Appendix G

Project Correspondence

United States Department of the Interior

NATIONAL PARK SERVICE
Gateway National Recreation Area
210 New York Avenue
Staten Island, N.Y. 10305-5019

IN REPLY REFER TO:

L76 (GATE-S)

May 26, 2015

Mr. Peter M. Weppler
Chief, Environmental Analysis Branch
Department of the Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, New York 10278-0090

Dear Mr. Weppler:

Thank you for your response to our comments dated April 9, 2015 and for the opportunity for pre-public review of how those responses were incorporated into the South Shore of Staten Island Coastal Storm Damage Reduction Project Draft Environmental Impact Statement (DEIS) and Feasibility Study (FS).

We appreciate expansion of the DEIS and FS to provide sub alternatives for the alignment of the line of protection at Miller Field as well as additional text to address impacts to cultural, natural and recreational resources within Gateway National Recreation Area (GNRA). I have enclosed a matrix that cross walks our April 9, 2015 comments (column A), your May 8, 2015 responses (column B), and corresponding revisions to the pre-public DEIS and FS (columns D and E, respectively). Column C of the matrix provides more detailed comments and assessments regarding USACE responses and revisions to DEIS and FS.

Thank you for your consideration of the enclosed comments (column C on the attachment). We are committed to working with USACE to realize a project that manages storm risks, improves public safety, and protects the resources and visitor experiences of GNRA. If you have any questions or require additional information regarding the enclosed comments, please contact me at jen_nersesian@nps.gov or 718-354-4665.

Sincerely,

Jennifer T. Nersesian
Superintendent

Matrix for NPS cross check for USACE responses and DEIS and Feasibility Study revisions

26-May-15

NPS Comment	USACE Response	NPS Document Review	DEIS Pages pdf pagination (report pagination) references USACE track change document	Feasibility Study pdf pagination (report pagination) - references USACE track change document
1. EIS Scope and Process				
We have identified two issues related to Gateway NRA that are missing from the analysis presented in the draft EIS: the alignment of the seawall at Miller Field (either landward or seaward of the hangar), and the location of the multi-use path at Miller Field (on top of the seawall or at ground level). We request that these be addressed in separate alternatives in the EIS analysis in order to fully compare the impacts that the proposed actions will have, adequately weigh the trade-offs among conflicting management goals, and allow for public input into the decision. We are sensitive to the need to keep this project on schedule, so if the timing is such that this analysis is not ready to be released to the public with the draft EIS, a supplemental analysis could be released at a later date as long as it has the opportunity to be publicly vetted and is included in the final decision document for the overall project.	The alignment of the seawall at Miller Field (either landward, seaward of or through the hanger) and the multi-use path at Miller field (on top of the seawall or at ground level) will be described in the draft EIS as sub-alternatives specific to Miller Field.	DEIS provides sub alternatives for LOP alignment and location of multi-use path; presentation of sub alternatives is pre-decisional and allows for public input into the decision as requested; Miller Field dune is not manmade (please see comments in cell C19).	62-63 (2-27 to 2-28); 167 (4-3); 171 (4-7); 173-174 (4-9 to 4-10); 187 (4-11); 188 (4-12); 193 (4-17); 199 (4-23); 201-204 (4-25 to 4-28); 206 (4-30); 209-210 (4-33 to 4-34); 219 (4-43); 223 (4-47); 224 (4-48); 229 (4-53); 230 (4-54); 235 (4-59);	
2. Natural Resources				
Overall we believe the EIS needs more in-depth evaluation of the impacts to natural resources. In particular, we are requesting additional analysis of impacts to the berm and dune system at Miller Field as well as erosional impacts along the entire shoreline. We also request incorporation of appropriate mitigation for likely impacts.	The draft EIS will present additional details to evaluation impacts to the berm and dune at Miller Field. Text will be added to the Feasibility Study as well as to the EIS to address any potential erosional impacts along the shoreline. Additionally, the USACE is committed to working with NPS to avoid and minimize impacts in the Gateway NRA while still providing the coastal storm risk management needed for SSSI. Any mitigation commitments will be identified in the EIS Record of Decision.	DEIS provides revised text that addresses shoreline change in a general sense throughout the project area. DEIS and Feasibility Study do not provide additional details to evaluate impacts to the berm and dune at Miller Field. These details may be provided in revisions to the SSSI Engineering Appendix; however, USACE did not provide a revision of that document (document with that name was a replicate of Attachment E - Plan Sheets.	21-22 (1-11 to 1-12);	
a. Erosional Impacts				
We request that the analysis be revised to incorporate the issues detailed below. We believe there is a high probability of impacts from the loss of sediment transport, and that mitigation should be included in the form of periodic sediment nourishment along the shoreline, with particular attention to Great Kills.	Text will be added to the Feasibility Study as well as to the EIS to address any potential erosional impacts along the shoreline.	Additional text was provided but no additional analysis or mitigation was provided in DEIS or Feasibility Study. This analysis may have been provided in revisions to the SSSI Engineering Appendix; however, USACE did not provide a revision of that document (document with that name was a replicate of Attachment E - Plan Sheets.	188 (4-12); 89 (3-16); 209 (4-33); 21-22 (1-11 to 1-12)	210-211 (9-4 to 9-5)

NPS Comment	USACE Response	NPS Document Review	DEIS Pages pdf pagination (report pagination) references USACE track change document	Feasibility Study pdf pagination (report pagination) - references USACE track change document
Construction of an engineered line of protection from Fort Wadsworth to Great Kills in conjunction with existing and planned groin and groin-like features (sewage discharge pipes) has a high probability of further depleting westward transport of sediment in an already sediment starved system. Reduction of sediment within cells R2, R3 and R5 of the historical sediment budget (Figure 2.3 page 13 of Appendix A: Engineering and Design) would directly impact park resources. Sediment transport through cells R2 and R3 directly impact dune and berm development at Miller Field. Sediment transport to and through cell R5 impacts Great Kills. Over the entire project length, Operations and Maintenance estimates loss of 5% of 135,000 cy annually and an annual nourishment cost for replacement of that sand at $337,000 (p 7-7 South Shore of Staten Island, New York Coastal Storm Risk Management Interim Feasibility Study for Fort Wadsworth to Oakwood Beach Draft Main Rep01i, November 2014). Current annual loss from system is 46,000 cy (Figure 2.3 page 13 of Appendix A: Engineering and Design).		Feasibility Study provides new text to indicate that project shoreline is stable and concludes that additional beach nourishment would disrupt this stability, increase alongshore transport, and make it difficult to maintain designed shorelines. This response does not address NPS comment. This comment references Appendix A; however, USACE did not provide a revision of that document (document with that name was a replicate of Attachment E - Plan Sheets).		126-127 (6-33 to 3-34)
In addition, impacts to sediment budget by existing New York City beach management practices is not identified within the sediment budget or estimates for annual sediment nourishment within project O&M. Please include this in the analysis.		Not addressed in revised DEIS or Feasibility Study.		
We also note that no analysis of how climate change may impact sediment transport processes is provided within the repo1i or appendices, and request its inclusion.		Revisions to DEIS and Feasibility Study do not adequately address this comment. DEIS indicates that if long-term beach erosion rates are affected by climate variability, the beach maintenance/restoration activities would be based on a future decision document. The Feasibility Study indicates that under current sea level conditions risk of flooding will be reduced from 5% to below 0.4 % per year but does not indicate how flooding risks will be reduced throughout 50 year project life span under projected climate change. Feasibility study also indicates a sensitivity analysis to SLR is provided in section 9.2 of the DEIS; however, that section was not provided for review.	188 (4-12)	54 (3-4); 197 (7-33)

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It is not clear that evaluation of the NED plan fully accounts for the impacts of sand loss from the Line of Protection during future storm events. A buried seawall should not impact shoreline processes. However, if sediments in front of the seawall are eroded and the seawall is exposed, shoreline processes would be significantly impacted by an exposed seawall. We request that this be evaluated in the analysis. We note that the economic analysis accounts for substantial storm damage reduction within the project area. To justify the economic analysis, the project area, and thus the Line of Protection, must be assumed to withstand numerous severe storm events during the 50 year project lifespan. The EIS and Appendices do not specify assumptions regarding frequency or intensity of storms used to justify project cost benefits. Appendix A (p 60) indicates that "In general the with-project coastal impacts are minor for the proposed line of protection since the majority of the proposed structures are set back from the shoreline and will only be exposed to nearshore wave processes during extreme storm events. The With Project storm induced erosion results indicate the structures have a minor impact on the profile change during storm events." No detailed analysis of with project shoreline recession and dune/beach recession is presented within the EIS or Appendices. Appendix A (Tables 3-3 and 3-4, p 33) presents without-project shoreline recession and dune/berm recession. At Miller Field, recession rates for storm return periods of2-500 years fall within range of 13-16 feet and 0-12 feet for shoreline and dune/berm, respectively. Recession rates are greater in other project reaches. If the LOP will only have minor impact on profile change during storm events, it follows that recession rates presented in Tables 3-3 and 3-4 should approximate with-project conditions. We request more information be presented in the EIS so that we may understand the assumptions regarding storm frequency and intensity during 50 year project lifespan; otherwise it is not possible to evaluate shoreline and dune/berm recession over the project lifespan to determine likelihood that part or all of the seawall will be exposed during the 50 year project.		Revisions to DEIS and Feasibility Study do not address this comment. DEIS states LOP will be subject to storm induced wave and water levels for 25 year storm event or greater; with project coastal impacts are stated as minor. Projected frequency of storms greater than a 25 year event were necessarily generated for USACE to estimate with project economic benefits. Projected frequency of storms greater that a 25 year event should be used to project dune/beach recession.	187 (4-11); 188 (4-12)	
		Revisions to DEIS and Feasibility Study do not address this comment. DEIS states LOP will be subject to storm induced wave and water levels for 25 year storm event or greater; with project coastal impacts are stated as minor. Projected frequency of storms greater than a 25 year event were necessarily generated for USACE to estimate with project economic benefits. Projected frequency of storms greater that a 25 year event should be used to project dune/beach recession. Direct and indirect (impacts on sediment supply due to dune/beach recession up drift)impacts at Miller Field should be evaluated. Indirect impacts at Great Kills (see line 16 of this spreadsheet) should be evaluated.	187 (4-11)	

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We have concerns for management of the shoreline that extend beyond the 50-year project lifespan; specifically, that without a program of beach and dune nourishment, the buried seawall will become exposed at some time in the future which will greatly alter the sediment budget and sediment transport processes. An exposed seawall is likely to severely decrease sediment transport to Miller Field which may result in erosion of the beach and dune. Great Kills is currently sediment starved due to existing shoreline structures. Reduction in sediment transport will exacerbate erosion and further impact Gateway NRA resources. Understanding that the EIS analysis focuses on a more limited project lifespan, we would still like to gain a better sense of the long-term implications since we will be responsible for this area far into the future.				
The NPS is also interested in understanding more about how the proposed structures will impact Great Kills Park water flow/drainage during future rain events and coastal storm events. We request that the EIS include an analysis of		Not addressed in revised DEIS or Feasibility Study.		
		Not addressed in revised DEIS or Feasibility Study.		
The best examples of "natural" coastal dune systems on Staten Island are at Crooke's Point and Miller Field. Construction of a buried sea wall on the existing sand dunes at Miller Field will replace this natural resource feature. This will also have additional adverse impacts on other specific natural resources, as described in the subheadings below. For this reason we believe that a thorough analysis of natural resource impacts and appropriate mitigation should be included in the EIS. Mitigation proposed should offset the disruption of beach-dune ecosystem functions, especially where they interface with coastal maritime plant communities, such as those existing at Crooke's Point. Ecosystem restoration (removal of invasive exotic vegetation with restoration of native vegetational communities) at Crooke's Point would be one recommendation for such an offset. Construction of a sustainable saltmarsh/beach-dune complex at the erosional zone of Great Kills may be another viable mitigative measure to replace coastal maritime habitats lost along the shoreline affected by the buried sea wall. We are happy to work with your office to identify the appropriate mitigation strategy.	The draft EIS will cite the NPS Gateway General Management Plan to present additional detail as well as impacts (for each sub-alternative, landward seaward or through the Hanger) to the existing dune at Miller Field. The dune at Miller Field has been actively managed by NPS, including re-contouring the slopes to minimize sand moving onto the adjacent parking lot the additions of plantings (most recently Ammophila breviligulata) to attempt to stabilize the sand). USACE's NED plan includes covering the slopes of the line of protection (LOP) with the excavated material (sand) and via coordination with the USFWS, the plan will also include planting native dune grass on the slopes. Existing dune habitat at Miller Field will be disturbed if the LOP seaward of the hanger sub-alternative is constructed; however this habitat will reestablish after construction is complete. In addition, USACE will be constructing a continuous line of dune habitat along the entire line of protection, a total of approximately 21 acres of dune habitat creation.	A circa 1924 photograph of the Vanderbilt estate and military hangar at Miller Field shows naturally vegetated dunes. The vegetated area was less than one-third of the present vegetated area, but it is likely that more area was above full moon tide and that intensive use of the dunes and beach reduced the vegetated area. Miller Field dune is not manmade. While development of dunes at Miller Field has benefited from groins and up drift nourishment; since 1972, NPS has not artificially constructed dunes or performed any other re-contouring of the beach-dune ecosystem. NPS management has encouraged natural dune development. Superstorm Sandy washed a gully in the intertidal zone in the southwest end of the beach and carried that sand onto the dunes and inland side of the dunes. Post Sandy, earth haulers returned sand from the inland deposits to the gullied area in the intertidal zone. Since Sandy, windblown sand has been slowly augmenting the dune elevation. Recent planting are aimed at restoring native vegetation as well as dune stabilization.		
i Natural Processes				

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The identified placement of the buried seawall through the existing dune is generally inconsistent with NPS policies for managing natural systems because it transforms a dynamic feature that is formed and morphed by coastal processes into a static engineered feature. Current management provides for future management altematives, such as strategic retreat, to allow for dune migration. Construction of an engineered seawall through the current dune alignment is essentially an management decision that artificially fixes the location of the dune and berm system. The EIS does not adequately consider natural resource impacts of replacing a dynamic shoreline with a fixed engineered structure within the context of a national park.	The draft EIS will cite the NPS Gateway General Management Plan to present any additional detail as well as impacts (for each sub-alternative) to the existing dune at Miller Field. The LOP is a fixed engineered structure, however, the existing dune at Miller Field is manmade and has been managed by NPS, including the addition of plantings.	Miller Field dune is not manmade. Please refer to comment in cell C19.		
ii Vegetation This alignment of the buried seawall will eliminate a sand dune plant community that colonized the site more than half a century ago. The NPS has undertaken substantial ecological restoration efforts on the dunes (removal of tens of thousands of non-native plants) since 2011, as well as post-Sandy reconstruction that includes about 30,000 grass stems and nearly 2,000 shrubs and trees. The new construction will replace compacted and root-stabilized sand. The existing sand dune crest at Miller Field beach is approximately I0.0 to 12.5 feet NAVD (compared with the NYC berms of 14 feet NAVD on either side of Miller Field). The multi-use path on the inland side of the dunes has an elevation of about 8.0 feet NAVD. These NPS dunes cover an area of approximately 1785 feet by 170 feet, or 7 acres. We request that the EIS include mitigation for these impacts in the form of planting efforts on the buried seawall with an intense and species-rich revegetation plan in order to rapidly re-establish native maritime plant and animal communities.	See response above in Section 2 regarding mitigation. USACE will include native planning efforts on the buried seawall and is in coordination with USFWS regarding the species. USACE would also welcome NPS input on planting efforts, including species list.	NPS will work with USACE to develop an appropriate species list for planting at Miller Field. Based on NPS (GIS data), the acreage of the current dune habitat is 7.3 acres. The NPS requests clarification of the engineering calculations made to determine the acreage of beach–dune habitat created as a result of the LOP construction. NPS will work with USACE to develop an appropriate species list for planting at Miller Field.		

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If the promenade is located on top of the dune rather than alongside it, this will constitute an additional loss of available habitat. This should be factored into the impacts analysis.	The EIS will add detail regarding the potential impacts of disturbing the existing dune for the sub-alternatives in which the LOP is constructed seaward of the hanger and/or the multi-use path at Miller field is on top of the seawall. In this scenario, a boardwalk (replacement of multi-use path) will be located at the top of the line of protection and habitat in this location will not be reestablished after construction is complete. However, USACE will be constructing a continuous line of dune habitat along the entire LOP, a total of approximately 21 acres of dune habitat creation. This habitat creation is greater than the amount that will be impacted because of the boardwalk on top of the LOP.	The NPS requests clarification of the engineering calculations made to determine the acreage of beach–dune habitat created as a result of the LOP construction.		
Long-term disruption to sediment transport and the resulting increased erosion could also lead to the loss of the oceanside saltmarsh at Great Kills. Again, we request that this be evaluated in the impacts analysis.	Text will be added to the Feasibility Study as well as to the EIS to address any potential erosional impacts along the shoreline.	General text regarding erosion added; however NPS comment was not addressed in DESI.	89 (3-16); 209 (4-33); 21-22 (1-11 to 1-12)	
iii. Fauna				
We request that the EIS analyze potential impacts to fauna, including a projection and timeline for the reestablishment of habitat and the wildlife it supports. Such impacts may include: how the loss of the Miller Field dune system may deprive this area of habitat for native pollinators and migratory passerines during construction and re-vegetation as the new system gets established	The EIS will add detail to consider the impacts of temporary habitat entire LOP, a total of approximately 21 acres of dune habitat creation. loss as the dune at Miller Field is disturbed during construction. This habitat will reestablish and USACE will be constructing a continuous line of dune habitat along the	No additional analysis provided in revised DEIS; NPS will work with USACE to develop an appropriate species list for planting at Miller Field.		
the cumulative impacts of erosion of the remaining beach over time on nesting habitat for Horseshoe Crabs, feeding and resting habitat for shorebirds, and habitat needed for feeding and resting by migratory passerines and raptors.	Text will be added to the Feasibility Study as well as to the EIS to address any potential erosional impacts along the shoreline.	DEIS expanded to address listing of red knot; otherwise no additional analysis provided in revised DEIS.	113 (3-40)	
3. Cultural Resources				
We request a more thorough analysis of impacts to cultural resources be included in the EIS (such as on pages 2-34 and 4-41). Please note that compliance with Section 106 does not fulfill compliance with the analytic requirements of NEPA, which also includes cultural resources.	Additional analysis will be added to the EIS.	Additional analysis provided.	124-129 (3-51 to 3-56); 199-205 (4-23 to 4-29)	69-70 (3-19 to 3-20);

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Regardless of the alignment of the buried seawall, the project will have an unavoidable major adverse impact on the historic district at Miller Field. We are ready to assist if requested in describing the impacts, such as severing Hangar 38 from its seaplane context, driving sheet piling near the Hangar and Elm Tree Light, etc. We believe this will constitute a major adverse impact under NEPA and an adverse effect under Section 106. We are happy to work with your office and the SHPO to identify the appropriate mitigation strategy.	USACE, as stated in the EIS, concurs with NPS that there will be impacts to the Miller Field Historic District. We will continue to coordinate with NPS and SHPO to develop mitigation strategies.	DEIS acknowledges adverse impacts. NPS will continue to work with USACE and SHPO to identify appropriate mitigation strategies.	36 (2-1); 124 (3-51); 204-205 (4-28 to 4-29); 240 (4-64); 242 (4-66);	69-70 (3-19 to 3-20);
a. 1.5 Project Area Description The extent of the project area within the legislated boundaries of Gateway NRA and their National Register (NR) status should be clearly identified. For example, Lines 22 - 27 read as follows: "The shoreline in the Project area consists entirely of city-owned beaches and lands of the Gateway National Recreation Area (NRA), owned by the Federal government and administered by the former military installation, currently a historic site) at the northeast end of the Project area, Miller Field (a former Army airfield, currently a park with athletic fields) in the New Dorp Beach area, and Great Kills Park (an undeveloped natural area) southwest of Oakwood Beach." It should be noted that the project begins adjacent to the National Register Fort Wadsworth Historic District, runs through the Miller Field Historic District and to Great Kills, all units of Gateway NRA, a national park. Figure 1.3 should clearly identify NPS property. All three units are identified, but only Fort Wadsworth is indicated to be part of Gateway NRA. The reference to Fort Wadsworth lists it as a former military site, suggesting the history of the site; we request that this history and/or the impacts to Fm1Wadsworth be discussed in the EIS. Maps throughout the document should clearly identify Gateway NRA sites. The references to the sites should be consistent as well.	The draft FS and EIS will update figures to clearly identify Gateway NRA sites.	The text in this section is still unclear. Modification of Figure 1-3 to clearly show land owners and define names might provide greater clarity. Page 149 compounds the problem by showing an NPS map, but again referring to it as an NYC site.	21 (1-11); 149 (3-76)	
b. 3.1 Affected Environment The description of the South Beach area should clearly indicate that this begins at Fort Wadsworth and describe the topography at this location.	The draft EIS will update the description of the South Beach area per the comment above	Words "Fort Wadsworth" were added to text but no description of topography was added.	82 (3-9)	
c. 3.7 Cultural Resources The first lines of this section appear to discuss archaeological sites but it is not identified as such. The paragraph noted below begins with a discussion about historic structures but continues with the archaeology discussion, so should be clarified. Page 3-39 lines: "The only historic structures noted in the APE are at Miller Field. Although the Phase I study did not identify any Native American resources along the proposed alignment, the shoreline was determined sensitive for deeply buried sites (Panamerican 2005). The potential for deeply buried sites was corroborated by a geomorphological study conducted for the District's New York and New Jersey Harbor Navigation Project (Geoarchaeological Research Associates 2014). While this study's APE was offshore, it suggested that the south shore of Staten Island is moderately sensitive for now inundated or deeply buried shoreline sites."	Will edit.	Text was edited.	124 (3-51)	

