficult to predict the adverse effects of such change over an extended period beyond the planning horizon of this Study of 100-years, the effects within the 100-year planning horizon would be anticipated to have low adverse impacts due to the infrequency of severe storms (e.g. 1 in 100 years). Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.27.3 Action Alternative

Adverse Effects

Any intrusive subsurface work associated implementation of the proposed project has the potential to disturb soil/sediment that could be contaminated with HTRW. Should contaminated soil/sediment be disturbed, there

could be increased risk to human health and the environment. However, a subsurface planning investigation would be conducted during the PED phase to further characterize the subsurface conditions. This investigation will inform any potential HTRW risks associated with construction and implementation of the proposed project and ensure there are not HTRW concerns in any areas where the subsurface may be disturbed. As per Engineer Regulation 1165-2-132, HTRW collocated within the proposed measure footprints must be avoided where feasible, and where they cannot be avoided, those sites must be remediated at 100% nonfederal cost prior to construction. Best management practices will be employed during project implementation to ensure the construction is conducted in a manner that is protective of human health and the environment and that any handling of subsurface materials is in compliance with applicable regulatory requirements. Therefore, this effects category is representative as low impact, with a corresponding score of -1.

No direct or indirect adverse effects from operation and maintenance of the site are anticipated to cause HTRW concerns. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

Beneficial Effects

Direct beneficial effects from construction include a cleaner East Riser Ditch with decreased concentrations of contaminants in the sediment and reduced CSRM flooding to the surrounding area. With reduced CSRM flooding risk, there would be less risk of severe storm damage to the surrounding urbanized area and less risk of petroleum and/or hazardous substances release, spread of historical contaminated soils and sediment, HTRW exposure, and delays and cost increases for addressing HTRW sites. Therefore, this effects category is representative as low benefit, with a corresponding score of 2.

No direct or indirect beneficial effects from operation and maintenance of the site are anticipated to occur. Therefore, operations and maintenance effects are anticipated to have no impact, represented by a corresponding rating criteria score of 0.

4.1.28 Hazardous, Toxic, and Radioactive Waste Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Hazardous, Toxic, and Radioactive Wastes Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+2	-1	+1
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*2*	*-1*	*+1*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**+1**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.29 Navigation

Navigation was a resource that was reviewed and assessed in the September 2022 Draft Integrated FR/Tier 1 (Programmatic) EIS due to the size of the Study Area. Navigation channels are present through the New York Bight and surrounding surface waters, including the Lower Bay. As this report is an interim response to the Comprehensive Plan, the same resources were reviewed for applicability to the Actionable Elements Sites. No navigation channel is identified in the vicinity of this Actionable Element Site. Therefore, an effects analysis is not applicable.

4.1.30 Noise and Vibration

Noise is generally defined as undesirable sound that may interfere with communication, damage hearing, and/or may diminish the quality of an environment. Noise intensity is measured and monitored in decibels (dBA). Approximate noise levels can be estimated based on surrounding land use and can typically range from an average of 30 dBA in wilderness areas to 90 dBA in more urban areas (USACE 2020b). Common sources of noise in our environment include transportation vehicles, equipment, machinery, construction, appliances, and motors, to name a few. While The Noise Control Act of 1972 established a national policy to promote an environment free of noise that jeopardizes human health and welfare, the primary responsibility for noise control relies on State and local governments (USEPA 2022). Table 13 has a few examples of common sources of noise and their anticipated average sound levels:

Table 4. Common Sources of Noise

Common Sources of Noise	Average Sound Level (Decibels/dBA)	Interpreted Level of Disturbance (from routine or repeat exposure)
Normal conversation and air conditioner	60	Low
City Traffic (from inside a vehicle), Gas-powered lawnmowers and leaf blowers	80-85	Mid-High
Approaching subway train and car horn	100	High
Entertainment venues	105-110	High
Fire crackers	140-150	High

Source: CDC 2022

Noise can carry a considerable distance underwater and on land; however, geographical extents of noise impacts are dependent on several factors including type of equipment utilized, noise exposure duration, amplitude, and wind direction/speed (USACE 2022) in relation to proximity to sensitive receptors such as residential communities and ecologically significant or special status species and wildlife.

Vibration is generally defined as rhythmic repetitive motion that may be experienced from a particular extraneous media (such as the ground or equipment). The duration of constant repetitive motion can cause disturbances in the environment both naturally (such as an earthquake) and mechanically (such as large vehicles, equipment and machinery), as well as occupational hazards to the human body having the potential

to cause injury from prolonged exposure (e.g. jack hammer).

4.1.30.1 Existing Conditions

Ambient noise levels within the Hackensack/Passaic Planning Region are anticipated to be mid-to-high range. The primary sources of noise anticipated include automobile traffic, truck traffic on highways and local roads, commercial and industrial processes, air traffic from Newark International Liberty Airport and Teterboro Airport, and New Jersey Transit rail systems. Noise criteria and the descriptors used to evaluate project noise will depend on the type of land use in the vicinity of the proposed project areas. Potential sources of vibration to sensitive receptors may include automobiles, large motor vehicles, air traffic take-off and landing, and construction (USACE 2022).

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The project area is located in an urban area adjacent to predominantly industrial buildings, with a few residential areas and an intersecting rail line. The northern end of the project area is approximately 850 feet from the end of the runway at the Teterboro Airport, a general aviation airport. Typical noise sources in and near the project area include trucks servicing nearby industrial buildings, trains using the rail line, and airplanes taking off and landing at the airport. Sirens would be audible from nearby emergency service facilities as well as general traffic noise. The only sensitive noise receptors in or near the project area would include the two residential mobile home parks near the north end of the project area. One is immediately adjacent to the proposed work area and the other is more than 600 feet from the project footprint and is buffered from the work zone by two commercial warehouse structures."

4.1.30.2 No Action

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, no construction for flood reduction measures would occur that would result in an increase in noise levels. In the long term, the risk of flooding would not be reduced. Construction activities to repair flood damage would temporarily increase noise levels in the immediate vicinity of the work. Any construction activities that may occur would be required to comply with local construction noise ordinances. Therefore, over the long term, there would be minor, reoccurring, short-term adverse noise impacts because the continued risk of flooding would periodically generate associated construction noise from repairs."

Therefore, this effects category is representative as low impact, with a corresponding score of -1.

Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages, and existing conditions for noise and vibrations would remain unchanged, without benefit. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

4.1.30.3 Action Alternative

Adverse Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the Proposed Action, construction activities would temporarily increase noise levels in the project vicinity but would conform to the local noise ordinances for the time of day that construction noise is allowed. As described in the RBDM EIS, work would occur during normal waking hours from 7:00 a.m. to 4:00 p.m., which is more restrictive than local ordinances, and the construction schedule would be communicated to the public (NJDEP 2018b). Noise barriers would be placed between construction activities and sensitive receptors and the quietest practicable construction methods and equipment would be used. Stationary equipment, such as generators and compressors, would be enclosed and vehicle idling would be limited (NJDEP 2018b). Noise complaint and response procedures would be established (NJDEP 2018b). Hence, there would be a minor short-term increase in noise levels during construction."

Therefore, this effects category is representative as low adverse effect, with a corresponding score of -1.

"Post-construction, noise levels would return to preconstruction levels during normal operations. Operation of the ERD pump station would produce noise only during heavy rain and coastal surge events. There are no sensitive receptors near the pump station location; thus, there would be no impact from noise generated by the pump station."

Therefore, this effects category is representative as no effect, with a corresponding score of 0.

Beneficial Effects

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The risk of flooding would be reduced, thereby reducing occasional increases in noise from flood-related repairs. Accordingly, the Proposed Action would have a negligible, long-term, beneficial impact on noise levels."

Therefore, this effects category is representative as low benefit, with a corresponding score of +1.

4.1.31 Noise and Vibration Score

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed above in the supportive effects analyses.