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Page 40 - lines 24-43 discuss Miller Field. The hangar is identified as is the concrete fire tower. There is little information on the history or significance of Miller Field; Elm Tree Light and the apron are not identified at all. All are part of the historic district. The history of Miller Field should be included in the text, and all historic resources should be clearly identified.	The EIS will include additional details on the history and significance of Miller Field, the Elm Tree Light and the apron. The apron is mentioned already in the EIS on line 27. In reference to the apron, the USACE is not clear on the location and extent of it as the NRHP nomination form is vague about it, the GMP does not mention the apron at all and the GMP Figure 3-12, which outlines the historic district, depicts what is assumed to be the apron to the south of Hangar 38. It seems to make more sense that apron is to the north of the hangar.	Page 3.54 Line 10 - Suggest adding the phrased "Army Airfield" after Miller Field. Please strike the reference to the GMP Map in the text and the discussion about the gravel parking lot. Please revise the text to indicate that the concrete apron was determined to be eligible by NY SHPO.	127-129 (3-54 to 3-56); 199 (4-23); 200 (4-24)	
In this section there is no discussion about Fort Wadsworth and its historic structures, although Fort Wadsworth is discussed under many other headings in the text. Given that Fort Wadsworth is discussed and identified, a description of the site should be included and the impact if any should be discussed in 4.0. There is also no discussion about Great Kills, and although this is not a historic district, there are archaeology sites. These sites are outside of the APE, but the fact that they exist and are outside of the APE should be noted.	A discussion of Fort Wadsworth will be included in the EIS. The archaeological sites at Great Kills will be noted.	Comment addressed.	125-126 (3-51 to 3-52); 127 (3-56); 199 (4-23); 200 (4-24)	
We suggest that a map of each Gateway NRA area should be included and each area should be clearly described. A subheading titled "Gateway NRA" or a subheading for each site might be helpful.				
d. Consultation				
"In accordance with the NHPA, implementing regulations, and New York State laws, the District has been in consultation with the New York SHPO and has prepared a Programmatic Agreement (Appendix F), which describes the roles and responsibilities of all parties in complying with cultural resource requirements." Please add the NPS to this consultation. We will submit comments on the Programmatic Agreement separately.	This section will be removed as Consultation was included in Chapter 4 under “Section 106 Coordination” where coordination with NPS is already included. The comments on the Programmatic Agreement were received by email. Thank you.	Comment addressed.	204-205 (4-28 to 4-29);	
e. 4.7 Cultural Resources Environmental Consequences				
We concur with the process and impacts identified in the following statement: "The District would continue to work with the NPS to minimize and/or mitigate for impacts to the Miller Army Airfield Historic District. The District would also evaluate the NRHP-eligibility of the 1943 fire control tower. The proposed Project would sever the connection of Hangar No. 38, a seaplane hangar, from the sea, thereby impacting the setting of this historic district. Construction of the proposed alignment would require that the fire tower be demolished." Additionally we request that the analysis incorporate the visual impact as well as direct impacts on Miller Field's historic resources, including the hangar, Elm Tree Light and the apron. Given the proposed alignment within feet of the Hangar and virtually wrapping around the Elm Tree Light, we anticipate a major adverse impact.	The USACE will incorporate an analysis of the visual impact to the district as well potential for direct impacts. Renderings are being prepared for Miller Field.	Some images have been provided to date. NPS will continue to work with USACE regarding visual impacts.	204-205 (4-28 to 4-29); 240 (4-64); 242 (4-66); enclosure 2	

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We also request that an analysis of the impacts on Fort Wadsworth and Great Kills be included in the text, particularly in regards to the viewsheds.	The USACE will provide an analysis of impacts to the Fort Wadsworth Historic District and Great Kills and their viewsheds. Please see enclosed views from Fort Wadsworth (Attachment 1).	Some images have been provided to date. NPS will continue to work with USACE regarding visual impacts.	204-205 (4-28 to 4-29); 240 (4-64); 242 (4-66); enclosure 2	
f. Section 106 coordination As discussed during a recent call, NPS consults with 3 federally recognized tribes. Please add the Stockbridge Munsee tribe to this list.	USACE has since the phone call initiated consultation with the Stockbridge-Munsee.	Comment addressed.	204-205 (4-28 to 4-29)	
g. Tribal Consultation We would like to confirm whether USACE has initiated tribal consultation, and if so, whether this has been limited to submission of the draft Programmatic Agreement or has the USACE submitted (or will it submit) the draft EIS and/or archeological reports to the tribes for review. We request to be kept informed regarding the extent of tribal consultation the USACE has completed and plans to complete.	As per Section 4.7 of the EIS, the USACE has initiated tribal consultation. As per correspondence in the EIS, the USACE provided the tribes with the Draft Programmatic Agreement and a CD with the Phase I cultural resources report. As per the correspondence in the EIS, the Delaware Tribe concurred with the Phase I recommendations for deep testing. The Delaware Nation indicated that the USACE should continue with the project as planned. The tribes will be provided copies of the Draft EIS. The USACE will keep NPS informed of all future tribal consultation.	Comment addressed.	204-205 (4-28 to 4-29); 240 (4-64); 242 (4-66)	
h. 4.10 Aesthetics and Scenic Resources This section does not include any discussion of the impact on NPS resources. Impacts should include a discussion of the view sheds at Great Kills, Fort Wadsworth and Miller Field.	The draft EIS will be updated to include a discussion of impacts to NPS resources, including viewsheds at Great Kills, Fort Wadsworth and Miller Field. Images from Fort Wadsworth are enclosed (Enclosure 2). Renderings are being prepared for Miller Field.	Some images have been provided to date. NPS will continue to work with USACE regarding visual impacts.	200-204 (424-428); enclosure 2; 240 (4-64); 242 (4-66)	
Chart 4.5 Table 4-5. Summary Comparison of the No-Action Alternative a 1 and the NED Plan This chart indicates that the NED plan will have no additional impacts to cultural resources. As proposed, the construction of the wall will have an adverse impact at Miller Field, and may have visual impacts at Great Kills and Fort Wadsworth, pending analysis of these viewsheds as noted above.		DEIS acknowledges the adverse impact to the historic district at Miller Field. Some images have been provided to date. NPS will continue to work with USACE regarding visual impacts.	200-204 (424-428)	
4. Recreational Resources As a National Recreation Area, these resources are fundamental to our mission. If the buried seawall is located landward of Hangar 38 at Miller Field, there will be a loss of the recreational fields currently occupying that area. This should be considered as an adverse impact to the park. Mitigation measures should be specified an included as a part of the EIS analysis.	See response above in Section 2 regarding mitigation. The draft EIS will add analysis of impacts to portions of the recreational fields if the landward of the hanger sub-alternative is constructed.	Not addressed pending determination of LOP alignment at Miller Field.		

NPS Comment	USACE Response	NPS Document Review	DEIS Pages pdf pagination (report pagination) references USACE track change document	Feasibility Study pdf pagination (report pagination) - references USACE track change document
The buried seawall will also impede public access to the shoreline. We request that the EIS specifically state that public access to the waterfront will be provided, and include the impacts from the change in access in the analysis, including potential mitigation.	See response above in Section 2 regarding mitigation. USACE NED Plan will replace the amount of access to the shore that is currently in place. On a recent field visit, USACE staff observed rope lined access points through the dune. If the seaward of the hanger sub-alternative is constructed, the same number of access points would be constructed over the buried seawall for access to the shoreline. Language will be added to the draft EIS to clarify this.	Comment addressed. Pedestrian access points will be spaced approximately every 500 ft.	209 (4-33)	
We request that the EIS assess other potential impacts to the visitor experience, which may include: 11 • the seawall may block sea breezes, creating a hotter and drier microclimate inland • the loss of the visitors' sense of connection with the sea and the natural environment, especially in the context that this is one of the few areas on Staten Island where a visitor can currently experience a natural dune system.	The draft EIS will add language stating that there could be minimal impact to sea breezes or the microclimate. Regarding visitor's sense of connection, CEQ states that NEPA does not require that an EIS speculate with respect to the potential impacts associated with feelings and personal perceptions.	DEIS states no impact on sea breezes, acknowledges change in visitor experience but impact is minimal.	209-210 (4-33 to 4-34)	

NPS Comment	USACE Response	NPS Document Review	DEIS Pages pdf pagination (report pagination) references USACE track change document	Feasibility Study pdf pagination (report pagination) - references USACE track change document
Seawall construction will destroy the recently constructed Multi-Use Path, but will replace it with a promenade. The location of the promenade on top of or behind the seawall will have differing impacts. A seawall topped with a heavily-trafficked promenade through the middle of the vegetated dune community may create an enforcement issue for NPS. Alternatively, the visitor experience behind the dune will be substantially different than what visitors currently experience, or will experience on lands adjacent to NPS lands under this scenario. We ask that these and any other tradeoffs be addressed and analyzed in the EIS alternatives.	Correct, if the seaward of the hanger sub-alternative is constructed, the Multi-Use Path would be impacted and USACE's project would provide a functional equivalent pathway in the form of a promenade on top of the buried sea wall or a promenade at ground level behind the buried seawall (sub-alternatives), based on input from NPS. If NPS selects the on top of the buried seawall sub-alternative, the promenade would be on the crest of the seawall and the vegetated dune would be on the slopes of the seawall, therefore traffic on the promenade would be over and not through the vegetated dune. Many beaches have wooden platforms located above planted communities to allow pedestrian traffic (over) but not impact the plantings. If NPS is concerned about promenade users stepping off the path and into the dune, the project includes a fixed railing on either side of the promenade for safety. It's a federal requirement if you have a drop of 3 feet or more adjacent to the walkway. This could help with NPS's enforcement concern by discouraging people from walking off of promenade and into the vegetated dune on the slopes of the seawall.	Comment addressed.	209-210 (4-33 to 4-34); 219-221 (4-43 to 4-45);	
Long-term, the disruption of sediment transport and resulting erosional impacts could lead to the eradication of recreational opportunities along the shoreline, such as access to the beaches. Of particular concern is any acceleration of erosion near the narrow area at Great Kills leading to the marina. If this area is breached, it would mean a loss of the road that is the only land access to the marina and Crooke's Point. We request that these potential long-term impacts be analyzed in the EIS and appropriate mitigation measures be evaluated.	Text will be added to the Feasibility Study as well as to the EIS to address any potential erosional impacts along the shoreline	DEIS states no adverse erosional impacts on recreational resources. No additional text or analysis was provided in DEIS or Feasibility Study to address NPS comment.	209 (4-33)	
5. Great Kills Park CERCLA site				

NPS Comment	USACE Response	NPS Document Review	DEIS Pages pdf pagination (report pagination) references USACE track change document	Feasibility Study pdf pagination (report pagination) - references USACE track change document
The USACE proposed plan for Reach 1 calls for a vertical flood wall around the Oakwood Waste Water Treatment Facility and then an earthen levee extending up to Hylan Blvd. The construction footprint of these storm protection structures will likely overlap with the eastern boundary of the Great Kills Park CERCLA project (the Site). Based on current information on the Site, the radioactive contamination was brought to the Site with the waste fill material. The extent of the waste fill material along the park's southeastern boundary has not yet been fully delineated. The first phase of the Remedial Investigation (planned to start in 2015) will include further investigation of the footprint of the former landfill area. The current steps for the GKP CERCLA project are: • Remedial Investigation 2015-2017 • Feasibility Study 2018 • Proposed Plan • Record of Decision • Remedial Design/Remedial Action To the extent practicable, NPS will consider prioritizing the investigation and clean up along the eastern boundary. However, the CERCLA process will still take several years to complete. We will work with you to factor this into the planning and construction of the project, both in terms of design as well as schedule.	Noted, thank you for the schedule and potential prioritization of the eastern boundary information. USACE will continue to coordinate closely with NPS on the cleanup at Great Kills Park.	Text added per request.	223-224 (4-47 to 4-48)	73-74 (3-23 to 3-24)
6. Permitting NPS is working to determine the legal authority and instrumentation under which the project will take place on NPS lands. It may not be the permanent easement mentioned in the EIS and we ask that you take this out of the draft EIS. We will continue to work with your office on this.	Reference to the permanent easement in the EIS will be replaced with a note saying that NPS is working with USACE to determine the legal authority and instrumentation under which the project will take place on NPS lands. Thank you.	Text added per request. NPS will continue to work with USACE to determine legal authority and instrumentation.	206 (4-30)	
few more textual errors and housekeeping issues: • Need to ensure accurate differentiation throughout the EIS between the NYC's Great Kills Park, and that of Gateway NRA Page 3-52: There seems to be some misclassification and misstatements about Gateway throughout this page. (e.g. Fort Wadsworth is a national park, Miller Field is an "abandoned" airfield, etc.). Please correct these inaccuracies in the draft EIS. We will be glad to help with this.	The draft EIS will be updated to ensure the language is clear when referring to NYC's Great Kills Park and that of Gateway NRA.	DEIS provided clarification in parts of the report; however, additional clarification is required [examples of text where further clarification is needed in DEIS 155 (3-82); 223 (4-47) and Feasibility study 73 (3-23)] Additional clarification in nomenclature and boundaries is needed throughout the document.	examples where this is done well: 150 (3-77); 77 (3-4); 158 (3-85); 127-129 (3-54-356)	
Missing words in the paragraph about Gateway on p. 1-10 that states "Tenain..." **1.6 Planning Objectives**	The draft EIS will be corrected per the comment above.	Corrections made.	21 (1-11)	

NPS Comment	USACE Response	NPS Document Review	DEIS Pages pdf pagination (report pagination) references USACE track change document	Feasibility Study pdf pagination (report pagination) - references USACE track change document
Please add the following objective: Where project activities are proposed for NPS lands, project will consider consistency with NPS policies (2006 NPS Management Policies) and Gateway National Recreation Area General Management Plan (2014).	The draft EIS (and FS) will add language per the comment above, to the extent practicable.	Text added per request.	25 (1-15);	
1.8 Permits, Approvals, and Regulatory Requirements Please include in Table 1-1: NPS o 2006 NPS Management Policies o Gateway National Recreation Area General Management Plan (2014)o Authorization, through a yet to be determined instrument, to conduct work on NPS land	The draft EIS (and FS) will add language per the comment above, to the extent practicable.	Additions made to Table 1-1.	27 (1-17);	

THE CITY OF NEW YORK
OFFICE OF THE MAYOR
NEW YORK, NY 10007

MEMORANDUM

TO: Frank Verga, United States Army Corps of Engineers, New York District
Peter Weppler, United States Army Corps of Engineers, New York District
Karen Ashton, United States Army Corps of Engineers, New York District
Steve Zahn, New York State Department of Environmental Conservation

FROM: Esther Brunner, Mayor's Office of Sustainability (MOS)
Terrell Estesen, NYC Department of Environmental Protection (DEP)
Naim Rasheed, NYC Department of Transportation (DOT)
Owen Wells, NYC Department of Parks and Recreation (DPR)

DATE: May 26, 2015

SUBJECT: **South Shore of Staten Island Coastal Storm Risk Management Revised Draft Environmental Impact Statement – New York City Agency Comments**

Thank you for the opportunity to submit comments on the updated draft Feasibility Study, draft Environmental Impact Statement and related documents submitted to the City for review on May 15, 2015. The City appreciated the many changes made in response to previous comments and submits the following comments for consideration. City agencies are still reviewing the extensive updates to the drafts and, accordingly, may submit additional comments during the public comment period.

Below are various City Agencies' comments about the revised draft EIS. The comments are organized by City Agency.

DOT Comments

1. There may be issues with the closure of Hylan Boulevard due to stoplog in place with NYPD and FDNY. Please coordinate with NYPD/FDNY to ensure stoplog will not interfere with their operations.

2. *Attachment A-Closure Structure*, states that the stoplog closure will take several hours. The attachment also discusses how the closure structure alternatives (roller gate and swing gate) provide a faster method of closing. Can more details be provided as to how long the alternatives would take to close this 110-foot section of Hylan Boulevard. In addition, Attachment A states "all closure structures will be evaluated for construction and environmental impacts to ensure that the appropriate cumulative impacts are evaluated if the closure structure is revised during the design phase"; however, we don't see this evaluation in the DEIS.

3. *Attachment B-Road Raising Details* states that the road raising at Father Capodanno and Seaview Avenue would result in driveway slopes at least 10-15%. Will these driveways also provide pedestrian access/access to the properties front door? Is this legal as the slope may exceed ADA guidelines? (in response to comments 1:12 maximum slope required by ADA is cited for pedestrian access points to the beach). In addition, 10-15% slopes will affect residents in many ways. For example during snow/ice event residents would have a hard time entering and exiting their property. Also during rain events the properties might flood.

4. *Attachment B-Road Raising Details* states the Seaview Avenue roadway transition onto Quincy and Oceanside Avenues may also impact a few structures on the north side of the road. Please explain what structures would be impacted and how.

5. *Attachment B-Road Raising Details* states the following:

   > Items of note include the need to make sure that the raising does not cause any clearance issues with the traffic signals, sight distance issue, lights etc. Additionally, some raising/adjustment of hydrants, valves, inlets, manholes etc. may be required.

   Wouldn't road raisings require full-depth reconstruction of roadways and sidewalks, and as part reconstruction wouldn't traffic signals and lighting and all associated conduits need to be removed, redesigned and installed? According to the USACE, the road raisings are 100% non-Federal responsibility subject to credit towards construction cost share requirements. Also, according to the USACE legal grade determination is also a non-Federal responsibility. Please confirm if DOT would have to undertake the reconstruction and if so, when would DOT be expected to complete the reconstruction by?

6. Page B-4 of the EIS recommends potentially using dredged materials for fill for grade change for roadways. Please note that this is not acceptable practice in NYC.

7. *Attachment B-Road Raising Details* states the following:

   > The levee crown should be maintained and all crown roadways, ramps, and access roads should be properly maintained and kept serviceable. This work involves periodically grading and gravelling road surfaces.

   Are there any specific maintenance requirements DOT should be aware?

8. Figure 1: Typical Road Raising Detail in *Attachment B-Road Raising Details* is not legible. Please insert a legible figure into the attachment.

9. In the "Stoplog Plan and Elevation" (Sheet Identification C-515) the 4"concrete slab and T-Wall are shown to be outside the ROW on both sides of Hylan Boulevard. Whose property is this and does it require acquisition? If acquisition is required, who is responsible and does the cost identified in *Attachment A – Closure Structure* include acquisition costs.

10. What types of trucks will use the combined truck and pedestrian access? How will pedestrian safety be ensured at these common access points?

11. Provide all back-up information used in preparing “Existing AADT and LOS on Nearby Roadways” (Table 3-9). Also, please explain how the existing Level of service was estimated. Please note that the Staten Island Expressway is under NYSDOT’s jurisdiction.

12. Please explain the purpose of including “Nearby Parking Facilities with Capacity and Hours of Operation” (Table 3-10) in the DEIS. The table fails to indicate occupancy during the peak periods. Also, NYSDOT is indicated as the source for Table 3-10. Please verify the source, as this information is not usually provided by NYSDOT.

13. The DEIS on page 3-85 states the Staten Island ferry transports more than 1,000 vehicles and approximately 70,000 pedestrians per day. Please provide the source. Also, the Staten Island Ferry does not carry cars so it is not clear where this information was obtained.

14. Please define short-term minor adverse effects on transportation and traffic identified on Page 4-48. How many months would transportation/traffic be affected by construction workers, truck deliveries and road/sidewalk closure?

15. “Initial Level of Protection Alternative” (Table 2-1) states alternatives FM4, FO3, FO3A and FO3B may result in major traffic delays during construction; however these alternatives will have no significant environmental impacts. These statements contradict each other. Furthermore, page 4-34 states the (NED) Plan would not result in potential significant adverse impacts to traffic during construction. Please clarify the discrepancies.

16. Section 3.3.1 – Uplands; This section neglects to mention the very common native Mulberry trees (Morus rubra) that are arguably the dominant native tree species in the Uplands west of Richmond Road, particularly in Drainage Areas C and D. This species should be included in this section.

17. Section 3.4.3 – Birds; Feral wild turkeys are very common on the South Shore, particularly near Seaview Avenue between the beach and Hylan Boulevard in Drainage Area C.

18. Section 3.4.4 – Mammals; Wild deer are very common in the uplands of Drainage Areas C and D west of Richmond Road. http://www.dnainfo.com/new-york/20141016/pleasant-plains/deer-population-on-staten-island-leaps-3200-percent-6-years. This species should be included in this section.

DPR Comments

19. (Page 3-45, L.28) NYC DPR’s records indicated the park is 315 acres. Please revise accordingly.

20. (Page 4-8, L17) Indicates that mitigation for tree loss will be accomplished by planting at a ratio of two new trees for each tree lost. Please note that restitution requirements for removal of street trees or trees within park property are dictated by Local Law 3 of 2010 and associated DPR rules and valuation methodology.

21. (Page 4-8, L.37) Indicates that USACE will monitor and control phragmites on the covered seawall portion. For how long will this monitoring, and associated invasives control as necessary, be expected to occur?
22. As per comment #11of the DPR Comment Letter dated May 20, 2015*, NYC DPR asks the USACE to consider the use of this agency’s Staten Island-based Greenbelt Native Plant Center as a resource

for plant material for the project. The Center's banked, locally sourced seed may provide a valuable opportunity to mitigate impact on local habitats from the project.

a. Replanting of removed trees (page 4-8, L.14)
b. Planting of LOP slopes (page 4-8, L.28)
c. Planting of upland areas disturbed by construction (page 4-9, L.9)
d. Revegetation of temporary haul roads and staging areas (page 4-9, L.16)
e. Wetland planting (page 4-17, L.16)

* Comment #11 is about the Main Report/Feasibility Study: NYC DPR asks the USACE to consider the use of this agency's Staten Island-based Greenbelt Native Plant Center as a resource for plant material for the project. The Center's banked, locally sourced seed may provide a valuable opportunity to mitigate impact on local habitats from the project.

a) Proposed creation of 46 acres of maritime forest/scrub-shrub, low marsh, high marsh, and dune habitats in Oakwood Beach (page 7-6)
b) Native beach vegetation on the slopes of the buried seawall (pages 7-7, 7-8)
c) Fort Wadsworth tie-off (page 7-8)
d) Drainage Area pond plantings (page 7-13)

23. In the discussion of permits and approvals (Section 1.8), it may be worthwhile to note the need for parkland alienation legislation.

DCP Waterfront Division Comments

24. In addition to the policy analysis of the NYC Waterfront Revitalization Program, please fill out a coastal consistency form available here: http://www.nyc.gov/html/dcp/pdf/wrp/wrpform.pdf

25. On NYC Policy 6, please provide a description of how the level of protection of the NED plan was selected and how this process considered sea level rise.

26. On NYC Policy 8, please describe how the current public access structures and waterfront public spaces will be affected by the NED plan and how the NED plan will provide for continued use of existing open space resources

DEP Comments

Please note that these comments do not reflect DEP's input on operational concerns, which we understand is being addressed separately.

General

27. In Section 4-1, the disturbed area for Reach 3 should include the 25' splash apron and 15' scour blanket as described in Section 2.5.1. If the project width of Reach 3 would be on DEP property or potentially encroach on the wastewater facilities it should be coordinated to avoid conflicts.

Hazardous Materials

28. For those project drainage areas which overlap with DEP's Bluebelt area where DEP's 2013 EIS indicated additional testing or remediation would need to be conducted, who would be responsible for further investigation and approvals?

29. What investigation has been or will be performed to assess the condition of the soils to be used for backfill on the Line of Protection slopes and those drainage areas outside of DEP's Bluebelt area? Will there be public access or passive/active recreation on the Line of Protection slopes?

30. Regarding the CERCLA clean-up at Great Kills Park, there should be a description of what the remedial measures are likely to consist of and how whether the proposed project could interfere with remediation (for instance, could it happen that removal is the only feasible remedy and the project would construct over contaminated area before the clean-up process is complete?).

Air Quality

31. Page 4-51 states that the General Conformity analyses and determination for the proposed action is a Record of Non-Applicability (RONA) for the NED plan. The document should include an explanation of why the RONA is appropriate (i.e. – why the action is exempted or why conformity is not applicable).

Comments on the May 2015 preliminary DEIS from DEP's Bluebelt Unit (page references made using track changes version of document):

32. **Page 1-15** – Why was planning objective #3, regarding consistency with the Bluebelt, taken out?

33. **Page 2-3**—The Mid-Island Bluebelt requires 204 acres of wetland property. This area includes mapped but unbuilt streets. As of spring 2015, 129 of those acres have been vested in the City of New York.

34. **Page 2-13** – In Oakwood Beach, the 17.19 acres in Drainage Area A are expected to be under jurisdiction of NYCDEP, not NYCDPR.

35. **Page 2-14** – You might want to point out that the real estate required for Interior Drainage Area A is already acquired for Bluebelt purposes or slated to be acquired.

36. **Page 2-14** – In Figure 2-2, it looks like Oakwood Creek tide gate call-out is in the wrong place. It should be pointing to symbol in the wall for drainage structures.

37. **Page 2-15** – Why take out reference to one of the proposed ponds being analogous to BMP OB-2 in the Bluebelt plan? Also you should note that the east pond is on City parkland while the west pond is on private property.

38. **Page 2-18** – Please demonstrate consistency with Bluebelt plan by stating that all the proposed ponds correspond to Bluebelt BMPs except for one. Here is a table showing that consistency:

USACE Designation	Bluebelt Designation
Midland Pond	BMP NC-6
Last Chance Pond	BMP NC-11
Pond #7	BMPs NC-13, 14
Pond #4	BMP NC-16
Pond #1	BMP NC-17
Pond#2	BMP NC-18

The one exception is the water body labeled Pond #3 on Figure 2-4. In the DEP plan, that pond is divided into two: BMPs NC-9 and NC-10. BMP NC-10 has its own new outfall into the Raritan Bay. This is necessary because from a hydrological point of view, all the stormwater cannot drain to the existing Naughton Avenue outfall. There is not enough grade change to make that flow path a physical possibility. Please change your design for Pond #3 to make it consistent with the Bluebelt plan.

For your reference, the following table presents the current overlap between the Bluebelt and USACE interior drainage areas and features:

USACE Drainage Area	Bluebelt Watershed	USACE Designation	Bluebelt Designation
A	Oakwood Beach	Natural flood storage	BMP OB-3
B	Oakwood Beach	West Pond	Cancelled BMP OB-1
B	Oakwood Beach	East Pond	BMP OB-2
C	New Creek	Pond #1	BMP NC-17
C	New Creek	Pond #2	BMP NC-18
C	New Creek	Pond #3	BMP NC-9, NC-10
C	New Creek	Pond #4	BMP NC-16
C	New Creek	Last Chance Pond	BMP NC-11
C	New Creek	Midland Pond	BMP NC-6
C	New Creek	Pond #7	BMP NC-13
E	South Beach	One of two ponds	BMP SBE-1A
E	South Beach	One of two ponds	BMP SBE-1B

39. **Page 2-18** – Figure 2-4 shows all ponds having an invert of 2 ft NGVD. How can they all have the same invert and still flow by gravity? How does that invert compare to inverts in Bluebelt plan?

40. **Page 2-20** – The 46.7 acres of available natural storage is all within the area to be acquired for the South Beach Bluebelt. Please point out that that the Bluebelt drainage plan requires a new ocean outfall at McLaughlin Street.

41. **Page 2-32** – Hylan Boulevard misspelled “Hyland.”

42. **Page 2-33** – Please mention the two proposed ocean outfalls – one in the New Creek watershed (Drainage Area C) draining BMP NC-10 and the other in the South Beach Bluebelt at McLaughlin Street.

43. **Page 2-33** – Is it possible to identify alternatives at this time to the stop-log structure at Hylan Boulevard?

44. **Page 2-33** – Should not the "Pedestrian and Vehicular Access" section include a discussion of vehicular access to the interceptor sewer or at least cross-reference where that discussion is in the document?

45. **Figure 3-1** – This figure is difficult to read. I think there are some inaccuracies in the map. In Drainage Area B, the west pond is not shown, and the acquisition necessary for that pond is also not presented. Excavated ponds in Drainage Area C are not shown. In addition, excavated ponds are not shown in Drainage Area E.

46. **Figure 3-2** – DEP is no longer planning to build BMP OB-1 because the neighborhood it would have served is being bought out and emptied. Please remove it from the maps.

47. **Page 3-17** – Identify NYC DEP as the agency responsible as the Bureaus mentioned are in that agency.

48. **Page 3-18** – Please remove BMP OB-1 from this figure.

49. **Page 3-60** – The 61 acre number for DEP Bluebelt property in Oakwood Beach is old. The new number is 42 acres. The numbers for Bluebelt property in New Creek are 107 and in South Beach 56.

50. **Page 4-7** – This figure, showing the proposed tidal wetlands on the seaward side of the wall, could use some work. Is the "proposed access road" on top of the interceptor sewer or the seawall? Please show the seawall on this figure and some streets on the landward side for orientation. Please show location of interceptor sewer.

51. **Page 4-8** – Reference is made to "inviting volunteer hydrophytic/wetland plants to establish" in the excavated ponds. DEP in its Bluebelt program will plant the flood storage areas or BMPs with wetland plants. The Bluebelt program will replace low quality wetlands dominated by *Phragmites* with diverse wetland plantings and other features to enhance wildlife habitat.

52. **Figure 4-5** – This map showing the difference in potential flooding with and without the project is a very important graphic. Can the document contain some discussion of the process whereby the new floodplain with the seawall in place would be mapped by FEMA and a new FIRM issued?

53. **Page 4-29** – Approximately 204 (not 300) acres of the Project Area will be or is already owned by the NYCDEP Bluebelt program. What about fee simple acquisitions required for the seawall's interior drainage system where excavation is proposed? This section only mentions easements necessary.

54. **Page 4-35** – In the third paragraph down, mention is made of the resulting landscapes after the ponds are excavated being "consistent with existing conditions." In fact, the excavated ponds will remove many acres of *Phragmites* and create vistas completely different from existing conditions. The vistas looking out over the permanent pools of the ponds will be an improvement over existing conditions.

55. **Figure 4-12 and 4-13** – The South Beach legend is the correct one for the photo.

56. **Page 4-69** – The Bluebelt acreage number is 204 acres, not 300.

DEP Natural Resources Comments

57. DEP is currently planning a wetland restoration at the Oakwood Beach Wastewater Treatment Plant (WWTP). This tidal wetland restoration will remove historic fill material and the invasive plant Phragmities to create low salt marsh and coastal dune habitats. The invasive Phragmites has been responsible for frequent wildfires in the region which are a substantial threat to the surrounding communities. Therefore, the restoration of salt marsh habitat will reduce the risk of wildfire and associated property damage to the Oakwood Beach community that has been plagued by wildfire for decades. With the efforts of the DEP to remove Phragmities adjacent to the Oakwood Beach WWTP, highly coordinated efforts between the two projects will be needed to ensure there are no negative effects to the created habitat/projects for both agencies.

58. Section 4.4.1 Benthic Resources. Albeit not major, there are several problems with this section. First, the beginning of this section only implies mortality to benthic macroinvertebrates and does not acknowledge the mortality to the entire benthic community. Second, DEP disagrees with the statement in the document that “The existing benthic organisms have the ability to burrow through sand and would not be impacted from the slight increase in sedimentation caused by the Project”. Surely benthic organisms with great vagility will be able to burrow out from the sedimentation, but the vast majority of the organism that the sedimentation may impact would not have the ability to burrow out from underneath the sand.

Mayor's Office of
Recovery & Resiliency

USACE South Shore of Staten Island Phase I
Draft Feasibility Study for Fort Wadsworth to Oakwood Beach, May 2015

NYC DPR Comments to:

A. USACE Response to DPR Comments
B. Draft Main Report

A. USACE RESPONSE TO DPR COMMENTS

DPR supplemental comments dated 10 February, 2105.

1. (DPR Comment 1) This comment asked for recognition in the Feasibility Report that the USACE *will work with NYC DPR to refine the design of project components that interface with recreational facilities*. In this response, USACE has reiterated the design components already described in the Feasibility Report, but has not satisfactorily addressed NYC DPR's comment; similarly, the revised Main Report does not reflect the intention to work with NYC DPR on refining design components. Add a reference within the Feasibility Report to note that USACE will work with NYC DPR on these refined design components, such as the materials and finishes of the raised promenade, and the number, location, and a design of access points over the LOP.
2. (DPR Comment 1-a) NYC DPR has not yet received the referenced Attachment I - Recreational Features.
3. (DPR Comment 2) The USACE response that no sediment transfer is being disrupted or modified by the project is noted. USACE interim findings show the project area as a mild or low erosional setting with a net loss of sand (although in Oakwood Beach, *shoreline erosion has been as high as 20 feet per year* [page 7-6]). Therefore, NYC DPR will want to work with USACE, as warranted, on any final beach nourishment recommendations.
4. (DPR Comment 2-a) NYC DPR's comment has not been adequately addressed. NYC DPR would like the Feasibility Report to reference an existing or planned analysis or calculation of the likelihood and storm event frequency that would expose the buried seawall's scour apron, due to the implications to the City's obligation to maintenance, operation and public safety if such an event were to occur.
5. (DPR Comment 3) NYC DPR's comment has not been adequately addressed. Drainage at the base of the levee will need to be planned for to prevent localized flooding within NYC DPR's facilities. The Feasibility Report should recognize that localized flooding at the base

of the levee is expected, and should reference a planned analysis to avoid this issue. For example, will grading along the base of the levee direct stormwater runoff to the sluice gates?

B. DRAFT MAIN REPORT

Existing Conditions

6. (Para. 88-89) Add to the description of threatened and endangered species to adequately capture known plant species and ecological communities. (Oakwood Beach has two populations of the state-listed *Iris prismatica* and a population of the state-listed *Tripsacum dactyloides*. All along the south shore are also populations of the state-listed *Cenchrus tribuloides*. There are also many locally imperiled plant species within these areas.)

7. (Para. 102) The acreage for FDR Boardwalk and Beach is given as 638.5 acres; however, NYC DPR's records indicate 644.5 acres. Please revise accordingly.

8. (Para. 109) A portion of NYC DPR's Great Kills Park property is within the CERCLA boundary. Update this section accordingly.

National Economic Development Plan

9. As commented on earlier drafts, the Feasibility Report should note that the refined design of project components that interface with park and recreational facilities will be developed in collaboration with NYC DPR. This revised Report has not adequately characterized the intention to work with NYC DPR to refine the design of relevant project components.

10. NYC DPR asks the USACE to consider the use of this agency's Staten Island-based Greenbelt Native Plant Center as a resource for plant material for the project. The Center's banked, locally sourced seed may provide a valuable opportunity to mitigate impact on local habitats from the project.

a. Proposed creation of 46 acres of maritime forest/scrub-shrub, low marsh, high marsh, and dune habitats in Oakwood Beach (page 7-6)
b. Native beach vegetation on the slopes of the buried seawall (pages 7-7, 7-8)
c. Fort Wadsworth tie-off (page 7-8)
d. Drainage Area pond plantings (page 7-13)

11. (Page 7-8) The description of deck surface finishing options (*timber, timber-composite, or concrete panel*) should be omitted. Instead, note that the refined design of materials and finishes will be developed in collaboration with NYC DPR.

12. (Page 7-8) The reference to a split boardwalk has been presented without adequate engagement with NYC DPR. Omit the reference to the split boardwalk, and instead note that the refined design of the functional replacement promenade will be developed in collaboration with NYC DPR.

13. (Page 7-8) Replace "restaurant" with "concession" (concession is an inclusive term that more accurately captures a broader variety of existing vendors).

14. (Para. 284) Include a schematic showing the 38-foot width functional replacement promenade within the body of the Main Report (schematics currently provided in Attachment F, page 4).

15. (Para. 278) Does the proposed *access road seaward of the buried seawall* run across NYC DPR property? What are the alignment, specifications, and maintenance obligations of this proposed road?

16. (Page 7-13) The extent of the flowage easement shown in graphic (Drainage Area B) does not appear to include the excavated west pond. If this omission is intentional, please clarify the flowage easement for this pond.

17. (Page 7-13) The ponds show in the graphic have very straight edges and sharp corners, which may be more challenging to maintain over the long term, and are less pleasant to local communities as a scenic and passive recreational amenity (should such use be permitted). The design of these ponds should be refined to provide more naturalized contours. NYC DCP welcomes the opportunity to collaborate on refined design of these edges.

18. (Paras. 317-320) NYC DPR asks to be consulted to develop more refined maintenance and operation costs, taking into account NYC DPR's operational practices and constraints.

19. (Para.211) Reword to clarify that Alternative #4 was supported because it "includes the replacement of existing promenade facilities" (rather than wording that suggests the provision of additional facilities).

20. (Para.240) Clarify that the "17.19 acres of currently available natural flood storage" will be preserved by the City (not solely DPR), as this site is comprised of adjacent DPR and DEP jurisdictions.

National Economic Development Plan

21. (Para.275) Update the description of the buried sea wall to reflect a revised crest promenade that accommodates a functional replacement of the existing boardwalk and esplanade, discussed in meetings between the City and USACE. NYC DPR's preferred solution is the maximum width that can be accommodated without extending the promenade beyond the at-grade footprint of the buried seawall.

22. (Para.274) NYC DPR welcomes the opportunity to work with USACE to design surface treatments to address the recreational context of the LOP, including the need to restrict public access over the seawall; planting maintenance; accommodating a variety of recreational users; etc.

23. (Para. 279-283) Include a reference that the location, number and design of pedestrian and vehicular access points will be determined in consultation with NYC DPR, to address visitor, operational, and emergency needs, in addition to M&O requirements of the seawall itself. This coordination will ensure access points meet the needs of park users and prevent the LOP from causing a loss of access to some locations or to segments of the current user population.

24. (Para. 282) Although stairs on the landward and seaward side of the seawall are included in the design, ADA accessible access over the seawall will need to be provided.

25. What is the likelihood that the buried seawall 10'-wide scour apron may become exposed over the life of the project (e.g.: due to erosion or wave action)?

26. Please clarify whether the east end of the buried seawall at Fort Wadsworth runs on to private property.

- USACE map files show the LOP on private property (Block 3125 / Lot 116); however, the property was not included in list of required acquisitions that USACE shared with the city. Could the LOP be realigned here onto NPS' Fort Wadsworth, to avoid acquisition of private property?

27. (Para.305) Provide a comprehensive investigation to avoid new localized flooding. Drainage at the base of the levee should be provided to prevent localized flooding within NYC DPR's facilities. For example, will grading along the base of the levee direct stormwater runoff to the sluice gates?

28. (Paras.295-298) A more detailed breakdown of M&O tasks is required in order for the City to better evaluate scope and cost over the life of the project. Please provide more detailed information on the exact amount of each service required, and cost multipliers used to calculate costs.

29. NYC DPR expects to incur addition staff and equipment costs due to the project, as the beach will be more challenging to clean and operate.

Plan Implementation

30. (Para.340-15) Clarify the level / type of storm event that will trigger a surveillance and reporting requirement.

Public Involvement

31. Section 11 should outline a more specific plan for comprehensive public engagement, to ensure community stakeholders are aware of the protective measures and impacts of this project.

Other

32. A plan for soil stabilization, planting and site security of the drainage areas should be presented.

33. A plan for wildlife connectivity between the interior drainage areas should be presented.

34. Is there any accommodation for fish & wildlife to pass through the culverts or levee? Specifically, catadromous fish, such as American eel and alewife, are known to use small freshwater ponds upstream of tidal channels for breeding. If local funding can contribute to

enhanced ecological services (or mitigation for impacts) of the projects, will the USACE consider these in the design alternative evaluation?

35. Note should be made of the probability of archeological resources in the area.

36. Generally, further information should be provided on the ecological impacts of the levee itself on the tidal ecosystem.

APPENDIX 2 – DRAFT INTERIOR DRAINAGE

37. (Page 122) The Appendix shows the extents of 100 year flooding with and without the project. Please confirm that the without the project the 100 year flood area will be reduced to the extent shown on the map.

38. (Figure 4) Will the project eliminate the transfer of sea water to the interior marsh areas? Some of the areas shown as freshwater wetlands in Figure 4 may have some tidal flow (particularly at the Cedar Grove and Oakwood areas) and loss of tidal inflow could cause damage to these areas.

APPENDIX 7 – REAL ESTATE PLAN

39. Include reference in the Real Estate Plan to the State buyout program, in terms of federal restrictions for permanent improvements.

40. (Exhibit A – Plan Sheets) Sheet C-11-, it is unclear if a portion of Block 3125 / Lot 116, which is privately owned, is required for the eastern end of the LOP. If so, is it possible to realign the LOP so the end does not extend onto private property?

41. (Page 3, Section III) Please clarify the timing of construction contract details here, which differ from Figure 37 of Main Draft Report.

42. (Page 3, para.D) NYC DPR requests a copy of the appraisal cost estimate.

43. (Page 7, para.18) Note that radiological testing at federal Great Kills Park has extended to DPR parkland, within the alignment of the project.

44. (Exhibit B) Provide full addresses or cross streets, as the public doesn't necessarily readily know their block and lot numbers.

New York City DOT

Attachment B:

(1) Road raisings: Will the Corp construct these as part of their project or will the City be required to construct?
(2) Road raising details: The standard detail is shown for a street in NJ. The detail itself is **illegible**. We need to see the detail that they have included bc their cost estimate is based upon their understanding of the standard detail.
(3) Road raising cost estimates: We think their estimates are low. Our Detailed Damage inspection Report (DDIR) for FHWA funding was over twice the cost estimate for the same area of Seaview Ave at Father Capodanno Blvd.
(4) Crown Roadway and Access Ramps: "The levee crown should be maintained and all crown roadways, ramps, and access roads should be properly maintained and kept serviceable. This work involves periodically grading and gravelling road surfaces." Is there a specific maintenance protocol that needs to be followed for this work?

(5) Road raisings as "Relocation": the Corp has stated that "), road raisings are considered a "relocation" and therefore, are subject to LERRDs cost sharing requirements, accordingly. Relocations are 100% non-Federal responsibility subject to credit towards construction cost share requirements. As such, legal grade determination is also a non-Federal responsibility." Clarification on the relocation definition and the cost sharing strategy for the City.

Attachment A:
(1) Value engineering: "Additionally, the 100% design (including the closure structure) will undergo Value Engineering. During this required review, an alternate closure structure may be identified and incorporated into the final design. However, if the result of the Value Engineering study again identifies the stop-log as the recommended closure structure, then the non-Federal sponsor must pay 100% of the design and construction for an alternate closure structure. Please refer to policy guidance ER 11-1-321 for Value Engineering requirements." Does the Value Engineering exercise also include the costs associated with O&M and life cycle replacement?

New York City DEP

Comments of Bluebelt Unit

Page ES8 – Why is planning objective #3, related to consistency with the Bluebelt plan and park resources, omitted?

Page xii – In the real estate requirements section, only different kinds of easements are discussed. Are not fee simple acquisitions needed for areas to be excavated?

Page 4-1 – Two new ocean outfalls are proposed in the future drainage plans developed by NYCDEP as part of the Bluebelt plan. The new outfall in the Midland Beach area drains BMP NC-10 and will pass under Father Capodanno Boulevard between Jefferson Avenue and Hunter Avenue. The new ocean outfall in South Beach is at McLaughlin Street. The new outfall in Oakwood Beach has been dropped from DEP's plans because BMP OB-1, that made the outfall necessary, is now itself no longer needed because of the State's buy-out program.

Page 4-2 – The proper number for the size of the Bluebelt acreage in South Beach, New Creek, and Oakwood Beach is 204 acres.

Page 6-3 – Why was this taken out of the list of Planning Constraints: "Integrate with and be complementary to other related programs in the study area"?

Page 6-47 – In Table 18, why was the objective of consistency with the Bluebelt program removed?

Page 6-49 – Under Area B, please include the note that the site for the East Pond is owned by the City of New York and will be the site for BMP OB-2 as part of the Bluebelt program. The site for the West Pond is privately owned. If that site is not successfully acquired, could an enlarged East Pond (BMP OB-2) do the job of providing all the necessary flood storage?

Page 7-8 – Under the section entitled "Stormwater Outfalls/Gate Chambers," please mention the two proposed new ocean outfalls, one at McLaughlin Street in South Beach and the other in New Creek draining BMP NC-10.

Page 7-11 – Under the section entitled "Pedestrian and Vehicular Access," please explicitly present the access points for the interceptor sewer on the seaward side of the wall in Oakwood Beach.

Page 7-14 – Please provide more detail under "Pond Restoration" of what planting and *Phragmites* control would be considered part of Area B: Minimum Facility.

Page 7-11 – Please change the design for Pond #3 so it is consistent with the plans for BMPs NC-9 and NC-10.

Appendices – NYCDEP submitted comments regarding Interior Drainage Aerials, Appendix 1: Engineering and Design, Appendix 2: Interior Drainage, Appendix 3: Geotechnical Evaluation, Appendix 4: Cost Appendix, and Appendix 5: Economic Appendix. Will revisions to the appendices be made available before the final draft is completed?

US Army Corps of Engineers South Shore of Staten Island Coastal Storm Risk Management

Interim Feasibility Study for Fort Wadsworth to Oakwood Beach

Draft EIS

Revision May 13, 2015

NYC DPR Comments

Priority items to be addressed prior to June 12, 2015 public release.

Addendum to NYC DPR Comments submitted by ORR on May 26, 2015.

---

1. The Draft EIS should note that the refined design of project components that interface with park and recreational facilities will be developed in collaboration with NYC DPR. This revised EIS has not adequately characterized the intention to work with NYC DPR to refine the design of relevant project components.

   a. (Page 4-33, L.21) Omit statement that *access to beaches would be maintained throughout construction*, as the design of the project has not been adequately developed to date to allow NYC Parks to determine whether public access and maintenance operations could be safely maintained during construction.

   b. (Page 4-33, L.39) Omit reference to *timber*. The USACE is expected to work with NYC DPR to refine the design of materials and finishes atop the proposed seawall.

   c. (Page 4-33, L.41) Omit *… and would allow for path/bike/pedestrian usage*. The refined design of the boardwalk functional replacement itself, as well as the location and design of access points will determine the degree to which such functions can be accommodated.

   d. (Page 4-36, L.10) Add sentence noting that the USACE will work with NYC DPR to refine the number, location, and design of pedestrian and vehicular access points across the buried seawall.