Noise and Vibration Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE[1]	ACTION TOTAL SCORE[2]
	No Action	Action	No Action	Action		
Construction/Footprint	-1	-1	0	+1	-1	0
O&M Assumptions	0	0	0	0	0	0
Subtotal of Adverse and Beneficial Effects	*-1*	*-1*	*0*	*+1*	*0*	*0*
Mitigation (if applicable, otherwise 0)	0	0	0	0	0	0
ACTION TOTAL SCORE (calculated, additive, with mitigation if applicable)					**-1**	**0**

Note: n/a – not applicable. Adverse Effect scores: 0 (no impact), -1 (low impact), -2 (low-moderate impact), -3 (moderate impact), -4 (moderate-high impact), -5 (significant impact). Beneficial Effect scores: 0 (no benefit), +1 (low benefit), +2 (low-moderate benefit), +3 (moderate benefit), +4 (moderate-high benefit), +5 (significant benefit).
[1] – Sum of the No Action Adverse Effect and Beneficial Effect
[2] – Sum of the Action Adverse Effect and Beneficial Effect

4.1.32 Socioeconomics and Demographics

Socioeconomics and demographics are an important part of project planning, design, and construction to ensure communities at risk are considered at a local level with regard for the human environment and experience as well as safety, resilience, and cohesion. A critical aspect of understanding the effects to the human environment is understanding the socioeconomic and demographic conditions in the vicinity of a Federal project, by soliciting feedback from the public through the public review and comment period, and providing forums, such as public engagement meetings, to engage all members of those communities at risk. Considering socioeconomics and demographics in decision making creates opportunities for incorporating the publics feedback into the decision-making process, relevant to the ground-level needs of those communities. Utilizing statistical parameters, the effects assessment can be focused on determining if a Federal project may adversely or beneficially effect the sustainability of communities, and informs actions of which may be necessary to ensure no project disproportionately effects one group over another.

4.1.32.1 Existing Conditions

The community near the East Riser Actionable Element primarily consists of the Vanguard Associates Manufactured Housing Community and, to a lesser extent, the Metropolitan Mobile Home Park. This community experiences heightened social vulnerability due to significantly higher percentages of residents with limited English proficiency and poverty rates exceeding national and state averages. This experience is further underscored by below-median life expectancies, reflecting myriad difficult-to-quantify all vulnerabilities. This area contains limited formal community infrastructure (such as community centers and gathering spaces), relying more heavily on informal connections. All nearby hospitals would be reached via Moonachie Avenue.

4.1.32.2 No Action

Adverse Effects
No adverse effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages, and existing conditions for noise and vibrations would remain unchanged.

Beneficial Effects
No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages, and existing conditions for noise and vibrations would remain unchanged.

4.1.32.3 Action Alternative

Adverse Effects
The project would create temporary construction-related noise and vibration from heavy diesel-powered machinery to excavate, grade, and clear the site. Noise and vibrations would be largely on land, with some localized disturbance during construction of the channel, railroad bridge replacement, and riprap placement. Construction fencing would restrict access to the work area during construction, until construction is complete. Best management practices will be utilized to reduce the effects of noise and vibration on surrounding communities, such as local noise ordinance construction windows and environmental windows.

Beneficial Effects

Beneficial effects would be anticipated from the reduced flood prevalence in the community that effect access to residences, roads, and business operations.

4.1.33 Socioeconomics and Demographics Score (not scored)

Existing Conditions as well as effects and consequences of the No Action and Action Alternative were assessed, including any anticipated adverse and beneficial effects perceived to socioeconomic and demographic conditions; however, qualitative scores were not generated for this section, as the adverse effects and/or benefits of the No Action and Action Alternative are highly subjective to the human experience of those living within the vicinity of this Actionable Element Site, and those utilizing this Site for recreational purposes. However, a scorecard may be generated for the Final Report, should there be enough supporting information received through comments from stakeholders and the public during the comment review period that would reasonably allow for a qualitative effect score to be generated.

5 ENVIRONMENTAL COMMITMENTS, COMPLIANCE, AND MITIGATION

The following summarizes environmental commitments and compliance relative to this Actionable Element Site including but not limited to those discussed in more detail below. The potential BMP's and mitigation actions that may be utilized to sustain low adverse effects for the Actionable Element Site are presented on the following table:

RESOURCE CATEGORY	POTENTIAL BMPs AND MITIGATION
Wildlife and Vegetation	Erosion and sediment control BMPs, vegetation restoration, invasive species BMPs, tree/shrub clearing restriction windows, replanting with native vegetation, pre-construction vegetation surveys
Special Status Species	Environmental window restrictions for construction and maintenance activities, terrestrial aquatic species and vegetation surveys, continued coordination with respective regulatory Agencies.
Special Status Areas	Erosion and sediment control BMPs, continued coordination with respective regulatory Agencies.
Physical Resources	Erosion and sediment control BMPs, disturbed areas restored to pre-construction land use.
Hydrological Resources	Erosion and sediment control BMPs, water quality certificate recommendations/BMPs
Air Quality and Clean Air Act	Air emissions from construction of the Actionable Element are anticipated to be below all de minimis levels on a yearly basis; and therefore, is not anticipated to trigger General Conformity Review.
Cultural Resources	In continued coordination with NYSHPO, NJHPO, LPC, NPS and other stakeholders, avoid/minimize adverse effects to Cultural Resources in accordance with stipulations of the Programmatic Agreement.
HTRW	Avoidance and minimization of impacts to HTRW sites, implementation of BMPs when working near HTRW sites. Coordination with Federal, State, and Local agencies as needed.
Navigation	Not Applicable.
Noise and Vibration	Construction timeframes will be coordinated with local ordinance. noise and vibration monitoring may be conducted during construction.
Socioeconomics and Demographics	Construction timeframes will be coordinated with local ordinances, noise and vibration monitoring/surveys may be conducted during construction. Additional BMPs may be tailored to the community concerns.

Avoidance, Mitigation, and Best Management Practices Considerations

As the anticipated adverse effects of the proposed Alternative of the Actionable Element are low ("-1") additional mitigation beyond avoidance is not necessary to sustain low adverse effect qualitative rating, therefore, no mitigation scores were generated. This does not mean that best management practices or mitigation (avoidance) will not be implemented, but rather, that it is not necessary to quantify beyond what is already being performed as part of the implementation of the project. Refer to the Environmental Appendix for supporting detail, the list of potential BMPs and/or mitigation that may be implemented, and individual resource effect rating score cards.

5.1.1 Clean Air Act

Section 118 of the Clean Air Act states that any Federal action that may result in discharge of air pollutants must comply with Federal, State, interstate, and local requirements respecting control and abatement of air pollution. Section 176(c) of the Act requires that Federal actions conform to an implementation plan after is has been approved or promulgated under Section 110 of the Act. As this Actionable Element Site is located within a maintenance zone for CO and $PM_{2.5}$ and is within the Ozone Transportation Region and in non-attainment area for ozone, these criteria pollutants were compared to the applicable *de minimis* quantities emission thresholds, including the more stringent ozone (VOC and NOx) threshold. Emissions from construction will be below all of these de minimis levels on a yearly basis; and therefore, is not anticipated to trigger General Conformity Review.

5.1.2 Clean Water Act, 33 U.S.C. 1251, et seq.

Section 401 of the Clean Water Act (CWA) requires every applicant for a Federal license or permit for any activity that may result in a discharge into navigable waters to obtain a State Water Quality Certificate or a waiver that the proposed activity will comply with the state water quality standards. NYSDEC and NJDEP issue Section 401 Water Quality Certificates for activities within each respective State (in New Jersey via the Waterfront Development Permits and CAFRA Permits processes).

Section 402 of the CWA prohibits the discharge of pollutants to the waters of the United States from any point source unless the discharge follows a National Pollutant Discharge Elimination System (NPDES) Permit (SPDES in New York and NJPDES in New Jersey). Storm water discharges associated with any activity that involves earth disturbances that exceed one acre also require a NPDES permit.

Section 404 of the CWA regulates the discharge of dredge or fill materials into the waters of the Unites States, including wetlands, at specific disposal sites. The selection and use of disposal sites must be in accordance with guidelines development by the U.S. EPA in conjunction with the Secretary of the Army and published in 40 CFR Part 230 (also known as the 404(b)(1) guidelines). Under Section 404(b)(1) USACE shall examine practicable alternatives to the proposed discharge and permit only the Least Environmentally Damaging Practicable Alternative (LEDPA). Both Section 404 and 33 C.F.R. 336(c)(4) and 320.4(b) require USACE avoid, minimize, and mitigate impacts to wetlands.