2. The Draft EIS should acknowledge a more significant expected impact on recreational facilities.

   a. (Page 4-33, L.19-21) It is not accurate to describe impacts to recreational facilities solely as *short-term .. during construction*. Rather, impacts on recreational activities that occur along the beachfront should be characterized as long-term and direct (for example, required relocation of buildings or portions of fields), in addition to short-term impacts during construction

b. (Page 4-33, L.22-23) Revise statement that *comfort stations and concession stands may be temporarily impacted by construction* to more accurately acknowledge the expectation that the project (nb: the project itself, not just the construction period) is expected to require the relocation and reconstruction of some park facilities, potentially including comfort stations, concessions, and recreational components such as playgrounds or athletic fields. Specific impacts to facilities will be identified during the refined design of the project, and in collaboration with NYC DPR.

c. (Page 4-33, L.23-25) It is not accurate to characterize these impacts as *primarily due to construction noise* – see comments above. Rephrase this sentence instead to "Short-term, indirect impacts include construction noise and the temporary limitations on access to the beach …"

d. (Page 4-33, L.27) Revise to clarify that *USACE will be in close coordination with NYC DPR during* design and specification and *construction to minimize any potential impacts*.

e. (Page 4-56, L.35-41) Revise as per above.

3. Tree restitution:

a. (Page 4-8, L.18-19) Add statement to acknowledge that restitution requirements for removal of street trees and trees within park property are dictated by Local Law 3 of 2010 and NYC DPR's restitution valuation methodology.

4. Alienation:

a. (Section 1.8) In the discussion of permits and approvals, it would be worthwhile to note the need for State and Local approvals. Notably, a reference to the need for State legislation granting parkland alienation should be included.

Ashton, Karen NAN02

From: Ashton, Karen NAN02
Sent: Wednesday, May 27, 2015 8:02 AM
To: 'Jay.Rose@tetratech.com'; 'michael.cannon@aecom.com'
Subject: Fw: [EXTERNAL] SSSI FS Phase I, Draft Main Report and EIS, May 2015

State

From: Servidone, Anna (DEC)
[mailto:anna.servidone@dec.ny.gov] Sent: Tuesday, May 26,
2015 12:33 PM Pacific Standard Time
To: Verga, Frank NAN02; Ashton, Karen NAN02
Cc: Fuchs, Alan (DEC) <alan.fuchs@dec.ny.gov>; McCormick, Susan D (DEC)
<susan.mccormick@dec.ny.gov> Subject: [EXTERNAL] SSSI FS Phase I, Draft Main Report and EIS, May 2015

Karen and Frank,

A couple of questions/comments to the draft report:

1. Stillwater elevations for project area in Table 4 and Table 11 for Stillwater elevation obtained from FEMA are different than the Stillwater design heights for optimization and NED Plan Identification, Tab.22, 23, 24, 25, etc. Please explain. What storm events were used in the analysis?

A RESPONSE TO THIS COMMENT WILL PROVIDED IN THE DRAFT REPORT PRIOR BEING RELEASED TO THE PUBLIC.

2. Please stay consistent in the whole report with the same maximum water level reached during Sandy for the same locations.

A RESPONSE TO THIS COMMENT WILL PROVIDED IN THE DRAFT REPORT PRIOR BEING RELEASED TO THE PUBLIC.

3. Could the information on New York City work (project location, type of the project, project length, fill quantity) that was done after Hurricane Sandy be included in the Report with other projects completed prior? Why this information is not available?

REQUESTS FOR THIS INFORMATION WERE NOT PROVIDED BY THE CITY. THEREFORE, THIS INFORMATION CANNOT BE INCLUDED IN THE REPORT. IF NYSDEC OR THE CITY CAN PROVIDE THIS INFORMATION PRIOR TO PUBLIC RELEASE OF THE DRAFT REPORT, THE CORPS CAN INCLUDE, ACCORDINGLY.

JUST FOUND OUT ABOUT DEP OAKWOOD BEACH TIDAL RESTORATION PROJECT LAST WEEK IN THE COMMENT LETTER FROM THE CITY.

4. **There is a concern regarding beach erosion in the study area and potential impact from the proposed buried seawall on fronting beaches. It sounds like, from the revised language in the Draft Main Report and EIS, that the results of the analysis of the shoreline changes indicated that the rate of erosion over most large areas of the shoreline is low. Wave damages in the study area would be small and limited to events greater than Hurricane Sandy. Most of the residential and commercial structures, boardwalk, and roadways are at least 200 feet landward of the projected 50-year future shoreline location, and protective shoreline structures were considered stable and able to withstand such erosion, etc…. It has been determined that there is not beach erosion evaluation required from the potential impact of the proposed buried seawall because of its proposed location; there is not impact anticipated from the propose structure - please confirm?**

CONFIRMED – THE LINE OF PROTECTION IS LOCATED WITHIN THE WATER AND THEREFORE DOES NOT CONTRIBUTE TO BEACH EROSION. HOWEVER, TO ENSURE THAT THE LINE OF PROTECTION IS PROTECTED FROM ANY "FUTURE" EROSION DUE TO HIGH SEA LEVEL RISE CONDITIONS AN ANALYSIS OF EROSION OF 50 YEARS WAS CONDUCTED AND THE CORPS DETERMINED THAT THE LINE OF PROTECTION WOULD STILL PERFORM WITH THE REQUIRED MINIMUM 75 FEET BEACH WIDTH FOR THE PROJECT DESIGN EVEN UNDER THE EXTREME CONDITIONS NOTED.

5. It reads in the report that a total of approx.. 296.51 acres of wetlands (freshwater and tidal) were found in the Project area. There is also a statement in the report that there are more than 500 acres of freshwater wetlands and approx.. 50 acres of tidal in the study area. Please verify.

THE DISCREPANCY OF WETLAND ACREAGE WILL BE CORRECTED IN THE DRAFT REPORT PRIOR TO RELEASE TO THE PUBLIC.

Thanks

-Anna

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

April 29, 2015

Environmental Assessment Section
Environmental Analysis Branch

Ms. Sherry White
Tribal Historic Preservation Officer
Stockbridge-Munsee Community
Band of Mohican Indians
W13447 Camp 14 Road
Bowler, WI 54416

Dear Ms. White:

The U.S. Army Corps of Engineers, New York District, (Corps), is authorized to undertake construction of the South Shore of Staten Island Hurricane and Storm Risk Management Project, Richmond County, New York under P.L. 113-2, the Disaster Relief Appropriations Act of 2013, following Hurricane Sandy in October 2012. The Corps is presently completing the feasibility study of the Phase I portion of the project which runs from just south of Fort Wadsworth to Oakwood Beach (Enclosure 1). The recommended Line of Protection Plan (LOP) consists of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the LOP consists of a T-Type Vertical Floodwall and Levee. The LOP also includes a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures, and demolition of the existing boardwalk. The Interior Drainage Plan includes pond excavation, construction of tide gates and gate chambers along the LOP, road raisings, and other minor interior drainage facilities. The Area of Potential Effect (APE) for this undertaking includes all areas impacted by activities required to construct the above listed features as well as construction access and staging areas and, if required, environmental mitigation measures. The locations of some of these features have yet to be determined. Maps and proposed plans are contained in the enclosed Preliminary Case Report and Programmatic Agreement (PA) referenced below.

As a federal agency the USACE has certain responsibilities for the identification, protection and preservation of cultural resources that may be located within the area of potential project effect (APE) associated with the proposed South Shore of Staten Island project. Present statutes and regulations governing the identification, protection and preservation of these resources include the National Historic Preservation Act of 1966 (NHPA), as amended through 2006; the National Environmental Policy Act of 1969; Executive Order 11593; and the regulations implementing Section 106 of the NHPA (36 CFR Part 800, Protection of Historic Properties, August 2004). Significant cultural resources include any material remains of human activity eligible for inclusion on the National Register of Historic Places (NRHP).

Much of the project's APE has been subject cultural resource surveys by the Corps or by others including a Phase I survey completed for the Corps in 2005. A CD containing the final Phase I report is enclosed (Enclosure 2). This work included archaeological testing and an historic architectural survey. The resulting report recommended further work in selected locations along the proposed project alignment. No Native American sites were identified however the Corps will excavate borings along the project alignment where construction by open trenching is proposed to provide an understanding of shoreline development as sea level rose and to determine areas sensitive for deeply buried landforms and Native American resources. No borings will be conducted where construction will entail just pile driving. The locations and number of borings will be determined by a geoarchaeologist or a geomorphologist with archaeological experience. Archaeological testing of high ground adjacent to proposed ponding areas and pump stations is also recommended.

A Preliminary Case Report was prepared which summarizes all cultural resources work conducted to date and outlines future work (Enclosure 3). The Corps has prepared a Draft PA which stipulates further studies the Corps will undertake. The draft PA for your review and comment is included as Enclosure 7 in the Preliminary Case Report. This document is being coordinated with the State Historic Preservation Office, National Park Service, New York City Landmarks Preservation Commission and other interested parties. We invite you to consult with us on this project and the PA. If you have questions please contact the project archaeologist, Ms. Lynn Rakos at (917)790-8629 or by email at Lynn.Rakos@usace.army.mil.

Sincerely,

Peter M. Weppler
Chief, Environmental Branch

Enclosures

Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

New York State Office of Parks,
Recreation and Historic Preservation

Division for Historic Preservation
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643
www.nysparks.com

December 16, 2014

Ms. Lynn Rakos
Project Archaeologist
US Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278

Re: CORPS
South Shore of Staten Island - Combined Erosion Control & Storm Damage Protection
southern shoreline of Staten Island from Fort Wads
05PR04225

Dear Ms. Rakos:

Thank you for continuing to consult with the New York State Historic Preservation Office (SHPO). We have reviewed the provided information in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include other environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

We have reviewed the updated submitted information and the Draft Programmatic Agreement. We offer the following comments with regards to the PA:

1. Second to last WHEREAS – "WHEREAS, the New York District shall provide the NYSHPO all documents, which may include but not limited to all reports, comments and notifications by *certified mail*; and" SHPO requests that certified mail be deleted and that CRIS be inserted. The Cultural Resource Information System (CRIS) is now online for submission of documents.

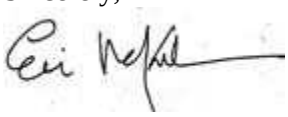
2. Stipulation I.A., SHPO requests clarification regarding whether the results of the borings will be used to plan additional archaeological investigation should paleo-surfaces or archaeological materials be encountered. SHPO requests that the last sentence is revised to "The New York District shall consult with the NYSHPO to develop *archeological work plans* to address this work."

3. SHPO recommends that specific language be included regarding procedures to be undertaken should evidence of human remains be encountered during any aspect of the investigation or subsequent construction activities. SHPO's Human Remains Discovery Protocol is enclosed to provide suggested language.

We look forward to continuing to review the draft PA.

If further correspondence is required regarding this project, I can be reached at (518) 237-8643, ext. 3260 or at eric.kuchar@parks.ny.gov. Please be sure to refer to the Project Review (PR) number noted above.

Sincerely,



Eric N. Kuchar
Historic Preservation Technical Specialist via e-mail only

Enc: NYSHPO Human Remains Discovery Protocol

State Historic Preservation Office/ New York State Office of Parks, Recreation and Historic Preservation Human Remains Discovery Protocol (October 2013)

In the event that human remains are encountered during construction or archaeological investigations, the New York State Historic Preservation Office (SHPO) recommends that the following protocol is implemented:

- At all times human remains must be treated with the utmost dignity and respect. Should human remains be encountered work in the general area of the discovery will stop immediately and the location will be immediately secured and protected from damage and disturbance.

- Human remains or associated artifacts will be left in place and not disturbed. No skeletal remains or materials associated with the remains will be collected or removed until appropriate consultation has taken place and a plan of action has been developed.

- The county coroner/medical examiner, local law enforcement, the SHPO, the appropriate Indian Nations, and the involved agency will be notified immediately. The coroner and local law enforcement will make the official ruling on the nature of the remains, being either forensic or archaeological.

- If human remains are determined to be Native American, the remains will be left in place and protected from further disturbance until a plan for their avoidance or removal can be generated. Please note that avoidance is the preferred choice of the SHPO and the Indian Nations. The involved agency will consult SHPO and appropriate Indian Nations to develop a plan of action that is consistent with the Native American Graves Protection and Repatriation Act (NAGPRA) guidance. Photographs of Native American human remains and associated funerary objects should not be taken without consulting with the involved Indian Nations.

- If human remains are determined to be non-Native American, the remains will be left in place and protected from further disturbance until a plan for their avoidance or removal can be generated. Please note that avoidance is the preferred choice of the SHPO. Consultation with the SHPO and other appropriate parties will be required to determine a plan of action.

Landmarks Preservation Commission

1 Centre Street
9th Floor North
New York, NY 10007

Voice (212)-669-7700
Fax (212)-669-7960
http://nyc.gov/landmarks

ENVIRONMENTAL REVIEW

Project number: US ARMY CORPS OF ENGINEERS / 106-R
Project: SOUTH SHORE SI COASTAL STORM DAMAGE REDUCTION
Date received: 11/14/2014

The LPC is in receipt of the, "Cultural Resources Summary and Preliminary Case Report for the South Shore of Staten Island Hurricane and Storm Risk Management Project, Staten Island, Richmond County, New York," prepared by the USACE and dated October 2014 and the "Phase I Combined Erosion Control and Storm Damage Protection Feasibility Study, South Shore of Staten Island, Richmond County, New York and Appendices," prepared by Panamerican Consultants, Inc and dated July 2005. The LPC concurs with the architectural and archaeological findings and would like to be consulted about the subsequent archaeology and geoarchaeology.

cc: NYSHPO

Gina Santucci 11/21/2014

SIGNATURE DATE
Gina Santucci, Environmental Review Coordinator

File Name: 30047_FSO_GS_11212014.doc

Landmarks Preservation Commission

1 Centre Street
9th Floor North
New York, NY 10007

Voice (212)-669-7700
Fax (212)-669-7960
http://nyc.gov/landmarks

ENVIRONMENTAL REVIEW

Project number: US ARMY CORPS OF ENGINEERS / 15ACE001R
Project: SOUTH SHORE SI COASTAL STORM DAMAGE REDUCTION
Date received: 12/4/2014

Comments:

The LPC is in receipt of the DEIS of November, 2014. The text is acceptable for historic and cultural resources.

LPC would like to be consulted regarding archeological work conducted as part of this project.

Cc: SHPO

Gina Santucci

12/11/2014

SIGNATURE DATE
Gina Santucci, Environmental Review Coordinator

File Name: 30047_FSO_GS_12112014.doc

The Delaware Nation
Cultural Preservation Office
P.O. Box 825 - 31064 State Highway 281- Anadarko, OK 73005
Phone: 405/247-2448 – Fax: 405/247-8905

NAGPRA ext. 1403
Section 106 ext. 1181
Museum ext. 1181
Library ext. 1196
Clerk ext. 1182

December 5, 2014

RE: Cultural Resource Summary and Preliminary Case Report, the South Shore of Staten Island Hurricane and Storm Risk Management Project, Staten Island, Richmond County, NY

Ms. Rakos,

The Delaware Nation Cultural Preservation Department received correspondence regarding the above referenced project. Our office is committed to protecting sites important to tribal heritage, culture and religion. Furthermore, the tribe is particularly concerned with archaeological sites that may contain human burials or remains, and associated funerary objects.

As described in your correspondence and upon research of our database(s) and files, we find that the Lenape people occupied this area either prehistorically or historically. However, the location of the project does not endanger cultural or religious sites of interest to the Delaware Nation. Please continue with the project as planned. However, should this project inadvertently uncover an archaeological site or object(s), we request that you halt all construction and ground disturbance activities and immediately contact the appropriate state agencies, as well as our office (within 24 hours).

Please Note the Delaware Nation, the Delaware Tribe of Indians, and the Stockbridge Munsee Band of Mohican Indians are the only Federally Recognized Delaware/Lenape entities in the United States and consultation must be made only with designated staff of these three tribes. We appreciate your cooperation in contacting the Delaware Nation Cultural Preservation Office to conduct proper Section 106 consultation. Should you have any questions regarding this email or future consultation feel free to contact our offices at 405-247-2448 or by email nalligood@delawarenation.com.

Sincerely,

Nekole Alligood

Nekole Alligood
Director

Delaware Tribe Historic Preservation Representatives
Department of Anthropology
Gladfelter Hall
Temple University
1115 W. Polett Walk
Philadelphia, PA 19122
temple@delawaretribe.org

November 27, 2014

Department of the Army
Attn: Lynn Rakos
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, N.Y. 10278

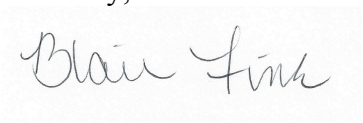
Re: South Shore of State Island Hurricane and Storm Risk Management Project

Dear Lynn Rakos,

Thank you for informing the Delaware Tribe regarding the above referenced project. We concur with the recommendations given in the Phase 1 Archaeological Survey. Borings along the project alignment will help to determine deeply buried landforms. We also concur with the recommendation for additional archaeological testing in areas of higher ground adjacent to proposed ponding areas and pump stations. We wish to continue as a consulting party on this project and look forward to receiving a copy of the additional survey report if one is performed. We appreciate your cooperation and look forward to working together on our shared interests in preserving Delaware cultural heritage.

If you have any questions, feel free to contact this office by phone at (609) 220-1047 or by e-mail at temple@delawaretribe.org.

Sincerely,



Blair Fink
Delaware Tribe Historic Preservation Representatives
Department of Anthropology
Gladfelter Hall
Temple University
1115 W. Polett Walk
Philadelphia, PA 19122

Stockbridge-Munsee Tribal Historic Preservation

Main Office
W13447 Camp 14 Rd
Bowler, WI 54416

New York Office
P.O. Box 718
Troy, NY 12181

Lynn Rakos
Project Archaeologist
US Army Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090
Via email only

May 15, 2015

RE: South Shore of Staten Island Hurricane & Storm Risk Management Project
Richmond County, NY
Comment by Stockbridge-Munsee Mohican Tribe

Dear Ms. Rakos:

I am in receipt of cultural resource materials sent dated 4/29/15 sent for review by Stockbridge-Munsee Mohican Tribe for the South Shore of Staten Island Hurricane and Storm Risk Management Project. I received a letter, Cultural Resource Summary and Preliminary Case Report with draft PA, and a Phase 1 survey on a CD. The materials were forwarded to me here in Troy, NY where I conduct reviews such as this from a satellite office for our tribe.

Thank you to USACE for initiating consultation for this project.

On behalf of Stockbridge-Munsee Mohican Tribe I offer the following comments:

- We concur with the recommendations of the 2005 Phase 1 Report which indicate several locations for borings to assess the potential for deeply buried prehistoric resources. We further concur with the recommendation for additional testing in select areas in the project alignment, including areas of high ground adjacent to proposed poinding areas and pump stations.
- We do not wish to be a signatory to the PA, though we do not have concerns with it, and instead would prefer to continue to receive cultural resource reports for the above remaining areas to be tested.

Thank you & Kind regards,

B. Hartley

Bonney Hartley
Tribal Historic Preservation Officer
New York Office

(518) 326-8870 *Email: bonney.hartley@mohican-nsn.gov*

Preserving America's Heritage

December 5, 2014

Mr. Peter Weppler
Chief, Environmental Analysis Branch
U.S. Army Corps of Engineers - Planning
26 Federal Plaza - Room 2151
New York, NY 10278-0090

Ref: Proposed Construction of South Shore of Staten Island Coastal Storm Damage Reduction Project Richmond County, New York

Dear Mr. Weppler:

On November 20, 2014, the Advisory Council on Historic Preservation (ACHP) received your notification and supporting documentation regarding the development of a programmatic agreement to address the potential adverse effects for the referenced project. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from the State Historic Preservation Officer, Tribal Historic Preservation Officer, affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and you determine that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final programmatic agreement (PA), developed in consultation with the New York State Historic Preservation Office (SHPO) and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the PA and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

If you have any questions or require further assistance, please contact Brian Lusher at 202-517-0221, or via email at blusher@achp.gov.

Sincerely,

Raymond V. Wallace

Raymond V. Wallace
Historic Preservation Technician
Office of Federal Agency Programs

Landmarks Preservation Commission

1 Centre Street
9th Floor North
New York, NY 10007

Voice (212)-669-7700
Fax (212)-669-7960
http://nyc.gov/landmarks

ENVIRONMENTAL REVIEW

Project number: US ARMY CORPS OF ENGINEERS / 106-R
Project: SOUTH SHORE SI COASTAL STORM DAMAGE REDUCTION
Date received: 11/14/2014

The LPC is in receipt of the, "Cultural Resources Summary and Preliminary Case Report for the South Shore of Staten Island Hurricane and Storm Risk Management Project, Staten Island, Richmond County, New York," prepared by the USACE and dated October 2014 and the "Phase I Combined Erosion Control and Storm Damage Protection Feasibility Study, South Shore of Staten Island, Richmond County, New York and Appendices," prepared by Panamerican Consultants, Inc and dated July 2005. The LPC concurs with the architectural and archaeological findings and would like to be consulted about the subsequent archaeology and geoarchaeology.

cc: NYSHPO

Gina Santucci 11/21/2014

SIGNATURE DATE
Gina Santucci, Environmental Review Coordinator

File Name: 30047_FSO_GS_11212014.doc

Landmarks Preservation Commission

1 Centre Street
9th Floor North
New York, NY 10007

Voice (212)-669-7700
Fax (212)-669-7960
http://nyc.gov/landmarks

ENVIRONMENTAL REVIEW

Project number: US ARMY CORPS OF ENGINEERS / 15ACE001R
Project: SOUTH SHORE SI COASTAL STORM DAMAGE REDUCTION
Date received: 12/4/2014

Comments:

The LPC is in receipt of the DEIS of November, 2014. The text is acceptable for historic and cultural resources.

LPC would like to be consulted regarding archeological work conducted as part of this project.

Cc: SHPO

Gina Santucci

12/11/2014

SIGNATURE DATE
Gina Santucci, Environmental Review Coordinator

File Name: 30047_FSO_GS_12112014.doc

THE CITY OF NEW YORK
OFFICE OF THE MAYOR
NEW YORK, NY 10007

MEMORANDUM

TO: Frank Verga, United States Army Corps of Engineers, New York District
Peter Weppler, United States Army Corps of Engineers, New York District
Karen Ashton, United States Army Corps of Engineers, New York District
Steve Zahn, New York State Department of Environmental Conservation

FROM: Esther Brunner, Mayor's Office of Sustainability (MOS)
Terrell Estesen, NYC Department of Environmental Protection (DEP)
Naim Rasheed, NYC Department of Transportation (DOT)
Owen Wells, NYC Department of Parks and Recreation (DPR)

DATE: January 29, 2015

SUBJECT: **South Shore of Staten Island Coastal Storm Risk Management**
Draft Environmental Impact Statement – New York City Agency Comments

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Representatives of New York City (NYC) agencies and the NYC Mayor's Office would like to thank the United States Army Corps of Engineers, New York District, for hosting a productive meeting last Friday, January 23, 2015 at their offices. This memorandum includes a summary of City-agency comments that were discussed during this meeting. The comments are provided in two categories: general comments are discussed first and specific comments second. The following City agencies represented at the meeting are City sponsors of the project and/or potentially involved agencies for environmental review purposes: NYC Department of Environmental Protection (DEP), NYC Department of Parks and Recreation (DPR), and NYC Department of Transportation (DOT).

During the meeting, DEP raised a major concern in regard to the relationship of the proposed seawall and critical infrastructure, which relates to the question of feasibility but may affect the analysis in the DEIS. DEP is concerned that the Oakwood Beach Wastewater Treatment Plant (WWTP)'s ability to hydraulically function/not flood may be compromised by the proposed seawall and location of interceptor and seawall. Specifically, if the interceptor sewer is on the seaside of the line of protection and not properly protected the WWTP could flood and/or the drainage system could flood behind the line of protection. Additionally, the WWTP may need an effluent pump station (at great capital expense and logistical difficulty, with a seawall on site) to

continue to treat and discharge wastewater during a storm (meeting between Corps and DEP will be set up by Curtis Cravens, ORR).

South Shore of Staten Island Coastal Storm Risk Management
Draft Environmental Impact Statement (DEIS)

A. General Comments

1. Based on the conversation from Friday, January 23, 2015, City agencies are aware that many components of the plan and technical details are not fully developed at this point in time and procedurally will be developed as part of the plans and specs phase in the Summer of 2016, after the FEIS is released. However, as articulated in the meeting, where ever possible, please disclose conceptual and basic technical information that is currently available. Also, please include explanations of how certain components of the plan are anticipated to work. You should be clear that the information provided is based on a design-level of 15-20%.
2. Please use language from the Feasibility Study and related reports to provide more detailed information in the DEIS.
3. Once City agency comments are addressed, as discussed, please provide the revised DEIS to City agencies for review before the release of the document, currently anticipated for April 2015.

B. Specific Comments

For City agencies to make findings under SEQRA, *see* 6 NYCRR 617.15, the City believes that the DEIS should be revised to include (more detailed) information as follows:

- **Tentatively Selected Plan:** Please clarify upfront in the DEIS that the "Tentatively Selected Plan" is the proposed plan/project and describe it in detail (use language from the Feasibility Study).
- **Construction process details:** Please include a construction section in the NEPA EIS document - as opposed to include construction related information in several different analysis areas. The construction section should discusses the following:
    - Anticipated construction operations and schedule
    - Roadway closure, construction duration, detour, traffic analyses showing whether the proposed roadway closures would create significant adverse traffic impacts, Traffic Management Plan, emergency vehicle access
    - Interface with adjacent recreational facilities. To the extent possible, the anticipated construction phasing concept and staging areas should be described, noting that detailed locations will be refined in consultation with DPR. The intention would be to provide an understanding of how public access to waterfront recreational amenities and parking lots will be affected and managed (e.g., will DPR parking lots continue to be available for public use or restricted during certain periods?) and to disclose the construction period disruptions or short-term impacts that are likely.
    - Assessment/avoidance of localized flooding impacts on DPR property

  - More detail on methods, duration and intensity needed to make conclusions on noise, air quality – more analysis could be appropriate depending on what is done, how and for how long. Depending on duration and intensity, quantitative analysis may be appropriate for the construction phase – in that case, NYC standards should be assessed (i.e. – 3 dBA noise increase, local PM2.5 incremental impact thresholds).

- **Road raising:** Please describe specifics about the three locations where streets would be raised (provide figures); by how much, how many lots would be affected, and their impacts on the adjacent properties and utilities, responsible entity, sidewalk and property access, legal grade (indicate the legal grades and why the proposed road raisings will not meet legal grade), funding. Please also describe the NY Rising Residential buy-out program coordination (meeting between Corps and DOT will be set up by Curtis Cravens, ORR).
- **Community outreach:** Please include language when, by whom, and how property owners affected by road raising would be contacted and how the community would be involved.
- **Stoplog Structure:** More details are needed regarding design and operation/ maintenance, public safety issues including pedestrian & vehicular access, evacuation route. Coordination with DOT, OEM, NYPD, and FDNY is recommended (meeting between Corps and DOT, OEM, NYPD, and FDNY will be set up by ORR).
  - Please include as much detail as is currently known. If conceptual drawings are available, please include. State that operation & maintenance will be addressed and describe some parameters that will guide the Corp's consideration of public safety.
- **Air Quality placeholder:** Section needs to be provided.
- **Recreation/Open Space:** A more detailed description of the integration of the levee and promenade with adjacent recreation facilities would be useful to explain how the waterfront and amenities will operate. This would include discussion of any recreational assets that would be affected by the levee, identification of location of access ramps and pedestrian access points, any replacements of existing facilities with functionally equivalent facilities, and maintenance obligations.
- **Natural Resources:** Please include estimates of the amount of tree removals anticipated to be required. Any plans or accommodations to allow for wildlife connectivity should also be described.
- **Coastal Zone Management:** Status of conversations with DCP and DOS: Cate Alcoba of the Corps is in conversation with Terra Stern of DOS. Terra Stern and Mary Kimball of DCP's Waterfront and Open Space Division are in contact as well.
- **Hazardous Materials:** More information on areas of disturbance and what kind of testing/remediation may be needed; please provide more information relationship to CERCLA activities in Great Kills Park and any potential impacts on the proposed project.
  - Please provide the Hazardous Materials Report mentioned during the meeting to Curtis Cravens, ORR.

ANDREW M. CUOMO
GOVERNOR

JOE MARTENS
COMMISSIONER

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233-1010

January 21, 2015

Colonel Paul E. Owen
United States Army Corps of Engineers
New York District
26 Federal Plaza, Room 2109
New York, NY, 10279-0090

Re: South Shore Staten Island Phase I, Oakwood Beach

Dear Colonel Owen:

The New York State Department of Environmental Conservation (Department) has received the November 2014 draft proposal on the above referenced project from the United States Army Corps of Engineers (Corps). As currently formulated for the Oakwood Beach area of this project, the Corps' proposed alternative will not include a large parcel known as the "Traub property" as well as the vast majority of the properties obtained in this area through the New York Rising flood buy-out program. The Corps has tentatively elected to design the project in the Oakwood Beach area to provide necessary storm water storage capacity by excavating 200,000 cubic yards of earth to create a pond in an adjacent area.

The Department requests that the Corps reconsider this project attribute in the Oakwood Beach portion of the project, while keeping the project's schedule on track. The Department has continuously sought to have the Corps include the recommendations contained in the Oakwood Beach Dewberry Feasibility Study in the South Shore Staten Island Phase I project, as stated in the Department's April 10, 2014, letter to Colonel Owen (attached). Apparently based on discussions with certain agency staff from New York City, the Corps pursued a project attribute in the Oakwood Beach area that resulted in the exclusion of the Traub property, along with the vast majority of the New York Rising flood buy-out lots.

By this letter, the Department is requesting that the Corps reconsider this draft proposal and perform a design and economic analysis which includes the Traub property (with an appraised value reflecting its condition as mostly regulated wetlands) along with the buy-out lots (government-owned and available at no cost to the Corps), as an alternative project element to the one that involves excavating over 200,000 cubic yards of material for storm water storage. The Department will assist the Corps in this design and economic analysis by providing the Department's assessment of what portions of the Traub property may be available for construction under State regulations.

The Department understands that the Corps has had to extend by two months the target date for the public release of the draft report in order to address government agency comments (federal, state, and city). The Department requests that the Corps undertake best efforts to perform the requested reassessment (including the design and economic analysis) within the current schedule.

If you have any questions regarding this high priority request please contact me at the above number. As always, the Department looks forward to working with you and your staff to finalize the South Shore of Staten Island project.

Sincerely,

Joseph J. Martens

c: F. Santomauro
A. Ciorra
F. Verga
J. Rubin
K. Dineen
J. Tierney
V. Lannon
A. Fuchs
S. Zahn
S. McCormick
D. Zarrilli
C. Cravens

New York State Department of Environmental Conservation
Division of Water
Bureau of Flood Protection and Dam Safety, 4th Floor
625 Broadway, Albany, New York 12233-3504
Phone: (518) 402-8185 • **FAX:** (518) 402-9029
Website: www.dec.ny.gov

Joe Martens
Commissioner

April 10, 2014

Colonel Paul E. Owen
United States Army Corps of Engineers
New York District
26 Federal Plaza
New York, New York 10278

RE: South Shore of Staten Island (SSSI), New York Beach Erosion Control and Storm Damage Reduction Feasibility Study
New York State Department of Environmental Conservation Oakwood Beach Flood Attenuation Feasibility Study

Dear Colonel Owen:

The New York State Department of Environmental Conservation (Department) has completed its Flood Attenuation Feasibility Study of the Oakwood Beach area on the south shore of Staten Island. A CD of the final report dated January 31, 2014, which was previously provided to your staff, and the April 4, 2014 Supplemental Report is being forwarded to Mr. Frank Verga (Project Manager) by our consultant, Dewberry. Mr. Verga has also been given direct access to the final report via internet. The Department wishes to express our gratitude for all of the cooperation and assistance received from your staff during the course of the Department's study to help insure that its scope can be incorporated into the United States Army Corp of Engineer's (Corps) SSSI Feasibility Study

The purpose of the Department's study was to evaluate conceptually if the Corps' SSSI Feasibility Study, the New York City Mid-Island Bluebelt Study, the New York Rising Buy-out Program and restoration of natural infrastructure could all be combined in a fashion that would provide protection from coastal and rainfall flooding while preserving and restoring the wetlands within the Oakwood Beach watershed. The Dewberry Study has shown that this can be accomplished.

The Dewberry Study concluded that the revetment currently proposed in the Corps' Study can be moved landward and lowered which would allow for tidal wetlands to be constructed between the revetment and the ocean. The Buy-out Program will allow for more of the upland area to be used as stormwater storage to meet the needs of the City's Bluebelt Plan. The Supplement to the Study further evaluated the City's needs in regards to protecting and accessing their sewers that run parallel to the revetment alignment. Solutions have been found to accommodate all needs.

The Department is officially requesting that the Dewberry Oakwood Beach Flood Attenuation Feasibility Study be incorporated into the Corps' SSSI Feasibility Study. Please incorporate Alternative 1 and the modifications to it contained in the Supplemental Report into the SSSI Feasibility Study.

If you or your staff have any questions, you may contact Ms. Sue McCormick, P.E., Chief of the Coastal Erosion Management Program at (518) 402-8127 or myself at (518) 402-8185. Thank you for your and your staff's assistance in moving this very important resiliency component of the SSSI Feasibility Study forward in an expedited manor. The Department looks forward to the completion of the SSSI Feasibility Study and movement toward the construction phase.

Sincerely,

Alan A. Fuchs, P.E.
Director
Bureau of Dam Safety and Flood Protection

Cc: F. Verga, Corps Project Manager (CD sent by Dewberry)
J. Tierney, NYSDEC
V. Lannon, NYSDEC, Region 2
S. McCormick, NYSDEC (2 CDs sent by Dewberry)
C. Cravens, NYC Mayor's Office (CD sent by Dewberry)
J. Garin, NYCDEP
D. Gumb, NYCDEP (CD sent by Dewberry)
N. Maher, TNC (CD sent by Dewberry)
J. Huang, Dewberry

Alcoba, Catherine J NAN02

From: Verga, Frank NAN02
Sent: Wednesday, May 20, 2015 5:11 PM
To: Ashton, Karen NAN02; Couch, Stephen NAN02; Weppler, Peter M NAN02; Alcoba, Catherine J NAN02; Rakos, Lynn NAN02; Rice-Mcdonnell, Sheila R NAN; Chauncey, Andre T NAN02; Gonzalez, Carlos E NAN02; 'MPirrello@moffattnichol.com'; 'michael.cannon@aecom.com'; Simon, Ellen B NAN02
Cc: Brickman, Eugene NAN02; Ciorra, Anthony NAN02
Subject: Fw: [EXTERNAL] South Shore Staten Island Phase I request for moving forward on one Pond alternative
Attachments: 2015-4-6 Fuchs Ciorra SSSI Phase1two ponds.pdf

All, see below from NYS. As discussed we will need to update the draft report's proposed plan before public release.

Please coordinate with AEs as necessary to revise the main report, costs, figures, appendices, real estate plan and eis to meet our new schedule, as discussed.

Thanks.

From: Fuchs, Alan (DEC) [mailto:alan.fuchs@dec.ny.gov]
Sent: Wednesday, May 20, 2015 03:29 PM
To: Ciorra, Anthony NAN02; Verga, Frank NAN02
Cc: Tierney, James M (DEC) <james.tierney@dec.ny.gov>; Lannon, Venetia A (DEC) <venetia.lannon@dec.ny.gov>; Zarrilli, Dan <dzarrilli@cityhall.nyc.gov>; Cravens, Curtis <ccravens@cityhall.nyc.gov>; Murphy, Eileen (DEC) <eileen.murphy@dec.ny.gov>; McCormick, Susan D (DEC) <susan.mccormick@dec.ny.gov>; Zahn, Steve M (DEC) <steve.zahn@dec.ny.gov>; Klotz, Mark A (DEC) <mark.klotz@dec.ny.gov>; Dineen, Kate (STORMRECOVERY) <Kate.Dineen@stormrecovery.ny.gov>; Sinclair, Rebecca (STORMRECOVERY) <Rebecca.Sinclair@stormrecovery.ny.gov>; Santomauro, Frank NAN02; Shah, Ajay (DEC) <ajay.shah@dec.ny.gov>
Subject: [EXTERNAL] South Shore Staten Island Phase I request for moving forward on one Pond alternative

Anthony and Frank,

On April 6, 2015 I sent the attached letter to Anthony Ciorra by which NYS DEC requested that the Army Corps include within the South Shore Staten Island Phase I Project a component that has been referred to as the “Two Pond” alternative in the Oakwood Beach area of the overall project site. As discussed in my April 16th letter, the NYS DEC acknowledged that during the multiple remaining phases in the development of the final plan for this large scale project certain elements may be required to be modified to address actual conditions.

NYS DEC has come to the conclusion that a prior assumption on the availability of land for the Two Pond alternative is now uncertain to the extent that it cannot be assumed that the property necessary will be available. Therefore, NYS DEC is requesting the Army Corps revise

the documents/plans that are currently being developed for public review and consultation to reflect the previously developed “One Pond” alternative in this small portion of the overall project site. This will provide a more accurate presentation of the South Shore Staten Island Phase I Project for stakeholder consideration. NYS DEC is of the opinion that this modification should be made prior to the upcoming public presentation.

I thank you both for assisting NYS DEC and in moving this important project toward implementation.

Al

Alan A, Fuchs, P.E.

Director, Bureau of Flood Protection and Dam Safety, Division of Water

New York State Department of Environmental Conservation

625 Broadway, Albany, NY 12233-3504

P: 518-402-8185 | F: 518-402-9029 | Alan.Fuchs@dec.ny.gov

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Bureau of Flood Protection and Dam Safety
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April 6, 2015

Anthony Ciorra, P.E.
Chief – Coastal Restoration and Special Project Branch
United States Army Corps of Engineers – New York District
26 Federal Plaza – Room 2119C
New York, New York 10278

Re: South Shore of Staten Island Phase I Project

Dear Mr. Ciorra:

At a meeting on March 4, 2015, the United States Army Corps of Engineers (Army Corps) provided a number of potential alternatives on the above referenced matter to the Army Corps' non-federal sponsor, the New York State Department of Environmental Conservation (DEC). These alternatives addressed project elements in and around the Oakwood Beach area, which is within and adjacent to the proposed alignment of the South Shore of Staten Island Phase I Project (Project). At that meeting the Army Corps indicated that they needed to know the non-federal sponsor's preferred alternative for the Oakwood Beach area. This letter provides the Army Corps with this direction on behalf of DEC.

DEC requests that the Army Corps move forward with the "two pond" alternative, which includes a drainage pond on the area between Kissam Avenue and Fox Lane. New York State Governor's Office of Storm Recovery is implementing an extensive flood buy-out program in the Oakwood Beach area such that all properties within that program should be considered available for the Project, including the above identified areas. DEC understands that this alternative qualifies as the National Economic Development (NED) Plan.

DEC is aware that the Project may require mitigation focused in the Oakwood Beach area. Should mitigation be required, New York is ready and willing to work with the Army Corps to make the buy-out properties along and west of Fox Lane, and potentially northwest of Mill Road, available at no cost to the Army Corps for use in developing appropriate habitat for any necessary mitigation.

DEC acknowledges that during the development of the final plan and the design of the Project certain elements may be required to be changed to meet actual conditions. DEC looks forward to working through these issues with the Army Corps and will continue to work with you to expedite the development and timely construction of this important Project.

Sincerely,

Alan A. Fuchs, P.E.
Director
Bureau of Flood Protection and Dam Safety

ec: Commissioner Martens
Jamie Rubin
James Tierney
Venetia Lannon
Sue McCormick
Frank Santomauro
Frank Verga
Dan Zarrilli
Curtis Cravens

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

March 27, 2015

Colonel Paul E. Owen
District Engineer, New York District
U.S. Army Corps of Engineers
Jacob K. Javits Federal Bldg., Rm. 2109
26 Federal Plaza, Rm. 2131
New York, NY 10278-0090

Dear Colonel Owen:

This is the U.S. Fish and Wildlife Service's (Service) Draft Planning Aid Letter (PAL) for the U.S. Army Corps of Engineers' (Corps) South Shore of Staten Island Coastal Storm Risk Management Project. This PAL is intended as a supplement and update to our Fish and Wildlife Coordination Act Section 2(b) Report (FWCAR) for this project, prepared and dated January of 2006, based upon the project description provided in the Corps' 2004 Alternatives Feasibility Report and 2005 preliminary Draft Environmental Impact Statement. The Service had concluded in our 2006 FWCAR that project implementation, involving the construction of sea walls, sheet pile walls, levees (features designed to protect the shoreline, referred to as the Line of Protection [LOP]) and the excavation of wetlands to increase flood storage capacity, coupled with adoption of our recommendations, had the potential to result in positive effects to the aquatic ecosystem. The Service's 2006 FWCAR is hereby incorporated by reference.

The Corps completed a post-Hurricane Sandy assessment of the South Shore of Staten Island Coastal Storm Risk Management Project to: update an inventory of flood control structures; revise design water level elevations based on updated Federal Emergency Management Agency (FEMA) analyses; refine the LOP; and identify an optimal Post-Sandy tentatively selected plan, in September of 2014 (U.S. Army Corps of Engineers 2014).

The Corps has provided the Service with a preliminary/general project design and description (U.S. Army Corps of Engineers 2014). The final project design is contingent upon additional Corps site investigations (soil borings, etc.) and further coordination with the New York State Department of Environmental Conservation and the New York City Department of Environmental Protection (NYCDEP). The Corps requested this PAL in draft form to assist in their planning process with the understanding that the final PAL will reflect any project revisions/refinements as the final design is developed.

Project Purpose, Scope, and Authority

Refer to the Service's 2006 FWCAR for a description of the project purpose, scope, and authority. The following information is provided as an update that relates to Superstorm Sandy that occurred in October of 2012.

The South Shore of Staten Island was one of the hardest hit areas during Superstorm Sandy. High water marks and storm tide gauges deployed by the U.S. Geological Survey (USGS) show that maximum water levels during Sandy reached 13 to 16 feet National Geodetic Vertical Datum (NGVD) (U.S Geological Survey 2014) with flooding depths up to 9 feet above the local ground level. Twenty-three individuals lost their lives as a result of the storm in Staten Island. Along the study area, residences, businesses, and cars were heavily damaged and whole blocks of homes were removed from their foundations (U.S. Army Corps of Engineers 2014).

The federal government initially authorized the study of the problem and potential solutions along the 13 mile long south shoreline of Staten Island via a United States House of Representatives Committee on Public Works and Transportation resolution dated May 13, 1993 (U.S. Fish and Wildlife Service 2006). The Post-Sandy tentatively selected plan was authorized by the Disaster Relief Appropriations Act of 2013 (U.S. Army Corps of Engineers 2014).

Study Area

Refer to the Service's 2006 FWCAR for a description of the Study Area.

The Service conducted a site inspection on November 5, 2014. The Service observed extensive post-Superstorm Sandy storm damage protection efforts within the project area along the lower New York Bay/Atlantic Ocean shoreline during the site inspection. These efforts included large sand bag placement and dunes/levees constructed by New York City with FEMA funding (Alcoba *pers. comm.* 2014).

Fish and Wildlife Resources in Project Area

The Service identified four ecological communities within the project/study area in our 2006 FWCAR, including disturbed uplands, tidal wetlands, freshwater wetlands, and maritime beach. Refer to our 2006 FWCAR for a detailed description of these communities, including dominant vegetation, avian fauna, finfish, shellfish, herpto-fauna, mammals, and threatened and endangered species.

The ecological communities, observed during the November 5, 2014, site inspection, remain relatively the same as described in our 2006 FWCAR. Dominant vegetation observed during the inspection include: maintained lawn, common reed (*Phragmites australis*), goldenrod (*Solidago* spp.), and black cherry (*Prunus serotina*) in the disturbed upland community; common reed in both the freshwater and tidal wetlands; and American beachgrass (*Ammophila breviligulata*) and seaside goldenrod (*Solidago semipervirens*) in the maritime beach community.

The majority of wetlands within the project area are degraded or of low quality due to the dominance of an invasive common reed monoculture (U.S. Fish and Wildlife Service 2006).

Red Knot

While this report does not constitute a Biological Opinion under Section 7 of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), the following is provided as an update to the information included in the 2006 FWCAR regarding threatened and endangered species.

The Service's 2006 FWCAR was prepared well before the red knot (*Calidris canutus rufa*) was granted federal protection as a threatened species under the ESA in December of 2014. The red knot breeds in the Canadian arctic and winters mainly in Tierra del Fuego, northern Brazil, or Florida, and migrates through Staten Island, to and from its breeding sites in the spring and fall (New Jersey Department of Environmental Protection 2007).

The Service is not aware of site-specific surveys conducted to determine red knot presence; however, there are records of red knot presence on the mudflats at Great Kills Park, located adjacent to the project area to the south, during the months of May and August in past years (Ebird 2015). The most recent sighting (one red knot) at Great Kills Park was in August of 2013 (Ebird 2015). The project site does provide suitable red knot foraging habitat along the lower New York Bay/Atlantic Ocean shoreline. As such, it is likely that the red knot does frequent the project site during the spring and fall migrations.