5.1.3 Endangered Species Act, 16 U.S.C. 1531, et seq. (USFWS and NOAA-NMFS)

Consultation with the USFWS and/or NOAA-NMFS is required when a Federal action may affect a Federally- listed species or designated critical habitat. Many terrestrial and aquatic threatened, endangered, as well as candidate, species are present within the NYNJHAT Study Area. The Actionable Element Site is not anticipated to have adverse effects on threatened and endangered species as documented within this Appendix. Endangered Species Act coordination was initiated with the U.S. Fish and Wildlife Service, and an ESA assessment is within this document, incorporated by reference.

5.1.4 Fish and Wildlife Coordination Act Report

The USACE New York District and the USFWS are in the process of initiating a scope of work for the preparation of a FWCAR pursuant to the Fish and Wildlife Coordination Act 48 Stat. 401, as amended; 16 U.S.C 661 et seq., to provide information of fish and wildlife resources, including listed species under the ESA, and trust resources within the Actionable Element Site area. The FWCAR will be coordinated with the U.S. EPA, NYSDEC, NJDEP, and other agencies/organizations as appropriate, regarding the project area resources, potential project related impacts, and the means and measures that should be adopted to prevent the loss of or damage to fish and wildlife resources, as well as recommendations to avoid, minimize, or compensate for impacts resulting from the Actionable Element Sites. The USACE New York District

anticipates a Draft FWCAR before the Final Integrated FR/EA, and a Final FWCAR thereafter following a review and comment period. This Appendix will be updated with the FWCAR findings and recommendations for issuance of the Final Integrated FR/EA.

5.1.5 Floodplain Management (E.O. 11988)

Executive Order 11988 *Floodplain Management* implementing procedures include an eight-step process for determining potential impacts to floodplains. These steps, as outlined by 44 CFR 9.6 and under USACE ER 1165-2-26 *Implementation of Executive Order 11988 on Flood Plain Management*, are summarized as follows:

- Determine if the proposed action is in the base floodplain (1% chance of annual flood, also known as the 1% floodplain)
- If the action is in the base floodplain, involve the public in the decision-making process
- Identify and evaluate practicable alternatives to locating the action in the base floodplain
- Identify beneficial and adverse impacts of the proposed action
- Minimize threats to life and property and to natural and beneficial floodplain values. Restore and preserve natural and beneficial floodplain values
- Reevaluate the alternatives
- If the final determination is made that no practicable alternative exists to locating the action in the flood plain, advise the public of findings
- Implement the proposed action

The alternative plans were assessed under the eight-step process, provided in an Appendix to the original EA, and incorporated herein by reference.

USACE will continue to coordinate with FEMA in subsequent phases of the Study to minimize threats to life and property, and to preserve natural and beneficial floodplain values, as applicable. As this is just an interim action of the larger Comprehensive Plan, there will be additional opportunities for the public and Agencies to review the future proposed plan and provide feedback during the remainder of the Tier 1 and Tier 2 NEPA documents, subject to future funding and appropriations.

5.1.6 National Environmental Policy Act of 1969. 42 U.S.C. §4321 et seq.

Environmental data for the NYNJHAT Study has been compiled and documented in the September 2022 Integrated FR/Tier 1 (Programmatic) EIS that was released for public, state, and Federal agency review and comment. Environmental data for the Actionable Element Sites has been compiled and documented in this Integrated Interim Response FR/EA, for public, state, and Federal agency review. NEPA compliance will continue to be implemented throughout subsequent phases of the Study, including the remainder of this Interim Response action phase, as well as the Comprehensive Plan's Tier 1 and the Tier 2 phases.

5.1.7 National Historic Preservation Act of 1966 (INTER ALIA)

The Actionable Element is in compliance with Section 106 of the National Historic Preservation Act, as amended. As part of the requirements and consultation process contained within the National Historic Preservation Act implementing regulations of 36 CFR 800, this project is also in compliance through ongoing consultation with the Archaeological and Historic Preservation Act, as amended, Archeological Resources Protection Act, American Indian Religious Freedom Act, Executive Order 11593, 13007, and 13175, the Presidential Memo of 1994 on Government to Government Relations, New York State Office of Parks, Recreation and Historic Preservation(OPRHP) Section 14.09 of the New York State Historic Preservation Act and the New Jersey Register of Historic Places Act, (Laws of 1970, Chapter 268) and New Jersey

Public Law 2004,Chapter 1. Consultation with the New York State Historic Preservation Office (NYSHPO), NYC Landmarks Preservation Commission (LPC), the New Jersey Historic Preservation Office (NJHPO), NJDEP, and NYSDEC, in partnership with MOCEJ, the Secretary of the Interior (SOI) in consultation with NPS Interior Region 1 Office, the Delaware Nation, the Stockbridge Munsee Community Band of Mohican Indians, and the Delaware Tribe of Indians (federally-recognized tribes), and other interested parties was initiated on May 23, 2022. Coordination on the potential for effects with the interested parties and the appropriate federally recognized tribes is ongoing and will be finalized prior to implementation of the proposed action. The proposed action will be in compliance with the goals of this Act upon completion of coordination as stated above.

The Actionable Element Site has the potential to have an adverse impact on historic properties, however, additional investigation is required to determine what resources will be impacted. A Programmatic Agreement (see Cultural Resource Subappendix) which stipulates the actions the USACE will take with regard to cultural resources as the Project proceeds. The Programmatic Agreement will be used to ensure that the USACE satisfies its responsibilities under Section 106 of the NHPA and other applicable laws and regulations. The Draft PA will be provided to the USACE New York District, New York and New Jersey State Historic Preservation Offices, New York City Landmarks Preservation Commission, Federally Recognized Tribes, and Interested parties for their review and participation. Both cultural resource surveys, and additional analysis of the impacts to the viewshed will be carried out in compliance with Stipulations I-V in the PA.

5.1.8 Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. et seq.

The Magnuson-Stevens Fishery Conservation and Management Act (PL 94-265), as amended, establishes procedures for the identification of essential fish habitat and required interagency coordination to further the conservation of Federally-managed fisheries. The implementing regulations require Federal agencies that authorizes, funds, or undertakes, or proposes to authorize, fund, or undertake, an activity that could adversely affect essential fish habitat is subject to the consultation provisions of the Act and identified consultation requirements. This Actionable Element Site is not likely to have adverse effects on essential fish habitat.

5.1.9 Migratory Bird Treaty Act, 16 U.S.C. 715-715s, and E.O. 13186 Responsibilities of Federal Agencies to Protect Migratory Birds

A “take” of a migratory bird protected under the MBTA. Section 704 of the MBTA states that the Secretary of the Interior is authorized and directed to determine if, and by what means, the take of migratory birds should be allowed and to adopt suitable regulations permitting and governing “takes”. Disturbance of a nest of a migratory bird requires a permit issued by the USFWS pursuant to Title 50 of the Code of Federal Regulations. Construction of the Actionable Element Site is not anticipated to have the potential to “take” migratory birds, eggs, nests, or young during construction that may involve mechanized land clearing. USACE will coordinate with the USFWS, NYSDEC, to determine the appropriate construction windows that avoid “takes” and establish best management practices to be implemented during construction and operations and maintenance activities of the Actionable Element Sites.

6 CONCLUSIONS

This Integrated Interim Response FR/EA Appendix describes the existing conditions and Alternative effects, including adverse and beneficial, of the East Riser Actionable Element Site.

Each individual resource scorecard is combined into one collective Actionable Element Site scorecard to compare the Alternatives, including the No Action Alternative, and presented in the Main report, Effects and Consequences Section, of which this document is appended to, as well as the following section as to provide a high-level overview of the anticipated adverse and beneficial effects concisely; with additional detail in the Appendices where necessary to elaborate on the extent of those adverse and beneficial effects. An additional score card was further developed and presented in the Environmental Quality Section of the Main report, which presents the data in a format that provides further comparison of the adverse and beneficial effects.

6.1 ENVIRONMENTAL CONSEQUENCES MAIN REPORT SUMMARY TABLES

The following tables have been provided in the Main report of this Integrated Interim Response FR/EA, and below for ease of review.