The Section 7 consultation shall be conducted and documented in a separate document and will be contingent upon the Service's receipt of a Corps ESA determination and assessment.

New York City Bluebelt Program

The Corps' revised project design is being proposed within the context of the NYCDEP's Bluebelt program, initiated in the late 1980's but accelerated within the project area due to damages associated with Hurricane/Superstorm Sandy. This program involves stormwater management for approximately one third of Staten Island's land area. The program preserves natural drainage corridors, called Bluebelts, including streams, ponds, and other wetland areas. Preservation of these wetland systems allows them to perform their functions of conveying, storing, and filtering stormwater, as opposed to using stormwater culverts and other man-made structures. The Bluebelt program is proposing wetland restoration within the project area, and includes the creation of a mosaic of habitats (upland islands, ephemeral pools, emergent wetlands, and open water) and the plantings of appropriate native species within several of the wetlands proposed for excavation as part of this project (New York City Department of Environmental Protection 2013). The Corps has indicated that the Bluebelt-recommended measures would be implemented by the NYCDEP either once the Corps project is complete or completed concurrently. However, the Service must assess the impacts of the federal project and any associated mitigative measures proposed by the Corps. Any mitigative/beneficial measures proposed and implemented by other organizations/agencies will not be accredited to the Corps. The Corps could choose to implement, or assist in the funding of, wetland enhancement projects

identified by the Bluebelt program and receive credit to compensate for impacts of the proposed action (further described in the Mitigation Recommendations section below).

Proposed Action

The South Shore of Staten Island Coastal Risk Management Project has been developed to include a LOP and interior drainage improvements. The primary revisions to the project design from the project proposed in 2006 are included as follows:

- Shifting of the southern portion of the LOP (Oakwood Beach to New Dorp Beach) alignment landward; reduction of the crest elevations/footprint to create uniformity of structure design and minimize beach maintenance;
- Lowering of the crest elevation at New Dorp Beach and Oakwood Beach by 6-8 feet;
- Increase in the amount of excavation of existing ponds within 3 of the 5 drainage/wetland areas (further described in "Project Impacts" section); revision of the excavated wetland design from an open water habitat to an emergent wetland habitat.
- The levee and seawall proposed at Crescent Beach in the pre-Sandy project are not included in the post-sandy project. No work is proposed at Crescent Beach at this time.

Table 1 provides a comparison of the LOP parameters of the pre-Sandy and post-Sandy plans (refer to U.S. Army Corps of Engineers 2014 for map depicting reaches).

Table 1. Key LOP Parameter Comparison of Pre-Sandy and Post-Sandy Plans

Corps Reach No.	Location	Type of Structure	Length (feet)	Crest Elevation Pre-Sandy (feet, NGVD)	Crest Elevation Post-Sandy (feet, NGVD)
A-4	Fort Wadsworth to Oakwood Beach	Buried Seawall	22,700	20-28.5	20.5
A-3	Oakwood Beach Treatment Plant (southern portion)	Vertical Floodwall	1,800	26	20.5
A-2	Oakwood Beach Treatment Plant (northern portion)	Earthen Levee	600	23	18
A-1	Oakwood Beach Landward	Earthen Levee	2,800	17	18

The seawall proposed in the New Dorp Beach to Oakwood Beach section of the project, currently dominated by common reed, was initially proposed to be buried with sand excavated from the project area. However, the Corps is concerned that sand in this area is likely to contain

common reed rhizomes which, if placed over the seawall, could cause the further spread of the invasive common reed. As such, the Corps is now proposing to leave the armor stone seawall in this section of the project area exposed and to not be buried.

The post-Sandy Project involves the placement of the LOP further inland in the area between New Dorp and Oakwood Beach when compared to the pre-Sandy project. This project design revision would preserve the hydrological connection between the Lower Bay and tidal wetlands that would remain seaward of the seawall and reduce turbidity impacts, allow for lower crest elevations, increase the protective buffer between the ocean and LOP, and potentially lower maintenance costs (U.S. Army Corps of Engineers 2014). Decreasing the amount of maintenance also results in decreasing the amount of future disturbance and associated environmental impacts.

The proposed action would remove invasive, non-native vegetation and increase the flood storage capacity of the excavated wetlands. The Corps has indicated that they will grade and seed the excavated wetlands to create emergent wetlands that will have open water present primarily during storm events. If these wetlands function as intended, this project would restore these wetlands by removing invasive species, while also improving the flood storage capacity and wildlife habitat functions. The Corps is also proposing to utilize sediment and erosion control practices (silt fencing, hay bales, etc.) to minimize the input of sediments into wetlands during construction activities and the clear marking and fencing of wetland edges to avoid un-intended intrusions of construction equipment into wetlands.

The Corps is also proposing the enhancement of tidal wetlands at Oakwood Beach, including the removal of common reed, planting of native vegetation, and grading of 18.9 acres, resulting in 12.9 acres of low marsh and 6 acres of high marsh (U.S. Army Corps of Engineers 2015). While this measure does not create additional wetlands, it will result in a net gain in wetland functional values (biological productivity/ecological value and flood storage) in these tidal wetlands.

Project Impacts

The project impacts described in our 2006 FWCAR that are still applicable for the post-Sandy project are summarized as follows:

- Preclusion of the formation of maritime beach and wetland habitats;
- Maritime beach and wetland habitat modification and/or loss.
- Burial of benthic organisms; and
- Increase in turbidity of aquatic habitats.

Refer to the Service's FWCAR for a detailed description of these impacts. In 2006, the Service identified the most significant impact of the proposed action was the loss of vegetated wetlands as a result of the conversion of these wetlands, albeit degraded, to open water habitat.

Table 2 provides a comparison of the interior drainage excavations proposed for the pre-Sandy and post-Sandy plans in cubic yards (refer to U.S. Army Corps of Engineers 2014 for map depicting drainage areas).

Table 2. Comparison of Excavations proposed in Pre-sandy and Post-Sandy Plans

Corps Drainage Area	Pre-Sandy Plan (cubic yards)	Post-Sandy Plan (cubic yards)	Post-Sandy Increase (cubic yards)
A	0	0	0
B	0	204,000	204,000
C	252,000	382,000	130,000
D	0	0	0
E	164,000	228,000	64,000

The post-Sandy plan calls for a net increase of 398,000 cubic yards of excavation in wetland areas within the project area. The Service estimated in our 2006 FWCA that a total of 85 acres of wetlands were to be excavated. The post-Sandy design now involves the excavation of approximately 117 acres of wetlands, an increase of 32 acres. The pre-Sandy plan included 5.18 acres of wetland fill from the construction of the LOP, as compared to the 10.89 acres of wetlands proposed to be filled in the post-Sandy plan. The increase in wetland fill is attributed to the moving of the LOP landward and the revision of the LOP design from the more narrow sheet pile seawall to the wider buried seawall (Alcoba *pers. comm.* 2014). The construction of the LOP will result in the net loss of 10.89 acres of wetlands. However, the post-Sandy project also involves the excavation of 11.34 acres of uplands, which, if properly graded and planted with appropriate vegetation to provide a mosaic of wetland habitats (open water, emergent and/or scrub/shrub wetlands), could be considered compensatory mitigation and be accredited towards, the 1:1 mitigation ratio described in the Service's 2006 FWCAR.

The placement of exposed armor stone associated with the LOP would directly modify the wetland habitats between New Dorp Beach to Oakwood Beach (see page 9 of U.S. Army Corps of Engineers 2014). Artificial habitats typically do not support the same assemblages, often supporting fewer native and more exotic species (Chapman and Blockley 2009). Additionally, the exposed armor stone could segment the habitat and limit or prevent access to terrestrial species that traverse through wetland habitats as part of their life cycle (Sheridan 2010). For example, the diamondback terrapin (*Malaclemys terrapin*) was identified in our 2006 report as a reptile that occurs in the project area. This species requires sandy beaches for breeding and salt marsh for feeding and growth (Maryland Diamondback Terrapin Task Force 2001). The placement of the exposed armor stone could prevent or limit access between the two habitats, thereby limiting habitat suitability for this and other species that traverse through these habitats (Maryland Diamondback Terrapin Task Force 2001).

Mitigation Recommendations

Previously Proposed Mitigation Measures

Refer to the Service's 2006 FWCAR (pp. 35-41) for a description of recommended mitigative measures, which are still applicable for this revised project design.

One of the primary mitigative measures recommended in the Service's 2006 FWCAR was an overall compensatory mitigation plan that provided a ratio of 1:1 to compensate for the conversion of vegetated wetlands to open water (pond) areas.

The post-Sandy project is designed to create emergent wetlands (consisting of native vegetation) in the excavated areas, as opposed to the permanent open water habitats envisioned in the Service's 2006 report. Provided the excavated areas function as emergent wetlands, the post-Sandy project would result in a net benefit to wetland functions and values at this site due to the removal of invasive species, while also improving the flood storage capacity and wildlife habitat functions. In this case, the 1:1 mitigation ratio recommended in the 2006 FWCAR would be met. However, note that should the excavated areas not function as emergent wetlands (if common reed intrusion occurs or areas become permanent open water habitats with only fringe vegetation or if areas are too dry to support wetland habitats), either (1) remedial actions (invasive species removed, re-grading, supplemental plantings, etc.) should occur so that the functions and values of emergent wetlands are reestablished; or (2) the 1:1 compensation ratio should be followed. Listed below are mitigative measures recommended to improve the likelihood of wetland restoration success.

The Service notes that the 1:1 mitigation ratio is still required for the filling of 10.89 acres from the construction of the LOP. This mitigation can be attained through the creation of wetlands resulting from the excavation of upland areas described in "Project Impacts" section.

Service Recommended Conservation Measures for the Post-Sandy Project

The following measures are recommended in addition to those described in the Service's 2006 FWCAR.

Burial of the exposed seawall: In regards to the plan to leave the seawall exposed between New Dorp and Oakwood Beach, the Service recommends that the seawall be buried to allow for movement of terrestrial species that traverse the wetlands. Common reed is an invasive species that is already dominant in this wetland. A monitoring and maintenance program should be implemented to insure that common reed is removed and does not expand beyond the buried seawall. Additionally, as further described below, the Service recommends the restoration, of wetlands not proposed for excavation, including the removal of common reed.

Planting of wetland vegetation/increase in diversity in excavated wetland and upland areas: Due to the potential of seeds to be transported by storm water away from intended locations, the Service recommends that seeding efforts are supplemented with plantings as well. As stated above, the Service recommends that only native species be seeded or planted. Such plantings should occur in both existing wetlands and any additional wetlands created in excavated uplands. Additionally, as stated above, excavated uplands can also be properly graded and planted with appropriate vegetation to provide a mosaic of wetland habitats (open water, emergent and/or scrub/shrub wetlands) and be accredited towards the 1:1 mitigation ratio described in the Service's 2006 FWCAR.

Monitoring and maintenance of all restored wetlands: Wetland areas restored as part of this project should be monitored for at least 5 years to insure that they function as designed - as emergent freshwater wetlands in the excavated areas and as tidal wetlands in the enhanced area. There should be little (no more than 5 percent coverage) or no common reed present and at least 85 percent coverage of native herbaceous/shrub layer vegetation. Should the excavated areas not function as emergent wetlands (if common reed intrusion occurs or areas become permanent open water habitats with only fringe vegetation or if areas are too dry to support wetland habitats), either remedial actions (invasive species removal, re-grading, supplemental plantings, etc.) should occur so that the excavated areas do function as emergent wetlands or the 1:1 compensation ratio should be followed.

Restoration of wetlands not proposed for excavation: Extensive wetland areas dominated by an extensive monoculture of common reed exist within the project study area. Wetland areas not proposed for excavation could be restored - including the removal of common reed, planting of native wetland vegetation, and repair/removal of hydrological impediments (if applicable).

Contaminants: The Service recommends that the Corps conduct a sampling effort to evaluate hazardous substances in sediment at the surface and at the depth of excavation. This effort should sample for organochlorine pesticides and PCBs (polychlorinated biphenyls), metals, and polycyclic aromatic hydrocarbons (PAHs) to determine if there are contaminants present at concentrations which could be exposed and harmful to fish and wildlife resources. Should such contaminants be present, the Corps should coordinate with the Service on a course of action, which may include site remediation (removal of contaminated soils and backfill of clean material), treatment of surface waters or consideration of alternate sites.

Creation of bio-filtration basins/swales: The Corps should consider the creation of biofiltration basins and/or swales in upland areas to provide primary treatment of storm water run-off prior to entry into wetlands (New York State Department of Environmental Conservation 2001).

Service Position

When compared to the originally proposed project in 2006, the revised proposed action would result in an increase in: the amount of material to be excavated from existing wetlands (a net increase of 398,000 cubic yards); the acreage of wetlands to be excavated (increase of 32 acres); and the area of wetlands to be filled (an increase in 5.71 acres).

However, nearly all of the wetlands to be excavated and/or filled consist of a monoculture of the invasive common reed which is of limited ecological value. The removal of invasive non-native vegetation, the seeding and planting of native wetland vegetation and the creation of emergent wetland in the excavated wetlands would improve the ecological value of those habitats. Additionally, the enhancement of 18.9 acres of tidal wetlands at Oakwood Beach will also improve the ecological value of those wetlands. Finally, the excavation, grading and planting of 11.34 acres of uplands converted into freshwater wetlands could also be accredited towards and attain the 1:1 mitigation ratio described in the Service's 2006 FWCAR. Provided the wetland enhancements function as designed/intended, the proposed action would result in no net loss of wetland acreage and in a net increase in wetland functional values.

As such, the Service concludes, provided the Service-recommended measures are implemented, that the proposed action will not have significant adverse impacts on fish and wildlife resources in the project area.

The Service appreciates the Corps' assistance during the completion of this document. If you have any questions or require additional information, please contact Mr. Steven Sinkevich of the Long Island Field Office at 631-286-0485.

Sincerely,

for Patricia Cole
David A. Stilwell
Field Supervisor

cc: NYSDEC, Region 2, Long Island City, NY (S. Zahn)
USFWS, Long Island Field Office, Shirley, NY

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DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF
Environmental Analysis Branch

October 30, 2014

Mr. Christopher Boelke
Field Office Supervisor
NOAA/NMFS/Habitat Conservation Division
55 Great Republic Drive
Gloucester, MA 01930-2276

Subject: **South Shore of Staten Island Coastal Storm Risk Management Project, Staten Island, New York**

Dear Mr. Boelke:

With the passage of the Hurricane Sandy Disaster Relief Appropriations Act of 2013 (Public Law 113-2), the U.S. Army Corps of Engineers has been given the authority and funding to complete ongoing coastal storm risk management projects and studies in the Northeast. As part of the planning and implementation process for the South Shore of Staten Island Coastal Storm Risk Management Project, Staten Island, New York, the New York District will be completing the Feasibility Study and environmental compliance.

Your office last reviewed an Essential Fish Habitat (EFH) report for the above project in accordance with the Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act of 1996 (PL 104-267) in 2005. This letter is a request for your office to provide an update to the original EFH assessment. Please find attached the Essential Fish Habitat Assessment previously submitted as well as updated plans and specifications and project description for your review. The District recognizes your heavy workload and appreciates your prompt response to the project description and the required funding to complete your reassessment. Please review the information and provide any comments regarding any new potential project impacts on Essential Fish Habitat.

I look forward to working with you and your staff on this effort. If you should have any questions, please contact Ms. Catherine Alcoba of my staff at 917-790-8216.

Sincerely,

Peter Weppler
Chief, Environmental Analysis Branch

Cc: Melissa Alvarez, NMFS Sandy Hook

Attachments

Alcoba, Catherine J NAN02

From: Alcoba, Catherine J NAN02
Sent: Tuesday, January 06, 2015 2:16 PM
To: 'Melissa Alvarez - NOAA Federal'
Subject: RE: [EXTERNAL] Re: SSSI EFH (UNCLASSIFIED)
Attachments: Final SSSI EFH 1-2015.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Melissa,

Sorry for the delay getting back to you. The project details are still being finalized. We are still waiting to receive sponsor comments on the draft FS/EIS, however we still hope to release the updated document to NAD and the public later in January.

The EFH assessment, updated to reflect each of the project changes below, is attached.

Let me know if you have any questions to want to arrange a time to talk.

Thanks and happy new year!
Kate

Catherine J. Alcoba
Biologist
U.S. Army Corps of Engineers
New York District
26 Federal Plaza - Room 2145
New York, NY 10278-0090
Voice: 917-790-8216
Fax: 212-264-0961

-----Original Message-----
From: Melissa Alvarez - NOAA Federal [mailto:melissa.alvarez@noaa.gov]
Sent: Wednesday, November 05, 2014 8:53 AM
To: Alcoba, Catherine J NAN02
Subject: [EXTERNAL] Re: SSSI EFH (UNCLASSIFIED)

Kate,

Please update the EFH assessment to include changes. The original document is too old and we have nothing in the system or files here on it. Thanks.

Melissa D. Alvarez, PWS
Marine Habitat Resource Specialist
Habitat Conservation Division
National Marine Fisheries Service
James J. Howard Marine Sciences Laboratory
74 Magruder Rd.
Highlands, NJ 07732
(732) 872-3116 phone
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melissa.alvarez@noaa.gov
http://www.greateratlantic.fisheries.noaa.gov/

On Fri, Oct 31, 2014 at 8:51 AM, Alcoba, Catherine J NAN02 <Catherine.J.Alcoba@usace.army.mil> wrote:

Classification: UNCLASSIFIED
Caveats: NONE

Hello Chris and Melissa,

NYD will soon be completing the Feasibility Study and Environmental Impact Statement for the South Shore of Staten Island (SSSI) Coastal Storm Risk Management Project.

Your office last reviewed an EFH report (attached) for SSSI in 2005. NYD requests that you provide an update to the original EFH assessment.

I will be sending you a current project description showing where the Line of Protection (LOP) is located, figures showing the individual interior drainage areas as well as the project plan sheets that are going through NYD review now. You will get a separate email from the AMRDEC Safe Access website with a onetime use password to access and download the files.

The project has LOP and interior drainage features like what your office reviewed in 2005, but has modifications such as:

1. Divided the original SSSI project into 2 phases
- Fort Wadsworth to Oakwood Beach (Phase I, focus of this coordination with NMFS)
- Great Kills Harbor to Crescent Beach and Annadale to Tottenville (Phase 2, will coordinate with you in the future) - NYD is re-evaluating this hydrologically separable area that previously did not have Federal and/or non-Federal interest

2. Moved the LOP landward at Oakwood Beach
- allowed the LOP to have a lower crest elevations
- gave opportunity for constructing natural/nature-based features as part of the overall solution to protect the Oakwood Beach area, the recommended alternative includes tidal wetland (seaward of the LOP) as a sustainable and resilient approach to attenuate coastal storm surge
- required additional interior drainage at Oakwood Beach (pond B)

3. Change from LOP with many different structure types/heights to a more uniform structure type/height
- was combination of buried seawall, sheet pile wall, rock revetment, earthen levee ranging from 17 to 28.5 ft NGVD
- now predominantly buried seawall with design crest elevation of 20.5 ft NGVD

4. Revised design water level elevations based on FEMA analysis

5. No in water construction equipment. Possible delivery of rock material via barge (could also be truck delivery).

Please let me know if there is any additional information that I can send you.

Thanks,
Kate

Catherine J. Alcoba

ESSENTIAL FISH HABITAT ASSESSMENT

COASTAL STORM RISK MANAGEMENT PROJECT

SOUTH SHORE OF STATEN ISLAND, NEW YORK

January 2015

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS AND ACRONYMS

°C	degrees Celsius
councils	regional fishery management councils
CSO	combined sewer overflow
District	New York District
DO	Dissolved oxygen
EFH	Essential Fish Habitat
ft	feet
HRE	Hudson-Raritan Estuary
MFCMA	Magnuson-Stevens Fishery Conservation and Management Act
mg/l	milligrams per liter
MLW	mean low water
mm	millimeter
NEFMC	New England Fisheries Management Council
NGVD	National Geodetic Vertical Datum
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	National Oceanic and Atmospheric Administration – Fisheries
NYC	New York City
NYSDEC	New York State Department of Environmental Conservation
ppm	parts per million
ppt	parts per thousand
USACE	U.S. Army Corps of Engineers
USDOC	U.S. Department of Commerce
USFWS	U.S. Fish and Wildlife Service
WWTP	Waste Water Treatment Plant
YOY	Young-of-the-year

1.0 INTRODUCTION

In accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MFCMA), this assessment identifies the potential impacts of the United States Army Corps of Engineers (USACE), New York District's (District's), proposed Coastal Storm Risk Management Project (Project) on designated Essential Fish Habitat (EFH) along the southern Staten Island shoreline, New York (Figure 1). The MFCMA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), set forth several new mandates for the U.S. Department of Commerce (USDOC), the National Oceanic and Atmospheric Administration – Fisheries (NOAA Fisheries), regional fishery management councils (councils), and other Federal agencies to identify and protect important marine and anadromous fish habitat. Although the concept of EFH is similar to "critical habitat" under the Endangered Species Act of 1973, measures recommended to protect EFH are advisory, rather than prescriptive.

The councils, with assistance from NOAA Fisheries, are required to delineate "essential fish habitat" for all managed species. EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The regulations further clarify EFH by defining "waters" to include aquatic areas that are used by fish (either currently or historically) and their associated physical, chemical, and biological properties; "substrate" to include sediment, hard bottom, and structures underlying the water; and, areas used for "spawning, breeding, feeding, and growth to maturity" to cover a species' full life cycle. Prey species are defined as being a food source for one or more designated fish species, and the presence of adequate prey is one of the biological properties that can make a habitat essential.

Federal agencies that fund, permit, or carry out activities that may adversely impact EFH are required to consult with NOAA Fisheries regarding the potential effects of their actions on EFH. According to USDOC (2014), the contents of an EFH assessment should include:

- A description of the proposed action;
- Analysis of the effects (including cumulative) of the proposed action on EFH, the managed fish species, and major prey species;
- The federal agency's views regarding the effects of the action on EFH; and,
- Proposed mitigation, if applicable.

This EFH assessment includes:

- A description of proposed Coastal Storm Risk Management activities in the southern Staten Island shoreline project area (Project Area);
- A description of the existing environment in the Project Area;
- A listing of EFH-designated species for the Project Area;
- Information relating to the habitat suitability and relative abundance of EFH-designated species and life history stages in the Project Area;
- A summary of the diets of EFH species (i.e., prey species) in the Project Area;
- A summary of available survey data for benthic prey species in the vicinity of the Project Area;

- An analysis of the potential impacts of Project activities on EFH-designated species and species of special interest; and,
- An analysis of the direct, indirect, cumulative, and synergistic impacts as a result of Project activities.