6.1.1 Natural Environment

The following tables of effects was generated from the adverse and beneficial effects assessment presented in Appendix A, and provides a high-level overview of the anticipated adverse and beneficial effects of Construction, Operations and Maintenance, and Mitigation if applicable. Refer to Appendix A for supporting detail and individual resource effect rating score cards.

NATURAL ENVIRONMENT SCORECARD EAST RISER Qualitative Rating Scores	NO ACTION TOTAL SCORE	ACTION TOTAL SCORE
WILDLIFE AND VEGETATION		
Wildlife	**-1**	**0**
Fish	**-1**	**-1**
Migratory Fish	**N/A**	**N/A**
Terrestrial Vegetation	**-1**	**0**
Submerged Aquatic Vegetation	**N/A**	**N/A**
Invasive and Aquatic Nuisance Species	**-1**	**0**
SPECIAL STATUS SPECIES		
Threatened and Endangered Species (Terrestrial)	**-1**	**0**
Threatened and Endangered Species (Aquatic)	**N/A**	**N/A**
Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act Species	**-1**	**0**
Marine Mammal Protection Act Species	**N/A**	**N/A**

Sea Turtles	**N/A**	**N/A**
Essential Fish Habitat and EFH-Designated Species	**-1**	**0**
SPECIAL STATUS AREAS		
Wetlands	**-1**	**+2**
Floodplains	**-1**	**+2**
Wild and Scenic Rivers	**N/A**	**N/A**
Designated Critical Habitat	**N/A**	**N/A**
Critical Environmental Areas	**N/A**	**N/A**
Marine Protected Areas	**N/A**	**N/A**
Coastal Zone Management Act Areas	**-1**	**+1**
Coastal Barrier Resources Act Areas	**N/A**	**N/A**
National Park Service Land	**N/A**	**N/A**
Wildlife Refuge Land	**N/A**	**N/A**
Commercial and Recreational Fishing	**N/A**	**N/A**
Subtotal Scores (additive, for calculation)	***-10***	***4***
TOTAL AVERAGED SCORE (calculated, averaged. Subtotal divided by total number of resources applicable and scored):	**-1**	**0.5**
TOTAL HIGHEST ADVERSE EFFECT ESCALATED SCORE (for comparison purposes)	**-1**	**-1**
TOTAL HIGHEST BENEFICIAL EFFECT ESCALATED SCORE (for comparison purposes)	**0**	**+3**

6.1.2 Adverse Effects Summary

6.1.2.1 Wildlife and Vegetation

No Action Alternative

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, the [East Riser Ditch] *would continue to support limited habitat for terrestrial and aquatic wildlife species. Erosion and sedimentation would continue to adversely affect the ERD and downstream habitats by increasing the turbidity of the water and smothering aquatic substrates. Therefore, under the No Action alternative, continued flooding, erosion, and sedimentation could have a long-term minor impact on habitat for wildlife and fish within the project area."*

The no action is anticipated to continue to have wildlife vulnerable to coastal flood risk and damages.

Action Alternative

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the Proposed Action, terrestrial and aquatic habitats would be affected by construction of the ERD improvements and pump station. Vegetation supporting wildlife habitat, including riparian forested areas, would be removed or disturbed during construction. In addition, there is potential for direct harm to terrestrial and aquatic wildlife from the use of heavy equipment along the ERD. Most of the common wildlife and fish species in the project area would be able to move away from construction equipment, noise, and disturbance. In addition, disturbed areas would be revegetated with native plant species following construction. Therefore, there would be short-term minor impacts on wildlife habitats in the project area from the construction of the Proposed Action. In the long term, the Proposed Action would have a minor beneficial effect on wildlife and fish because it would increase native vegetative cover in the project area and reduce sedimentation to downstream aquatic habitats."

6.1.2.2 Special Status Species

No Action Alternative

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Because there is no suitable habitat for listed species, there would be no effect on federally listed species under the No Action alternative. The ERD would continue to support very limited habitat for state threatened and endangered species. Continued flooding, erosion, and sedimentation would have a negligible impact on the state's threatened and endangered species and their habitats through continued habitat degradation."

"Under the No Action alternative, there would be no construction of flood reduction measures and the ERD would continue to support habitat for migratory birds. Continued flooding, erosion, and sedimentation would have a negligible impact on migratory birds within the project area by potentially reducing some of the available riparian habitat."

"Under the No Action alternative, flooding of the ERD would continue to adversely affect downstream habitats, including designated EFH in Berry's Creek, by carrying sediments, [urban runoff] contaminants, and debris that could be harmful to EFH species. Therefore, under the No Action alternative, continued flooding would have a long-term minor impact on EFH downstream of the project area."

Action Alternative

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the Proposed Action, there would be no effect on federally listed species because there is no suitable habitat for threatened and endangered species. Through consultation with USFWS, as described in the RBDM EIS, the U.S. Department of Housing and Urban Development determined that there was no potential for effects on bat species (NJDEP 2018b). Although the Proposed Action would remove trees in the riparian zone, the project area would be revegetated with native species. Construction BMPs described in the RBDM EIS to protect migratory birds during vegetation clearing could also provide protection for state-listed bird species (Section 5.11)."

"Under the Proposed Action, habitats that support migratory birds, including riparian and shrubland habitats along the ERD, would be removed or disturbed by construction of the ERD improvements and pump station. If construction activity occurs during the migratory bird breeding season, construction activities that could result in the destruction of nests, eggs, or young birds in the nest. Construction BMPs identified in the RBDM EIS would include scheduling vegetation removal and disturbance outside of the nesting season. Where construction timing cannot be altered to avoid the breeding and nesting season, preconstruction surveys for nesting activity would

be conducted by qualified avian biologists, and no-disturbance buffers would be instituted around active nests (NJDEP 2018b). In addition, areas where vegetation is removed would be revegetated with native plant species following construction. Therefore, with implementation of BMPs, the Proposed Action would have a minor impact on migratory birds.

There are no known bald eagle nests in or near the project area; thus, there would be no impact on bald eagles under the Proposed Action."

"there is potential for stormwater runoff during construction to impact water quality in Berry's Creek. To reduce the risk of erosion, sedimentation, and associated water quality impacts, a project-specific SWPPP would be implemented (Section 5.4). During operation, flows from the pump station would be conveyed through a below-grade pipe to Berry's Creek. An energy dissipation structure would be installed at the outfall from the pump station to avoid scour in Berry's Creek. Therefore, impacts on EFH in Berry's Creek would be negligible."

6.1.2.3 Special Status Areas

No Action Alternative
As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, the risk of flooding in and beyond the project area would not be substantially reduced. The wetlands adjacent to the ERD receive runoff from surrounding industrial and commercial land use areas, resulting in these wetlands trapping [urban runoff] contaminated sediment from stormwater... Future repeated flood events could cause erosion, carrying even more [urban runoff] contaminated sediment into these wetlands, further degrading their function and value. Because of the already degraded nature of the wetlands, the No Action alternative would have a long-term, minor, adverse impacts on wetlands within and around the project area."

"The No Action alternative would have no direct impact on floodplains because construction for flood reduction measures would not occur. However, the risk of flooding in and beyond the floodplains of the project area would not be reduced, and additional construction, repairs, or mitigation efforts may be required in the future to address damage after flooding. It is anticipated that the amount of land subject to inland flooding surrounding the ERD would increase due to an increase storm frequency, intensity, and duration, as well as from sea level rise (Section 5.3). The increased flooding could cause an increase in sediment buildup in downstream structures such as culverts, and further increase flood risk by impeding flow. As discussed in Section 5.19, structures and residences surrounding the project area would continue to be at risk of loss of life and property damage during future storm events. Because the occurrence of flooding is expected to increase owing to climate change and sea level rise, this alternative would have a minor, long-term, adverse impacts on people and property within the floodplain as well as on the natural floodplain function depending on the extent and duration of flooding."

Action Alternative
As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

*"Under the Proposed Action, short-term, minor impacts on 0.88 acres of wetlands would occur during construction as a result of temporary fill, vegetation removal, and grading activities (**Appendix A, Figure 5**). Temporary fill and vegetation removal would result in physical and biological effects from alteration of drainage, physical loss of wetlands, and/or interruption of tidal exchange (Shuldiner and Cope 1979). The Proposed Action would require dewatering for the construction of the pump station* (not part of this proposed Alternative, as was already funded and in construction)*, culvert/railroad crossings, and dredging of the ERD. These activities could increase turbidity in adjacent wetlands for the duration of dewatering activities. The Proposed Action would revegetate disturbed areas with native, deeply rooting plant species to stabilize the soil and prevent soil erosion*

that could impact wetlands. Following construction, localized areas of temporary wetland impacts would be restored to preconstruction conditions and would be expected to recover within a short period of time.

Although not part of this proposed Alternative but included herein for awareness, [a] *total of 0.37 acres of freshwater emergent wetlands would be permanently filled as a result of the construction and operation of the ERD pump station under the Proposed Action. The Subapplicant would be required to provide wetland mitigation for this permanent impact on wetlands in compliance with the CWA and any required USACE permit conditions.*

For remaining portions of the project, that are part of this proposed Alternative, [i]*mplementation of the Proposed Action would result in short-term minor impacts on wetlands from the placement of permanent fill needed to construct the ERD pump station that would be mitigated to result in no net loss of wetland functions or acres."*

"Construction of the Proposed Action would affect floodplains through changes in vegetation, sedimentation, hazardous materials exposure, and floodplain capacity. The Proposed Action would temporarily remove vegetation, adversely affecting floodplain functions in the short term. However, revegetation with native plants would improve and benefit floodplain functions and values in the long term (Section 5.8). Construction could result in accidental releases of hazardous waste from previously unknown underground sources or minor leaks from construction equipment, and ground disturbance could cause sediment to run off into the floodplain and result in minor adverse impacts on water quality, aquatic life, and hazardous materials. The Subapplicant would implement a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the general stormwater permit for construction activities (Section 5.4) and a site-specific Erosion and Sediment Control Plan (Section 5.1). These measures would be required by the state and local permits would be required for construction (to avoid and minimize impacts). Therefore, construction of the Proposed Action would have negligible short-term impacts on the floodplain."

6.1.3 Beneficial Effects Summary

6.1.3.1 Wildlife and Vegetation

No Action Alternative
No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages.

Action Alternative
The proposed project would replace non-native terrestrial vegetative habitat with native vegetative habitat more suitable for native wildlife. The increased function and capacity of the CSRM measures would support less frequent and intensive flooding effect to wildlife, and could more naturally support the absorption of flood damages to surrounding communities. The action will not create new aquatic habitat, and aside from the physical modifications to the channel and culverts, is not anticipated to increase fish prevalences or presence within the channel due to the existing tide gate structure.

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"In the long term, the Proposed Action would have a beneficial minor effect on vegetation because it would increase native vegetative cover in the project area and reduce sedimentation to downstream aquatic habitats by reducing erosion of soils into the ERD."

6.1.3.2 Special Status Species

No Action Alternative
No beneficial effects of the no action are anticipated.

Action Alternative
As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"In the long term, the area may provide slightly improved habitat conditions for state-listed species."

"The Proposed Action would stabilize the banks of the ERD, which would reduce the amount of silt in the waters of the ERD over the long term. This would have a minor beneficial effect on water quality and EFH in Berry's Creek."

Although the Action would remove trees in the riparian zone, construction related disturbances will also remove non-native terrestrial vegetation and replace with native vegetation that would be more suitable habitat for stop over migrations, foraging, roosting, and nesting.

6.1.3.3 Special Status Areas

No Action Alternative
No beneficial effects of the no action are anticipated.

Action Alternative
As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Implementation of the Proposed Action is anticipated to have long-term, moderate, beneficial impacts on wetland functions and services in and around the project area as a result of improved bank stabilization and the addition of native plantings along the ERD. The Proposed Action would reduce the occurrence of severe flooding events in and around the project area, reducing the amount of sediment and [urban runoff] that could be transported to surrounding wetlands."

*"The improvements to the ERD would provide increased flood protection for up to approximately 141 structures (**Appendix A, Figure 7**). Implementation of the Proposed Action would reduce the extent of flooding in the project area and reduce the risk of future flood damage to surrounding structures. A reduction in the occurrence of severe floods would improve floodplain function because the floodplain would not be inundated with sediment- and [urban runoff]. Therefore, the Proposed Action would have a long-term, moderate, beneficial impact on floodplain function."*

6.1.4 Physical Environment
The following table of effects was generated from the effects assessment presented in Appendix A, and provides a high-level overview of the anticipated adverse and beneficial effects of Construction, Operations and Maintenance, and Mitigation if applicable. Refer to Appendix A for supporting detail and individual effect rating score cards.

PHYSICAL ENVIRONMENT SCORECARD EAST RISER Qualitative Rating Scores	NO ACTION TOTAL SCORE	ACTION TOTAL SCORE
PHYSICAL RESOURCES		

Topography and Geology	-1	0
Surface Waters	-3	+2
Sediment	-1	+1
Land Use	-1	0
HYDROLOGICAL RESOURCES		
Bathymetry	-1	0
Inland Hydrology	0	+2
Coastal Hydrology, Currents, and Circulation	N/A	N/A
Tides, Tidal Exchange, and Tidal Range	0	+1
Sediment Transport	-1	+1
WATER QUALITY	-3	+2
AIR QUALITY	-1	0
CLIMATE AND RELATIVE SEA LEVEL CHANGE	-2	0
CULTURAL RESOURCES[1]		
Historic Structures[1]	0	+1
Viewshed / Historic Setting[1]	-1	+1
Terrestrial Archaeological Resources[1]	-1	-1
Submerged Archaeological Resources[1]	0	0
NATIVE AMERICAN LAND	N/A	N/A
HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE	-1	+1
NAVIGATION	N/A	N/A
NOISE AND VIBRATION	-1	0
SOCIOECONOMICS AND DEMOGRAPHICS	NS	NS
Subtotal Scores (additive, for calculation)	***-18***	***11***
TOTAL AVERAGED SCORE (calculated, averaged. Subtotal divided by total number of resources applicable and scored):	-1.05	+0.64
TOTAL HIGHEST ADVERSE EFFECT ESCALATED SCORE (for comparison purposes)	-3	-1
TOTAL HIGHEST BENEFICIAL EFFECT ESCALATED SCORE (for comparison purposes)	0	+3

[1] Cultural Resource Category is broken out by resource of significance.
N/A Not Applicable, NS Not Scored.

6.1.5 Adverse Effects Summary

6.1.5.1 Physical and Hydrological Resources

No Action Alternative

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, there would be no impact on geology or soils from construction of flood reduction measures. Flood impacts would not be reduced under the No Action alternative, but there would be no impact on bedrock from flooding due to its depth. Continued flood events would physically damage soils by eroding surface soils and carrying them downstream, thereby destroying beneficial fungi and other microbes, limiting gas exchange, and destroying the structure of soil aggregates (Ponnamperuma 1984). Loss of vegetation as a result of flooding along the riparian area surrounding the ERD would also result in increased soil erosion in the flooded areas. This could lead to slight increases in the amounts of sediments, nutrients, and [urban runoff] contaminants transported into waterbodies and nearby wetlands. Additionally, ongoing soil erosion has the potential to lead to changes in topography. The severity of these impacts would be limited, as more than 95 percent of the soil in the project area is considered low-quality, developed urban land; thus, a reduction in the soil's physical quality as a result of ongoing flooding would not be of high importance. Additionally, the amount of soil that is undeveloped and susceptible to erosion is small and the topography is generally flat, so the impact of erosion on topography would be negligible. Therefore, the No Action alternative would have a long-term negligible adverse impact on soils and topography in the project area."

"The No Action alternative would not reduce the risk of flooding, and floodwaters would continue to result in erosion and runoff that pollutes surface waters by carrying sediments, [urban runoff] contaminants, and debris into the ERD and adjacent wetlands. Water would continue to inundate the area during flood events, entering the drainage system and causing backwater conditions, surcharging, and flow reversal in some locations. Receding floodwaters have the potential to transport debris, petroleum-based pollutants (e.g., motor oil), sediments, and… sewage to surface waters. [F]loodwater that contains bacteria (e.g., fecal coliform and enterococcus) could be conveyed into surface waters and result in public health threats (EPA 2012). Sewage [discharge] also contributes to excess nutrients, such as phosphorus, which can result in algae growth that could result in lower dissolved oxygen levels that affect aquatic life (Minnesota Pollution Control Agency 2009). In addition, the occurrence of flood events is anticipated to increase in the future because of sea level rise… which could increase [surface runoff] loads in the ERD and Berry's Creek, making it difficult to reach future TMDL standards.