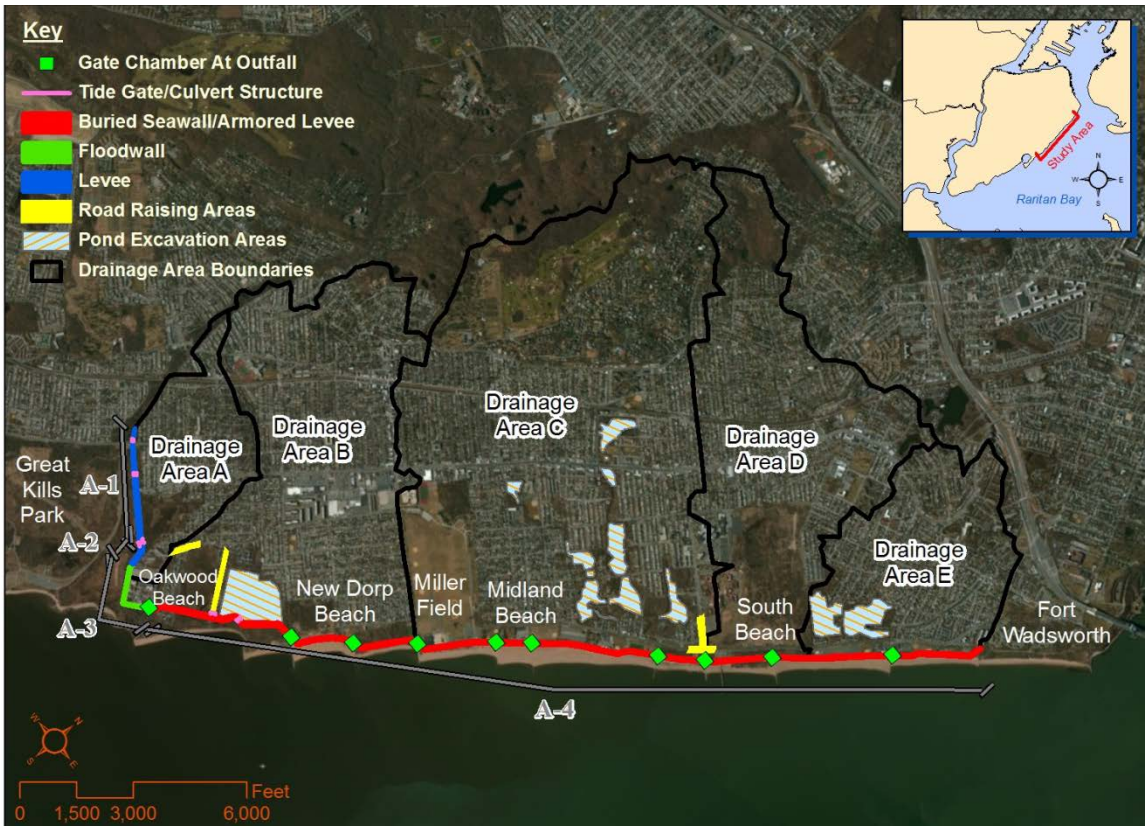


Figure 1 - Location of Study Area for the South Shore of Staten Island

Coastal Storm Risk Management Feasibility Study

2.0 PROJECT DESCRIPTION

2.1 PROJECT AREA

The proposed Project consists of the construction of measures to provide coastal storm risk management for the southern Staten Island shoreline. The proposed Project area is located on the eastern side of the south shoreline of Staten Island, NY and encompasses a reach approximately 5.5 miles long from Fort Wadsworth to Oakwood Beach. The principal neighborhoods along the study reach from east to west are South Beach, Midland Beach, New Dorp Beach, and Oakwood Beach. The study limit is bound inland by natural high ground approximately one mile from the shoreline. The study area lies within the political boundary of the 11th Congressional District of New York. (USACE 2014).

2.2 PROJECT DESCRIPTION

This section provides a brief description of the various structural coastal storm risk management measures proposed by the District for the southern Staten Island shoreline. Measures planned for the southern Staten Island shoreline generally include construction of levee, flood walls and seawalls. Figures depicting the proposed Project in detail are provided in Appendix A.

2.2.1 Line of Protection

The NED Plan includes the Line of Protection Alternative that consists of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the Plan consists of a T-Type Vertical Floodwall, and Levee. The Plan also includes a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures. In general the Plan structure was split into four engineering reaches based on different design sections as listed below and depicted in Figure 2:

- Reach A-1: Levee
- Reach A-2: Levee
- Reach A-3: Floodwall
- Reach A-4: Buried Seawall

Figure 2 - Overview of Line of Protection

Alignment

Starting in Oakwood Beach in Reach A-1, the earthen levee with a 10-foot wide crest ties into high ground on the northwest side of Hylan Boulevard. A stop-log structure, consisting of H-shaped posts that accommodate the stacking of metal panels, is proposed at Hylan Boulevard to prevent floodwaters from flanking the levees during rare high water events. The earthen levee continues southeast through Oakwood Beach parallel to Oakwood Creek and Buffalo Street until the levee crosses over Oakwood Creek. A tide gate structure is proposed at this location. The total length of this Reach A-1 is 2,800 ft.

Reach A-2 begins on the eastern side of the creek and includes a levee that extends approximately 600 feet up to the Oakwood Beach Waste Water Treatment Plant (WWTP).

In Reach A-3 the Line of Protection transitions to a Vertical T-type Floodwall surrounding two sides of the WWTP at Oakwood Beach. The total length of the floodwall is 1,800 feet.

Reach A-4 extends 22,700 feet from the southeast corner of the WWTP to Fort Wadsworth. In previous alternatives Reach 4 consisted of a mixture of exposed armor stone revetments, buried seawalls, and vertical steel sheet pile flood walls. The structure was revised to a continuous buried seawall. The alignment of the buried seawall through Oakwood Beach deviates from previously developed alternatives, extending across a portion of the Fox Beach neighborhood that is being environmental restored as part of the State of New York's Bluebelt Plan. The alignment continues across the marshes of Oakwood Beach and past Kissam Ave. The alignment in this marshy area is landward of New York City's sanitary sewer trunk line to the WWTP. A service road is proposed along the seaward edge of the buried seawall to facilitate access to the trunk line. A bend in the alignment occurs at the eastern end of Oakwood Beach to accommodate a second proposed tide gate structure.

From Midland Beach to Fort Wadsworth the alignment generally follows the footprint of the existing promenade and FDR Boardwalk. There are a few exceptions where the alignment was shifted landward to maintain a protective buffer between the shoreline and buried seawall/armored levee. This is most noticeably at the eastern end of the project area where the beach narrows. The buried seawall/armored levee ties-in to high ground at Fort Wadsworth. The buried seawall/armored levee in this reach extends 22,700 feet from the Oakwood Beach to Fort Wadsworth.

Levee

An 3,415-foot long earthen levee is proposed in Reaches A-1 and A-2 to terminate the structures in the LOP plan into high ground, thereby creating a closed system that protects the project area from floodwaters. The proposed levee in Reach A-1 and A-2 has a crest elevation of 18 foot NGVD29. The proposed Levee consists of compacted impervious fill that extends a minimum of 6 feet below the existing ground surface to prevent seepage. Common fill would be placed at a 2.5H:1V slope to stabilize the core and provide a solid basis for vegetation. The Levee along Reach A-1 has a crest width of 10 feet. The crest width of the A-2 Levee section (approximately 615 feet) was increased to 15 feet to allow maintenance vehicle access to the tide gates. Figure 3 presents a typical section of the Levee in Reach A-1. Figure 4 presents a typical section for the levee in reach A-2.

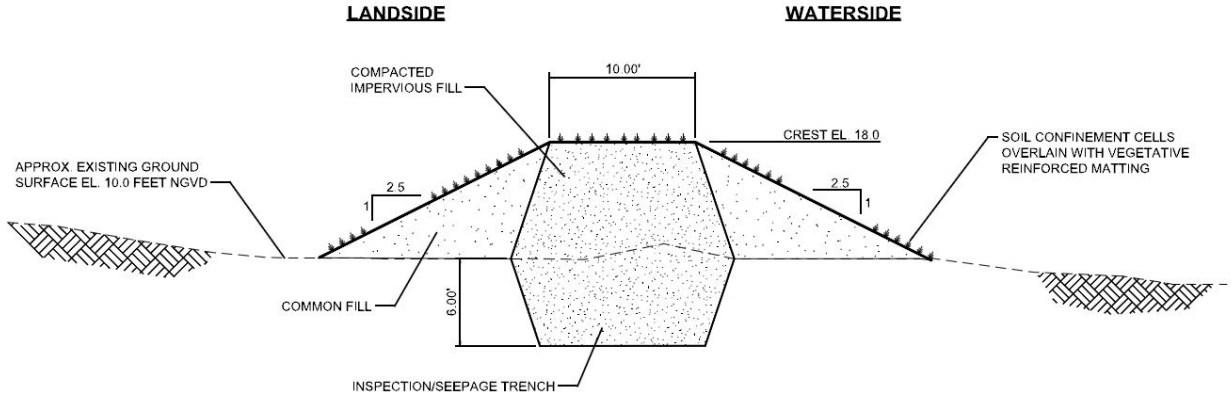


Figure 3 – Levee Typical Section (Reach A-1)

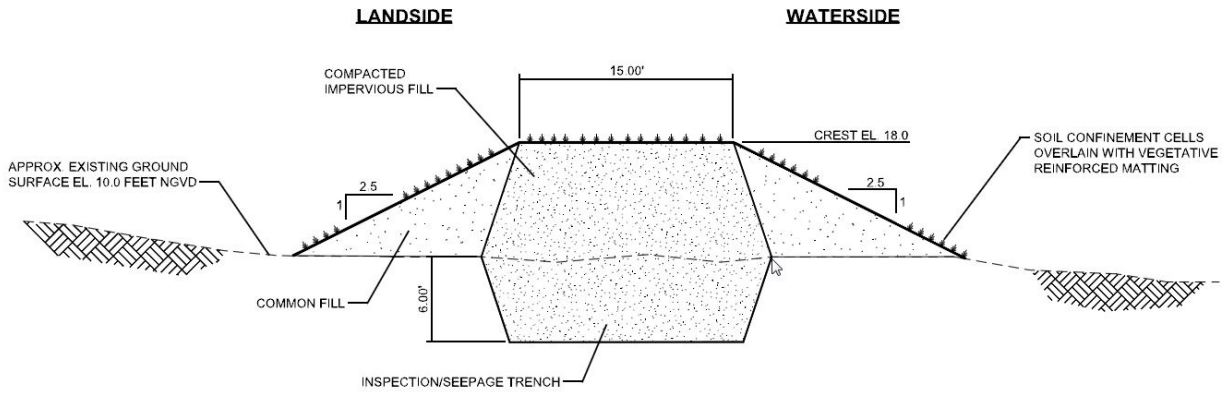


Figure 4 -Levee Typical Section (Reach A-2)

Floodwall

A reinforced concrete floodwall was proposed for Reach A-3 where a confined footprint is necessary to minimized impacts to the Oakwood Beach WWTP. The floodwall design consists of an H-pile supported T-wall with top of wall elevation of 20.5 feet NGVD29.

The structure footing was designed to accommodate localized wave induced and overtopping jet scour by defining a 4-foot thick base set 2-feet below grade. In addition, a rock blanket extends 15-foot seaward side of the wall to address wave scour and a rock splash apron extends 10 to 15 feet landward from the concrete footing to provide adequate overtopping jet scour protection. A vertical steel sheet pile wall has been added beneath the wall to prevent seepage below the footing. Figure 5 presents a typical section of the Floodwall (Reach A-3).

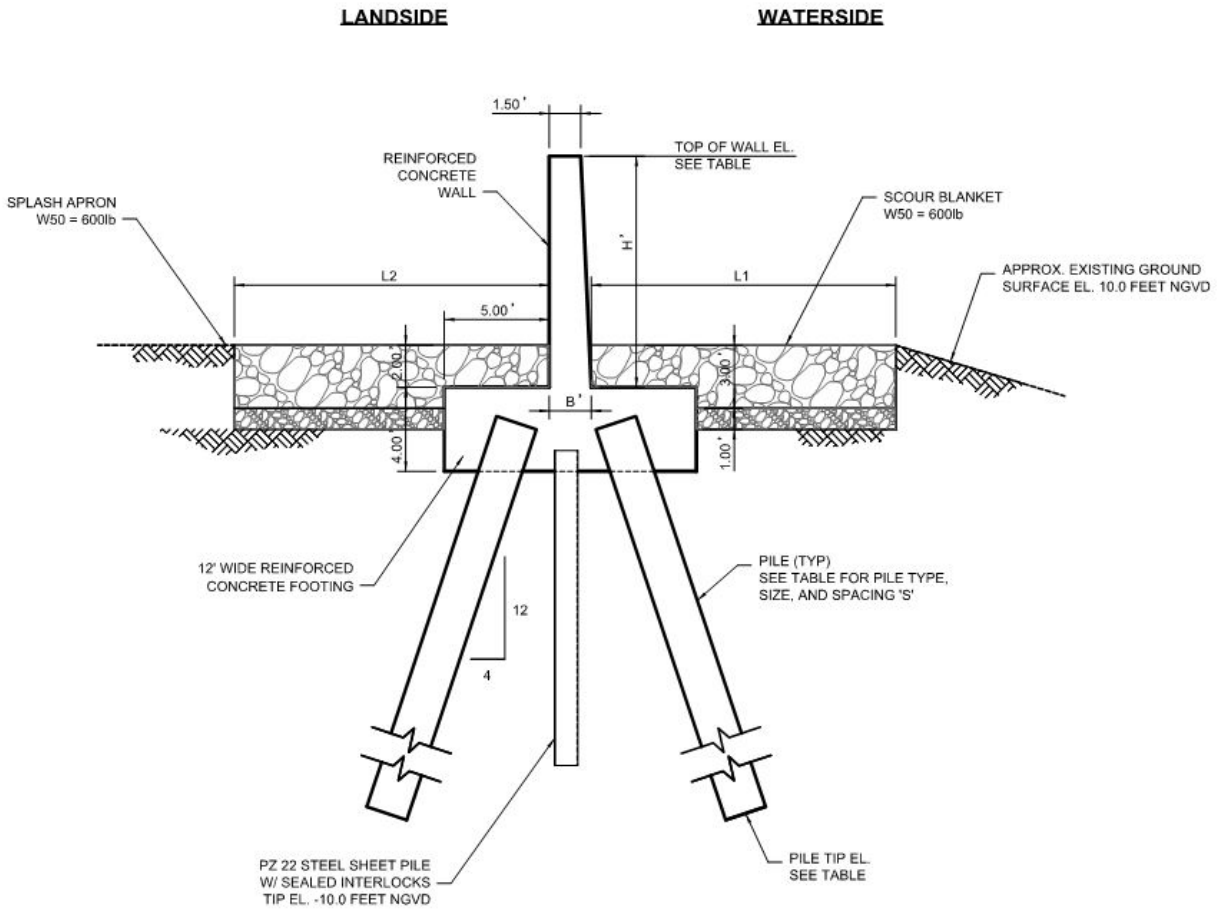


Figure 5 – Floodwall Typical Section (Reach A-3)
Buried Seawall

A buried seawall is selected for Reach A-4 which spans the majority of the project reach from Fort Wadsworth to Oakwood Beach. The designed crest elevation of the Buried Seawall is 20.5 feet NGVD 1929.

The buried seawall comprises a trapezoidal shaped core structure with a 10-foot wide crest and 1.5:1 (horizontal: vertical) side slopes. The core is constructed with two-stone thickness armor stone and bedding stone layers. A 10-foot wide scour apron is incorporated into the seaside structure toe. The entire above-grade portion of the structure is covered with material excavated to accommodate the structure foundation. This material, primarily sand with some clay, silts, and topsoil, will support grass and other native beach vegetation. The material cover is used to visually integrate the buried seawall with surrounding topography and to protect the public from climbing and/or falling on the uneven rock surface. Geotextile fabric is placed underneath the bedding layer to reduce settlement and around the core structure to minimize loss of fill through the voids. The material cover will be placed on 2:1 side slopes with a vegetative reinforced matting to provide additional protection and stabilization of the seaward face during less intense storm events. A vertical steel sheet pile wall will be installed in the interior of the structure to prevent seepage.

The buried seawall incorporates a promenade, replacing the continuous at-grade paved and pile supported promenade from Fort Wadsworth to Miller Field and FDR Timber Boardwalk. Roller compacted concrete is constructed atop the crest to create a 17-foot wide paved promenade. Figure 6 presents a typical section of the Buried Seawall (Reach A-4).

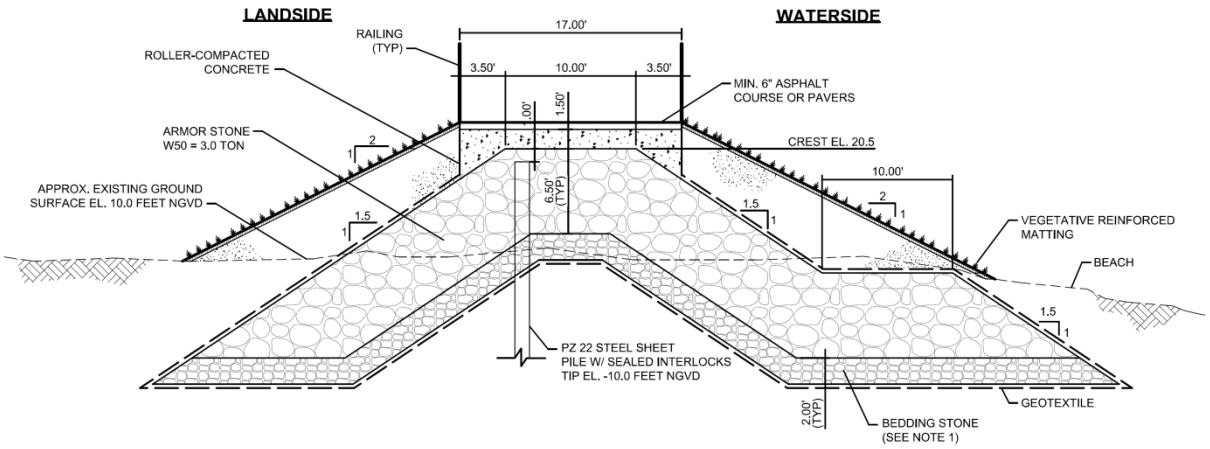
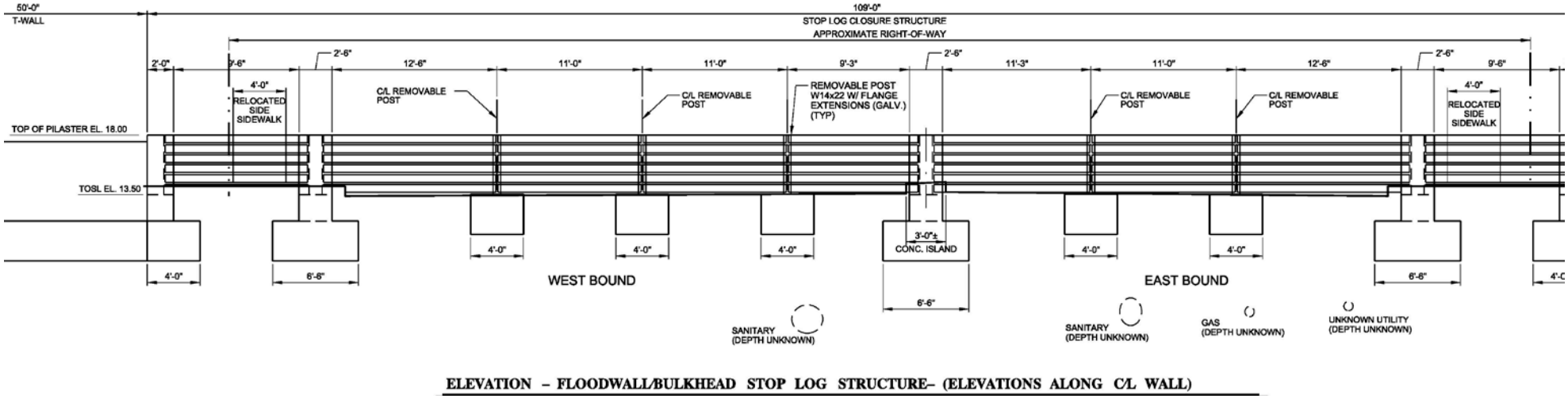


Figure 6 –Buried Seawall Typical Section (Reach A-4)

Stoplog Structure

At Hyland Boulevard a stoplog closure gate closure structure will be used to close off the roadway as needed to prevent flooding during rare storm events. The structure is approximately 106 feet long and 4 to 4.5 feet high and will be supported by a concrete foundation which consists of a series of footings located within the roadway adjacent to each lane of traffic along with footings located in the center median and each side of the Hylan Boulevard. During a flood event removable posts will be installed within the roadway and the stoplogs installed within the frame/guide. There are nine spans in the design. The multiple spans allow for testing the stoplog structure to be staged, precluding a full closure of Hylan Boulevard. Figure 7 presents a typical section view.



ELEVATION – FLOODWALL/BULKHEAD STOP LOG STRUCTURE– (ELEVATIONS ALONG C/L WALL)

Figure 7 – Typical Section of Stoplog Structure

Tidal Marsh

The shorelines along the southeastern shore of Staten Island have generally been mildly erosional, which indicate that the rate of erosion over most large areas of the shoreline is low, averaging less than 1 foot per year of shoreline loss. However, the segment near the Oakwood Beach area is at a much lower elevation (within 5 feet or less of sea level), and shoreline recession has been as high as 20 feet per year. Physical properties of the area seaward of the LOP in Oakwood Beach include poorly drained, organic and erosive soils.

As part of the integrated approach for the Oakwood Beach area, the District considered increasing human and ecosystem community resilience as part of the overall solution to manage risk. To inhibit erosion, attenuate wave energy that can cause scour to the Project area, and to reduce sedimentation through the creek and tide gate into the freshwater wetland, the NED Plan has been designed to preserve the functional effectiveness of tidal exchange. This would facilitate wetland drainage and enable the tidal wetlands seaward of the LOP to help filter sediments so they are not brought into the freshwater wetlands (see Figure 4-3). In addition, the NED plan will utilize sand excavated during construction of the foundation for the LOP.

To accomplish this enhancement, the existing channel would be relocated from along the inside toe of the existing natural berm to a central location within the site. The mouth of the existing channel would be widened from 22 feet (at elevation 2.0 feet NGVD 1929) to 30 feet wide. Widening the channel mouth and relocating the channel itself would allow for proper flooding and draining of the proposed marsh. The channel would be extended into the upper portion of the site to allow drainage from runoff from the scrub-shrub and maritime forest. The channel would also branch off and would connect with the proposed tide gate under the proposed access road that would run parallel to the LOP (USACE 2014a).