Action Alternative

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Excavation would occur during construction of the Proposed Action. The channel would be widened and deepened to a maximum of 12 feet from the top of the bank, and the pump station complex would disturb approximately 1 acre with excavation to 10 feet deep. However, there would be no overall change in the topography of the project area. There would be no impacts on bedrock from excavation because construction actives would not reach the depth of the bedrock.

The Proposed Action would have minor, short-term adverse impacts on soils and topography from ground-disturbing activities during construction. Construction effects would be temporary, and the Subapplicant would implement a site-specific Soil Erosion and Sediment Control Plan, reviewed and certified by the Bergen County Soil Conservation District, to ensure that appropriate best

management practices (BMPs) are used to minimize impacts on soil resources. The Proposed Action would include bank stabilization measures such as geolifts and riprap placed along channel banks to reduce erosion.

In addition, channel banks and adjacent riparian areas (approximately 9.5 acres) would be planted with deep-rooted species to stabilize the soil and prevent soil erosion."
"Prior to any construction activities occurring within the channel, the ERD would be dewatered using temporary cofferdams. The water diversion equipment would be used to establish adequate flow conveyance around the cofferdams' in-channel construction sites. Once the channel sections have been dewatered, construction activities would include adding temporary fill and grading for the pump station construction, culvert/railroad crossing replacements, and dredging of the ERD. These activities would alter surface water flow, specifically during dredging activities in the ERD, where approximately 20,020 cy of sediment would be removed. There would be a minor short-term impact on water quality with the implementation of the mitigation measures and BMPs listed in the RBDM EIS. Measures such as sediment filtration and water diversion would reduce the amount of sediment and other potential [urban runoff] pollutants from reaching Berry's Creek from construction-related equipment and activities.

During vegetation removal and grading activities, surface water quality would be temporarily impacted by increases in suspended sediment."

6.1.5.2 Water Quality and Air Quality

No Action Alternative
As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The No Action alternative would not reduce the risk of flooding, and floodwaters would continue to result in erosion and runoff that pollutes surface waters by carrying sediments, [urban runoff] contaminants, and debris into the ERD and adjacent wetlands. Water would continue to inundate the area during flood events, entering the drainage system and causing backwater conditions, surcharging, and flow reversal in some locations. Receding floodwaters have the potential to transport debris, petroleum-based pollutants (e.g., motor oil), sediments, and… sewage to surface waters. [F]loodwater that contains bacteria (e.g., fecal coliform and enterococcus) could be conveyed into surface waters and result in public health threats (EPA 2012). Sewage [discharge] also contributes to excess nutrients, such as phosphorus, which can result in algae growth that could result in lower dissolved oxygen levels that affect aquatic life (Minnesota Pollution Control Agency 2009). In addition, the occurrence of flood events is anticipated to increase in the future because of sea level… which could increase [surface runoff] loads in the ERD and Berry's Creek, making it difficult to reach future TMDL standards. The No Action alternative would have a moderate, long-term, adverse impact on water quality."

"Under the No Action alternative, temporary construction-related emissions would not occur because flood reduction measures would not be implemented. Therefore, there would be no short-term adverse impacts on air quality.

In the long term, continued flood events could result in road closures, causing traffic congestion and diversion of vehicles away from flooded areas. Additionally, construction equipment would be used to repair flood damage resulting from the continued flood events. Emissions from equipment used for flood-related repairs and additional vehicle emissions generated by flood-related road detours could result in negligible emissions of criteria pollutants within a nonattainment area. However, these emissions would not result in a NAAQS exceedance, change the status of the maintenance area, or conflict with applicable air quality plans. Hence, there would be a negligible adverse impact on air quality from vehicle and equipment emissions resulting from continued equipment use for flood-related repairs and additional vehicle emissions generated by flood-related road detours. Because the frequency and duration of flooding is expected to increase as a result of sea level rise and climate change, the No Action alternative would have a negligible long-term adverse impact on air quality."

Action Alternative

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Prior to any construction activities occurring within the channel, the ERD would be dewatered using temporary cofferdams. The water diversion equipment would be used to establish adequate flow conveyance around the cofferdams' in-channel construction sites. Once the channel sections have been dewatered, construction activities would include adding temporary fill and grading for the pump station construction, culvert/railroad crossing replacements, and dredging of the ERD. These activities would alter surface water flow, specifically during dredging activities in the ERD, where approximately 20,020 cy of sediment would be removed. There would be a minor short-term impact on water quality with the implementation of the mitigation measures and BMPs listed in the RBDM EIS. Measures such as sediment filtration and water diversion would reduce the amount of sediment and other potential [urban runoff] from reaching Berry's Creek from construction-related equipment and activities."

"A general conformity applicability analysis was completed for the RBDM EIS to determine the potential levels of nonattainment criteria or maintenance pollution that may be emitted under the larger RBDM project (NJDEP 2018b). Based on the projected annual estimated emissions for the study area, it was determined that temporary construction and periodic use of the diesel-powered generators at the pump station during emergency conditions would not exceed the annual de minimis levels for criteria pollutants under general conformity (Section 4.9.4 of the RBDM EIS)"

6.1.5.3 Cultural Resources

No Action Alternative
The No Action or No-Build Alternative was assessed in relation to the project's purpose and need. Under this scenario, no measures would be implemented to address future flood risks, which are anticipated to worsen due to relative sea level rise. As a result, this alternative would leave existing aesthetic, visual, historical, and cultural resources vulnerable to damage. Cultural resources within the study area face the risk of deterioration or destruction from coastal flooding and sea-level rise

Action Alternative
The construction activities associated with the East Riser Alternative—including channel modifications, culvert replacements, and the replacement of a railroad bridge, are expected to result in low adverse effects on cultural resources. The Area of Potential Effect (APE) is primarily confined to existing roadways, paved surfaces, and previously disturbed corridors such as road shoulders and graded embankments, which significantly limits the likelihood of encountering intact archaeological deposits. Based on background research, historic maps, and aerial photographs, both prehistoric and historic archaeological sensitivity within the APE is low. The most sensitive areas are those near map-documented buildings, which may warrant monitoring during construction. Additionally, one historic district (the Vanguard Associates Mobile Home Park) is located within 300 meters of the APE, but is not directly affected. Therefore, while potential impacts are limited, minor adverse effects could result from construction near previously undocumented or poorly mapped cultural features.

6.1.5.4 Hazardous, Toxic, Radioactive Waste

No Action Alternative
The no action is anticipated to continue to have the surrounding area vulnerable to coastal flood risk and damages. Storm damage to a significantly urbanized area, such as the Hackensack/Passaic Planning Region, can cause new releases of petroleum and/or hazardous substances, further spread historical contaminated soils and sediment, increase potential risk of exposure, and extend time and increase costs for addressing HTRW sites. Although the no action would continue from the existing condition trajectory, frequency of storms and severity of storms may increase over time, as may RSLC.

Action Alternative
Any intrusive subsurface work associated implementation of the proposed project has the potential to disturb soil/sediment that could be contaminated with HTRW. Should contaminated soil/sediment be disturbed, there could be increased risk to human health and the environment. However, a subsurface planning investigation would be conducted during the PED phase to further characterize the subsurface conditions. This investigation will inform any potential HTRW risks associated with construction and implementation of the proposed project and ensure there are not HTRW concerns in any areas where the subsurface may be disturbed. As per Engineer Regulation 1165-2-132, HTRW collocated within the proposed measure footprints must be avoided where feasible, and where they cannot be avoided, those sites must be remediated at 100% nonfederal cost prior to construction. Best management practices will be employed during project implementation to ensure the construction is conducted in a manner that is protective of human health and the environment and that any handling of subsurface materials is in compliance with applicable regulatory requirements.

6.1.5.5 Noise and Vibration

No Action Alternative
As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the No Action alternative, no construction for flood reduction measures would occur that would result in an increase in noise levels. In the long term, the risk of flooding would not be reduced. Construction activities to repair flood damage would temporarily increase noise levels in the immediate vicinity of the work. Any construction activities that may occur would be required to comply with local construction noise ordinances. Therefore, over the long term, there would be minor, reoccurring, short-term adverse noise impacts because the continued risk of flooding would periodically generate associated construction noise from repairs."

Action Alternative
As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"Under the Proposed Action, construction activities would temporarily increase noise levels in the project vicinity but would conform to the local noise ordinances for the time of day that construction noise is allowed. As described in the RBDM EIS, work would occur during normal waking hours from 7:00 a.m. to 4:00 p.m., which is more restrictive than local ordinances, and the construction schedule would be communicated to the public (NJDEP 2018b). Noise barriers would be placed between construction activities and sensitive receptors and the quietest practicable construction methods and equipment would be used. Stationary equipment, such as generators and compressors, would be enclosed and vehicle idling would be limited (NJDEP 2018b). Noise complaint and response procedures would be established (NJDEP 2018b). Hence, there would be a minor short-term increase in noise levels during construction."

6.1.5.6 Socioeconomics and Demographics

No Action Alternative
No adverse effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages, and existing conditions for noise and vibrations would remain unchanged.

Action Alternative
The project would create temporary construction-related noise and vibration from heavy diesel-powered machinery to excavate, grade, and clear the site. Noise and vibrations would be largely on land, with some localized disturbance during construction of the channel, railroad bridge replacement, and riprap placement. Construction fencing would restrict access to the work area during construction, until construction is complete.

Best management practices will be utilized to reduce the effects of noise and vibration on surrounding communities, such as local noise ordinance construction windows and environmental windows.

6.1.6 Beneficial Effects Summary

6.1.6.1 Physical and Hydrological Resources

No Action Alternative
No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages.

Action Alternative
As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

Overall, the Proposed Action would reduce the frequency of flood events in the project area, resulting in a reduced potential for soil erosion in the long term. Because most of the project area is currently developed, the magnitude of this beneficial effect would be small. Therefore, the Proposed Action would have a long-term, negligible beneficial impact on soils and no effect on topography."

"The Proposed Action would reduce the frequency of severe flood events in the project vicinity, resulting in a long-term, moderate, beneficial impact on surface water flow, quality, [urban runoff load], and sediment… transport downstream by decreasing stormwater and [urban runoff] pollutant loading. In the event of a flood, floodwaters would inundate a smaller area and would therefore be less likely to transport [urban runoff] pollutants such as oils, fuels, and sewage from the surface into the channel. The ERD channel improvements and installation of the pump station would increase stormwater conveyance capacity, thereby reducing the frequency of flooding events upstream."

6.1.6.2 Water Quality and Air Quality

No Action Alternative
No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages.

Action Alternative
As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The Proposed Action would reduce the frequency of severe flood events in the project vicinity, resulting in a long-term, moderate, beneficial impact on surface water flow, quality, [urban runoff load], and sediment… transport downstream by decreasing stormwater and [urban runoff] pollutant loading. In the event of a flood, floodwaters would inundate a smaller area and would therefore be less likely to transport [urban runoff] pollutants such as oils, fuels, and sewage from the surface into the channel. The ERD channel improvements and installation of the pump station would increase stormwater conveyance capacity, thereby reducing the frequency of flooding events upstream."

"There would be a negligible, long-term, beneficial impact from the reduced risk of flooding that would avoid flood-related emissions from roadway detours and the use of construction equipment for repairs."

6.1.6.3 Cultural Resources

No Action Alternative
No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding score of 0.

Action Alternative
Despite its low overall sensitivity, the East Riser Alternative presents opportunities for beneficial effects on cultural resource management. The project footprint's location in previously disturbed areas provides a high potential for avoiding significant archaeological resources through informed design and targeted monitoring. If implemented, cultural resource protection measures (such as archaeological monitoring near map-documented buildings or pre-construction survey in less-disturbed sections) would support compliance with Section 106 of the National Historic Preservation Act (NHPA), enhancing preservation planning without major changes to the project. These activities contribute to long-term cultural resource stewardship and help document areas with little prior survey coverage, and work occurs within already disturbed corridors with minimal changes to the surrounding setting and character. Additionally, no long-term or operational effects on cultural resources are anticipated following construction, ensuring continued preservation of nearby historic properties such as the Vanguard Associates Mobile Home Park.

Viewshed. The measures included in the study will enhance existing viewscapes, depending on location and scale. Construction of nature based measures may positively affect scenic byways, improve existing residential views, and/or increase access to historic coastal sites (USACE 2019). Aesthetic valuation, a judgement of value based on appearance of an object and emotional responses, of the public is ongoing and will be updated as stakeholder input is aggregated, but was not used to determine the preliminary impact rating.

Measures proposed for the AE will not involve the construction of structures that have a potential to indirectly affect historic properties, there are no historic properties impacted by the Action Alternative, and will not alter the visible environment (i.e., setting) of those resources. For this study, the visual impact study area (Indirect APE) includes those places within one mile (1.6 km) of proposed measures for the alternative that are in the potential viewshed (based on topography). This Visual Impact Area, or Zone of Visual Influence (ZVI), primarily encompasses parts of the New Jersey Hackensack Meadowlands District.

6.1.6.4 Hazardous, Toxic, Radioactive Waste

No Action Alternative
No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages.

Action Alternative
Direct beneficial effects from construction include a cleaner East Riser Ditch with decreased concentrations of any contaminants in the sediment and reduced CSRM flooding to the surrounding area. With reduced CSRM flooding risk, there would be less risk of severe storm damage to the surrounding urbanized area and less risk of petroleum and/or hazardous substances release, spread of historical contaminated soils and sediment, HTRW exposure, and delays and cost increases for addressing HTRW sites.

6.1.6.5 Noise and Vibration

No Action Alternative
No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages, and existing conditions for noise and vibrations would remain unchanged.

Action Alternative

As excerpted from the September 2022 New Jersey Meadowlands East Riser Ditch Pumping Station and Channel Improvements project:

"The risk of flooding would be reduced, thereby reducing occasional increases in noise from flood-related repairs. Accordingly, the Proposed Action would have a negligible, long-term, beneficial impact on noise levels."

6.1.6.6 Socioeconomics and Demographics

No Action Alternative
No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages.

Action Alternative
Beneficial effects would be anticipated from the reduced flood prevalence in the community that effect access to residences, roads, and business operations.

6.2 ENVIRONMENTAL QUALITY MAIN REPORT SUMMARY TABLES

To review and compare the Actionable Elements Alternatives for environmental acceptability, the individual resource impact assessment rating scores generated and presented in Appendix A were combined into broader resource categories and reviewed in two ways: first the resources were averaged together to identify the mean of adverse and beneficial effects, and second, the highest adverse and beneficial effect were escalated for each category to establish the upper limit of anticipated effects.

The results of those calculations are considered in three forms: an impact rating showing the "initial" or "unmitigated" impact of the construction and footprint, the operations and maintenance assumptions ratings, and the mitigated impact rating.

Potential adverse effects were rated on a scale of "0" to "5" with "0" representing No Adverse Effect and "5" representing High (significant) Adverse Effects that would be environmentally unacceptable. Likewise, potential beneficial effects were rated on a scale of "0" to "5" with "0" representing No Beneficial Effect, and "5" representing High (significant) Beneficial Effects that would be regionally and nationally significant.

The following general findings are based on the environmental analysis conducted and presented in Appendix A for each of the Actionable Element Sites. General findings of the Interim Response Alternative comparison are presented below for each Actionable Element Site. Where noted, resources were combined into overarching resource categories of which they relate, such as Wildlife and Vegetation which includes the averaged scores of Wildlife, Fish, Terrestrial Vegetation, Submerged Aquatic Vegetation (if applicable), and Invasive and Aquatic Nuisance Species. This was done in order to provide a high-level comparison of the Actionable Element Alternatives for Environmental Acceptability. Refer to Table 7 for the definitions to support impact rating tables to identify which resources were combined into one overarching resource category.

Table : Definitions of Resource Categories to Support Effects Rating Tables

A	Wildlife and Vegetation Category	=	Wildlife, Fish, Migratory Fish, Terrestrial Vegetation, Submerged Aquatic Vegetation, Invasive and Aquatic Nuisance Species

B	Special Status Species (Terrestrial)	=	Threatened and Endangered Species (terrestrial), Migratory Bird Treaty Act and Bald and Golden Eagle Act Species
C	Special Status Species (Aquatic)	=	Threatened and Endangered Species (aquatic), Marine Mammal Protection Act Species, Sea Turtles, Essential Fish Habitat, Migratory Fish, Special Status Fisheries
D	Special Status Areas	=	Wetlands, Floodplains, Wild and Scenic Rivers, Designated Critical Habitat, Critical Environmental Areas (State), Marine Protected Areas, Coastal Zone Management Act Areas, Coastal Barrier Resources System Areas, NPS Land, Wildlife Refuge Land
E	Physical Resources	=	Topography and Geology, Surface Waters, Sediment, Land Use
F	Hydrological Resources	=	Bathymetry; Inland Hydrology; Coastal Hydrology, Currents, and Circulation; Tides, Tidal Exchange, and Tidal Range; Sediment Transport
G	Cultural Resources	=	Historic Structures, Viewshed/Historic Setting, Terrestrial Archaeological Resources, Submerged Archaeological Resources

Average Adverse and Beneficial Effect Scores of Resource Categories

EAST RISER Qualitative Rating Total Scores (calculated, with mitigation if applicable)	NO ACTION SCORE	ACTION SCORE
NATURAL AND PHYSICAL ENVIRONMENT		
Wildlife and Vegetation[A]	**-1**	**-0.25**
Special Status Species (Terrestrial)[B]	**-1**	**0**
Special Status Species (Aquatic)[C]	**-1**	**0**
Special Status Areas[D]	**-1**	**+1.66**
Commercial and Recreational Fishing	**N/A**	**N/A**
Physical Resources[E]	**-1.5**	**+0.75**
Hydrological Resources[F]	**-0.5**	**+1**
Water Quality	**-3**	**+2**
Air Quality	**-1**	**0**
Climate and Relative Sea Level Change	**-2**	**0**
Cultural Resources[G]	**-0.5**	**0.5**
Native American Land	**N/A**	**N/A**
Hazardous, Toxic, and Radioactive Waste	**-1**	**+1**
Navigation	**N/A**	**N/A**
Noise and Vibration	**-1**	**0**
Socioeconomics and Demographics	**NS**	**NS**
Subtotal Scores (additive for calculation)	*-14.5*	*6.66*
TOTAL SCORE AVERAGED (calculated, additive and averaged):	**-1.20**	**+0.55**

Highest Adverse Effect Scores, Escalated

EAST RISER Qualitative Rating Total Scores (calculated, with mitigation if applicable)	NO ACTION SCORE	ACTION SCORE
NATURAL AND PHYSICAL ENVIRONMENT		
Wildlife and Vegetation[A]	**-1**	**-1**
Special Status Species (Terrestrial)[B]	**-1**	**-1**
Special Status Species (Aquatic)[C]	**-1**	**-1**
Special Status Areas[D]	**-1**	**-1**
Commercial and Recreational Fishing	**N/A**	**N/A**
Physical Resources[E]	**-3**	**-1**
Hydrological Resources[F]	**-1**	**-1**
Water Quality	**-3**	**-1**
Air Quality	**-1**	**-1**
Climate and Relative Sea Level Change	**-2**	**-1**
Cultural Resources[G]	**-1**	**-1**
Native American Land	**N/A**	**N/A**
Hazardous, Toxic, and Radioactive Waste	**-1**	**-1**
Navigation	**N/A**	**N/A**
Noise and Vibration	**-1**	**-1**
Socioeconomics and Demographics	**NS**	**NS**
Subtotal Scores (additive for comparison purposes)	*-17*	*-12*
TOTAL SCORE HIGHEST ESCALATED:	**-3**	**-1**

Highest Beneficial Effect Scores, Escalated

EAST RISER Qualitative Rating Total Scores (calculated, with mitigation if applicable)	NO ACTION SCORE	ACTION SCORE
NATURAL AND PHYSICAL ENVIRONMENT		
Wildlife and Vegetation[A]	**0**	**+1**
Special Status Species (Terrestrial)[B]	**0**	**+1**
Special Status Species (Aquatic)[C]	**0**	**+1**
Special Status Areas[D]	**0**	**+3**
Commercial and Recreational Fishing	**N/A**	**N/A**
Physical Resources[E]	**0**	**+3**
Hydrological Resources[F]	**0**	**+3**
Water Quality	**0**	**+3**
Air Quality	**0**	**+1**
Climate and Relative Sea Level Change	**0**	**+1**
Cultural Resources[G]	**0**	**+1**
Native American Land	**N/A**	**N/A**
Hazardous, Toxic, and Radioactive Waste	**0**	**+2**
Navigation	**N/A**	**N/A**
Noise and Vibration	**0**	**+1**
Socioeconomics and Demographics	**NS**	**NS**
Subtotal Scores (additive for comparison purposes)	*0*	*21*
TOTAL SCORE HIGHEST ESCALATED:	**0**	**+3**

Qualitatively, the No Action and Action Alternative are anticipated to have potential adverse effects, while the Action Alternative also anticipates potential beneficial effects, depending on resource and existing conditions present at this Actionable Element Site. As gathered from the Individual Resource scorecards presented in Appendix A that have been combined into Resource Categories and presented on the tables above, the Action Alternative adverse effects range from no to low ("0" to "-1") for the vast majority of resources present, and beneficial effects range from no to moderate ("0" to "+3"). As shown on the tables above, the net Average Adverse and Beneficial Effect score combined for the No Action exhibits an overall "-1.20" which would be equivalent by definition as "low" adverse effect when considering all resources adverse effects and benefits equally, while the Action Alternative exhibits an overall "+0.55" which would be equivalent by definition as "low"

beneficial effect when consideration all resources adverse and beneficial effects equally. In some instances, where noted, best management practices and/or mitigation is appropriate to maintain low adverse effects.

In further comparison, the No Action's highest adverse impact anticipated is moderate or "-3" and its highest anticipated beneficial effect is no or "0", while the Action's highest adverse impact anticipated is low or "-1", while its highest anticipated beneficial effect is moderate or "+3". The majority, if not all, of the adverse effects are derived from construction related effects and anticipated to be temporary and manageable thorough avoidance and best management practices. The beneficial effects are qualitatively derivative from the flood reduction and relevant improved condition of the conveyance of storm water to the pump station, and reduced adverse effects of existing condition.

This comparative assessment, informed by the individual resource scorecards presented in this Appendix A, and the Natural and Physical Environment scorecards presented in the Effects and Consequences Section of the Main Report, support the decision making process for the EQ account by presenting a qualitative side by side comparison of the Alternatives net average score, highest adverse effect score, and highest benefit score to further understand the nuances of the Action versus the No Action, as well as determine the environmentally preferred alternative, which would largely be considered as the alternative with the greatest benefits, lowest tolerable adverse effects, and net positive outcome that is more favorable than the other alternatives considered.

In this instance, the Action Alternative presents both the most favorable average score, as well as the highest escalated benefit score, with adverse effects that are no greater than -1, or low adverse effect.

7 LIST OF PREPARERS AND CONTRIBUTORS

Cheryl R. Alkemeyer, PMP, ENV SP, Physical Scientist, U.S. Army Corps of Engineers, New York District

Matt Voisine, Biologist, U.S. Army Corps of Engineers, New York District

Ryan Constantine, Archaeologist, U.S. Army Corps of Engineers, New York District

John Sulich, P.E., Environmental Engineer, U.S. Army Corps of Engineers, New York District

Jesse L. Miller, Biologist, U.S. Army Corps of Engineers, New York District

Carissa Scarpa, Chief Watershed Section, Environmental Analysis Branch, U.S. Army Corps of Engineers, New York District

Peter M. Weppler, Chief Environmental Analyses Branch, U.S. Army Corps of Engineers, New York District

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