The proposed measures along the coastline include constructing approximately 46 acres of tidal wetlands on the seaward side of the proposed revetment. Approximately 10.1 acres of maritime forest/scrub-shrub habitat would also be planted along the front of the revetment, while 12.9 acres of low marsh and 6 acres of high marsh acres of living shoreline are proposed in the shallow waters adjacent to the existing beachfront. Further, 17 acres of dune grass is proposed to be planted. These measures include multiple habitats that would provide environmental and public benefits to the Oakwood Beach area (USACE 2014).

Stormwater Outfalls/Gate Chambers

Existing stormwater outfalls, consisting of single and double concrete box culverts, pass beneath the Buried Seawall at nine locations. At these locations, the sheet pile seepage wall terminates either side of the existing culverts and the buried seawall rock structure will be constructed around the culverts and proposed gate chambers. A typical section view of the designed gate chamber is presented in Figure 8.

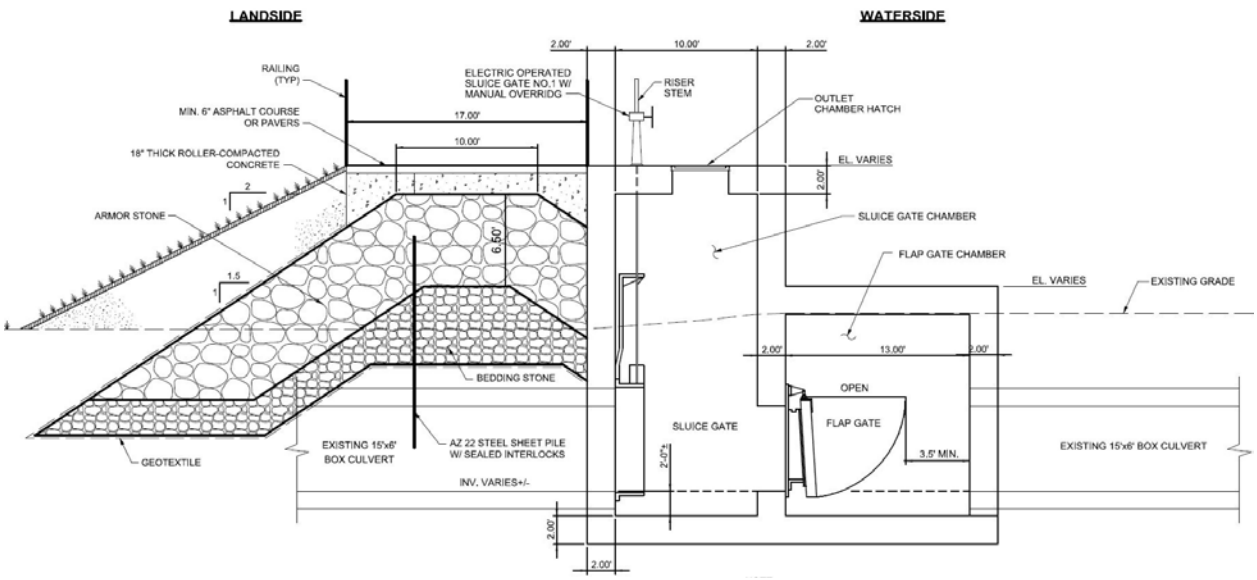


Figure 8 - Typical Section Gate Chamber

Tide Gates

Tide gate structures with reinforced concrete wing walls are proposed at two locations along the Line of Protection in the vicinity of Oakwood Beach. Aside from increases in wall height and thickness, the basic design of the proposed tide gate structures is consistent with the design of the existing tide gate structure located to the east of the Water Treatment Plant at Oakwood Beach. The tide gate structures are not designed for vehicular loading. Figure 9 presents a typical section of the tide gates.

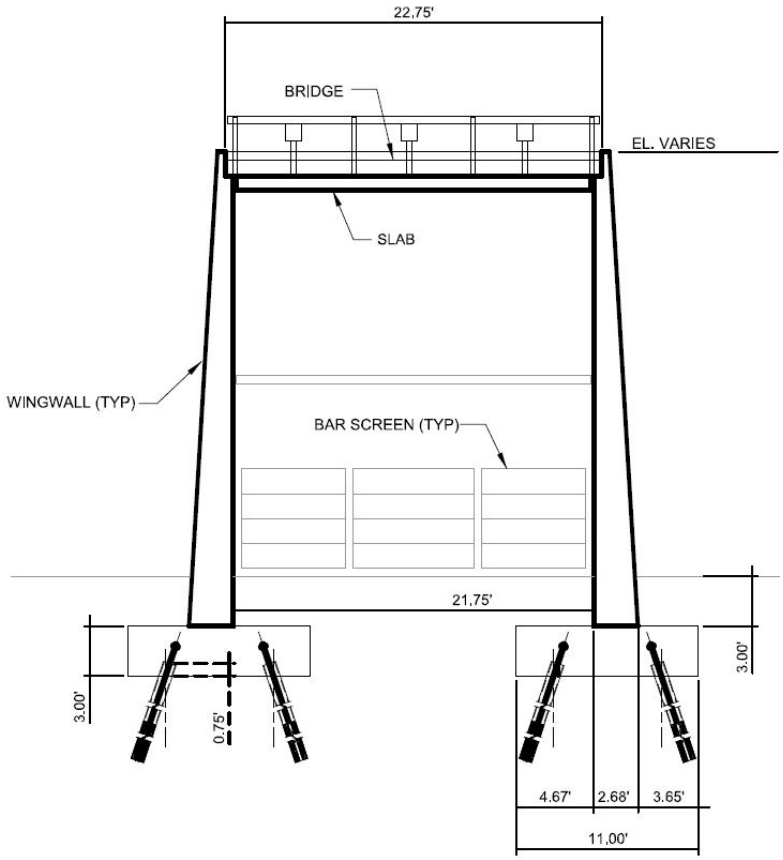


Figure 9 - Typical Section Tide Gate

Pedestrian and Vehicular Access

Three types of access points are provided along the Line of Protection: Maintenance vehicle access (MVA), combined truck and pedestrian access (DTP), and pedestrian access (PA).

Maintenance vehicle access is provided at one location in Reach A-2 and at four locations along Reach A-4 between New Dorp Beach and Oakwood Beach to provide vehicular access to the tide gate and stormwater outfall gate chambers. Earthen ramps are proposed to provide vehicular access to the tide gate and stormwater outfall gate chambers. These ramp sections are designed to handle HS-20 loading to allow maintenance vehicles to access the sluice gates in the drainage structures from above.

An additional nine earthen ramps are proposed between Oakwood Beach and South Beach. These ramps are designed for both pedestrian and HS-20 vehicular access and meet the 1:12 maximum slope required by ADA guidelines. The ramps have been located to provide beach access from existing roads and access paths.

Pedestrian access points, spaced approximately every 500 feet, are located along the Buried Seawall between Midland Beach and South Beach. Each access point consists of 10-foot wide reinforced concrete stairs on both the landward and seaward sides of the buried seawall that

provide access to the promenade and the beach. There are a total of 27 access points for pedestrians along the promenade including the 9 combined vehicle/pedestrian access ramps.

The buried seawall crest elevation exceeds the existing deck elevation for the Ocean Breeze fishing pier. The pier segments nearest to the promenade will need to be reconstructed to ramp up to the promenade at a 1:12 maximum slope required by ADA guidelines.

2.2.2 Interior Drainage Measures

The Interior Drainage measures as part of the NED Plan include tide gates, sluice gates, stormwater outfall structures, road raisings, and excavated ponds. The tide gates, sluice gates and outfall chambers are listed above as part of the Line of Protection design but are also included in this summary. The Interior Drainage Measures utilized in each of Drainage Areas include:

Area A: Minimum Facility

Natural Storage: 17.19 acres
Tide Gate
- Length: 22.75 ft. along levee alignment
- Height: 18 ft. NGVD 1929 crest elevation
- Width: 16 ft. wide
- Features: 3 @ 5 ft. by 5 ft. sluice gates, wingwalls, pre-engineered bridge on top of the tide gate

Outlets: 2 sluice gate structures (2 ft. by 2ft.) & 2 intermediate pipe outlets with flap gates

Area B: Minimum Facility

Natural Storage: 81.23 acres
Excavated Pond: 1 Pond
- Volume: 204,000 c.y.
- Invert: 2 ft. NGVD 1929

Tide Gate
- Length: 22.75 ft. along levee alignment
- Height: 20.5 ft. NGVD 1929 crest elevation
- Width: 16 ft. wide
- Features: 3 @ 5 ft. by 5 ft. sluice gates, wingwalls, pre-engineered bridge on top of the tide gate

Road Raising: Kissam Ave. to 7.1 ft. NGVD 1929, Mill Rd. to 7.1 ft. NGVD 1929
- Length: 1,730 lf. @ Kissam Avenue & 630 lf. @ Mill Road
- Width: 30 ft. @ Kissam Avenue & 60 ft. @ Mill Road
- Avg. Height: 3 ft. @ Kissam Avenue & 1 ft. @ Mill Road

Outlets: Ebbits Street, New Dorp Lane, Tysens Lane Gate Chambers

Area C: Alternative 4

Natural Storage: 120.44 acres
Excavated Ponds

	Volume:	377,200 c.y.
	Area:	42.2 acres
	Invert:	2 ft. NGVD 1929
Road Raising		Seaview Ave. & Father Capodanno Blvd. to 10 ft. NGVD 1929
	Length:	820 lf. @ Seaview Ave & 300 lf @ Father Capodanno Blvd.
	Width:	90 ft. @ Seaview Ave & 60 ft. @ Father Capodanno Blvd.
	Avg. Height:	1 ft. for both
Outlets:		Greely Avenue, Midland Avenue, Naughton Avenue, Seaview Avenue Gate Chambers

Area D: Minimum Facility

Natural Storage:	30.76 acres
Outlets:	Quintard Street Gate Chamber

Area E: Alternative 2

Natural Storage:		46.7 acres
Excavated Ponds:		2 Ponds
	Volume:	222,720 c.y.
	Area:	34.0 acres
	Invert:	2 ft. NGVD 1929
Outlets:		Sand Lane Gate Chamber, Quincy Ave. Chamber

Ponds

Drainage Areas B, C, and E include ponds excavated to 2 ft. NGVD 1929 (Drainage areas A and D involve acquisition and or preservation of open space and do not require ponding). The proposed pond locations and associated excavation areas are shown on the attached sheets.

For the potential pond excavation in Drainage Areas B, C and E, the depth of ponding will be no lower than 2 feet, NGVS29 since the ground water table in the project area is near this elevation. The potential location f the ponds for each proposed plan, in Drainage Area B, C and E, will be show in the Feasibility Study Interior Drainage Appendix. The final pond dimensions should not exceed the excavated amount and will be within the minimum facility footprint for natural storage. Please done that excavated amount needed for each pond can change based upon additional data being acquired during the PED/Plans and Specifications Phase (i.e., boring data within the pond footprint). A typical plan view of a Pond layout from the Interior Drainage Plates is presented in Figure 10. The Figure and Plates also include overlays of all of the other Interior Drainage Measures included in the NED Plan such as flowage easements, road raisings, tide gates, etc. as well as the alignment of the Line of Protection.

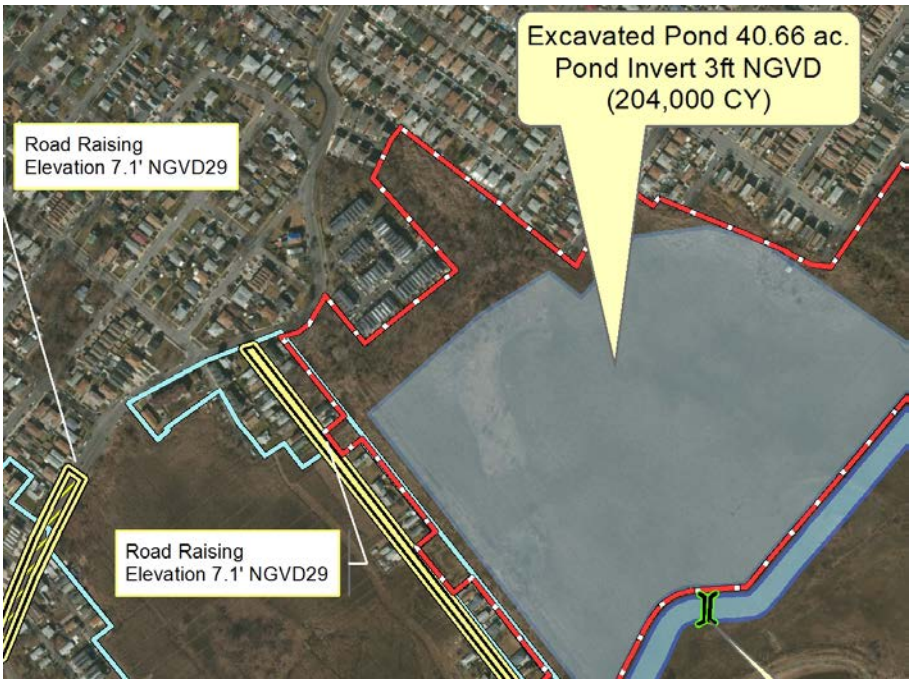


Figure 10 -Typical Plan View of Pond

Road Raisings

In Drainage Area B, Mill Road and Kissam Avenue will be raised to control the spillover of interior stormwater collections to and from Drainage Area A. In Drainage Area C Seaview Ave. will be raised to control the spillover of interior stormwater to/from Drainage Area D and Father Capodanno Blvd will be raised to meet the new crest elevation at Seaview Ave.

The road raising along Mill Road and Kissam Ave. will be implemented as part of the Minimum Facility for Area B and the road raising along Seaview Avenue & Father Capodanno Blvd will be implemented as part of an Alternative for Area C.

3.0 EXISTING ENVIRONMENT

The proposed Project Area consists of approximately 5.5 miles of coastline in the Borough of Staten Island, New York City, New York, extending along the Lower New York Bay and Raritan Bay, two relatively shallow bodies of water that are part of the Hudson-Raritan Estuary (HRE), and includes the Gateway National Recreational Area (USACE 1995). The approximate west and east limits (i.e. along the south shoreline) of the study area are Oakwood Beach and the easternmost point of land within Fort Wadsworth at the Narrows. Densely developed residential and commercial areas, wetlands, forests, ponds, creeks, meadows, and a narrow beach along the southern Staten Island shore characterize the environmental setting of the Project Area. Beachfront development includes residential structures ranging from small cottages to expensive homes, commercial properties, and developed parks with large parking areas, a shore-parallel boardwalk and promenade walkway. The most dominant existing coastal storm risk management structures east of Oakwood Beach are groins for outfall structures. In addition, the USACE constructed a project in 1999 to protect the Oakwood Beach area from Bay flooding. The project consists of two earthen levee segments, one tide gate structure, underground storm water storage, and road raising. The first levee segment, located south of the treatment plant and east of Oakwood Creek running parallel to the creek, has a top elevation of 10 feet NGVD. The second levee segment, located north of the treatment plant and running approximately northward and westward, is a raised road system with a top elevation varying between 7.9 ft. NGVD to 8.4 ft. NGVD. This project also consists of: (1) a new tide gate; (2) the raising of an access road at the northwestern area of the treatment plant property; and (3) underground storm runoff storage—all within the project area. The project is based on a 10 year economic life and protects against a 15-year storm (6.7% chance of occurring in any given year) (USACE 2014).

Historically, lands along the South Shore of Staten Island have been susceptible to tidal inundation during extratropical storms, nor'easters, and hurricanes with severe damage to life and property caused by wave action, erosion, storm surges and rising interior stormwater runoff trapped landward of the Bay. Areas between Fort Wadsworth to Oakwood Beach are susceptible to high velocity overtopping Bay flood waters when the storm surge from the Bay rise above Father Capodanno Boulevard or other local topographic features as was the case during Hurricane Sandy. Even if storm surge levels do not rise high enough to overtop the existing coastal barrier, if flood levels rise above the local storm sewer outfalls, it effectively blocks interior runoff from escaping out into the Bay, leading to high pooling water surface elevations landward of the existing coastal barrier and ultimately risks to life-safety and damages to property (USACE 2014).

Water Quality

Under existing conditions, pollutants that enter the local waterways in turn flow to the Lower Bay. These pollutants can include organic matter, which can increase the biochemical oxygen demand (BOD) within the water column and reduce the dissolved oxygen (DO) concentrations. This can then stress natural communities. Organic matter can also cause an increase in coliform bacteria, and nutrients. Although nutrients such as nitrogen and phosphorus are essential to the growth of phytoplankton and act as a base for supporting higher tropic levels, in excess

concentrations these nutrients can result in a condition known as eutrophication. This can result in phytoplankton blooms, including nuisance algal forms, which further depresses DO levels in water bodies. With large stormwater runoff volumes that are not attenuated in any way, as under current conditions, more of these pollutants coming from rooftops, lawns, roadway surfaces and other urban areas are transported directly to local streams and ultimately to the Lower Bay. There are also the erosive forces of unmanaged runoff which leads to sedimentation in local waterbodies (NYCDEP 2013).

Oakwood Beach (Drainage Areas A and B). Many water bodies in the Oakwood Beach area are small, and as a result, many are not classified by NYSDEC. For unclassified streams and ponds there are no legally mandated water quality goals. In the inland part of the watershed, there are no classified water bodies. In the lower Watershed, all three branches of Oakwood Beach Creek are classified as I/C or C (NYSDEC water quality standard ratings are defined in the text box). In general, activities in these designated waters cannot degrade water quality, introduce new contaminants or reduce flow or oxygen concentrations to a level that impairs the designated functions. The Lower Bay is classified as SB.

NYSDEC Water Quality Standard Ratings

Class B waters - primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.
Class C waters - best usage is fishing. These waters shall be suitable for fish propagation and survival.
Class SA waters - shellfishing for market purposes, primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.
Class SB waters - primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.
Class SC waters - best usage is fishing. These waters shall be suitable for fish propagation and survival.
Class I waters - best usages are secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.

New Creek (Drainage Area C). In the inland part of the watershed, the ponds at the Richmond County Country Club and Reeds Basket are either unclassified or listed as Class B water bodies by the NYSDEC. Under existing conditions, there are no known water quality issues in the surface water bodies of the inland watershed. The streams in the lower watershed are small and, as a result, many are not classified for water quality standards or goals. The Main Channel and the East and West Branches of New Creek are classified as I/C or C. The Lower Bay is classified as SB. Activities proposed within these designated water bodies cannot degrade water quality, introduce new contaminants or diminish flows or oxygen concentrations such that it impairs or compromises the function or intended use of the water body.

South Beach (Drainage Areas D and E). Surface waters in the inland part of the watershed include Brady's Pond, Cameron's Lake, and Whitney Woods. NYSDEC classifies Brady's Pond and Cameron's Lake as Class B waterbodies. The Lower Bay is classified as SB. The surface water that collects in Whitney Woods is not classified by the State. Under existing conditions, water quality issues at Brady's Pond include algal blooms that can lead to low dissolved oxygen counts in addition to the impacts on aesthetics and recreational uses. As discussed above, water supply to Brady's Pond is most likely dependent on groundwater discharges since water levels

do not fluctuate seasonally or with periods of low rainfall and the quality of the water is swimmable.

Substrate

The overall Project area lies within the Atlantic Coastal Plain Province. This region is characterized by low topographic relief and extends along the eastern margin of the United States. The topography of the Project area is nearly level with elevations ranging from sea level to almost 100 feet above sea level (USACE 2014).

There are four types of bedrock existing within or adjacent to the Project area. The predominant and oldest bedrock unit is serpentinite and consists of the serpentine minerals antigorite, chrysotile, and lizardite. The remaining three types of bedrock include the Stockton Formation consisting of sandstones and arkoses; the Lockatong Formation consisting of siltstones and shales; and the Passaic Formation consisting of shale, siltstone, sandstone, and conglomerate (Benimoff and Ohan 2003). The surficial deposits within the Project area consist primarily of glacial outwash deposits from the most recent (Wisconsin) glaciations (Benimoff and Ohan 2003).

The main soil type within the Project area consists of Beaches. The Beaches unit is composed of very deep to deep bedrock and poorly drained areas adjacent to the Atlantic Ocean. Beaches are not considered a true soil because they typically do not support vegetation, and are constantly reworked by wave and wind action (U.S. Department of Agriculture, Natural Resources Conservation Service [USDA/NRCS] 2014).

These sands contain abundant magnetite and comparatively little garnet (Northern Ecological Associates, Inc. [NEA] 2002). The general characteristics of these sands are very different from other sands in the region. These sands are less rounded and poorly sorted, and contain abundant feldspar and rock fragments suggesting that the materials were derived mostly from the rivers draining the Newark Basin region (i.e., the Passaic, Hackensack, and Raritan rivers) (NEA 2002).

4.0 SPECIES OVERVIEWS

This section describes the habitat requirements of the EFH-designated species and non-EFH-designated fish that potentially occur within the Project Area. Specifically, Section 4.1 provides individual species assessments of EFH-designated species and Section 4.2 provides assessments of prey species.

4.1 EFH-DESIGNATED SPECIES

EFH-designated species and life history stages in the Project Area were identified based on a list in the NOAA Guide to EFH Designations in the Northeastern United States (USDOC 2014) for the 10-minute by 10-minute area of latitude and longitude bounded on the north, west, south, and east as follows: 40° 40.0′ N latitude, 74° 00.0′ W longitude, 40° 30.0′ N latitude, and 74° 10.0′ W longitude. EFH designations for coastal finfish and shellfish species in this area were based on information compiled by the New England Fisheries Management Council (NEFMC) (NEFMC 2014). Designations for sharks and highly migratory finfish (e.g., mackerel) were made by NOAA Fisheries (USDOC 2014).

A total of 13 finfish species, three skate species, and three shark species are currently designated as EFH species in this area. Each EFH-designated species and the corresponding designated life stages are presented in Table 1.

Available information on life history and habitat requirements for each EFH-designated species is summarized in this section, along with relevant survey information. Primary reference sources are cited once, at the beginning of each summary. For most species, the primary source was one of a series of EFH source documents prepared by the NOAA Fisheries in 1999. Several other primary sources are also identified. Designated life history stages (eggs, larvae, juveniles, and adults for finfish and early and late juveniles and adults for sharks) for the 10-minute by 10-minute "square" of latitude and longitude that includes the Project Area are identified at the beginning of each species assessment and in Table 1. Additionally, Figure 11 depicts the area of occurrence along the eastern Atlantic shore for all EFH-designated species affected by the proposed project.

Conclusions regarding the likelihood of occurrence of each species and life history stage in the Project Area are presented at the end of each species assessment. In reaching these conclusions, emphasis was given to the depth and water quality preferences of eggs, larvae, juveniles and adults, and their association with sandy substrates. Another important factor is whether the bottom sediments (sand) in the Project Area provide suitable habitat for invertebrates that are preyed upon by bottom feeding EFH species.

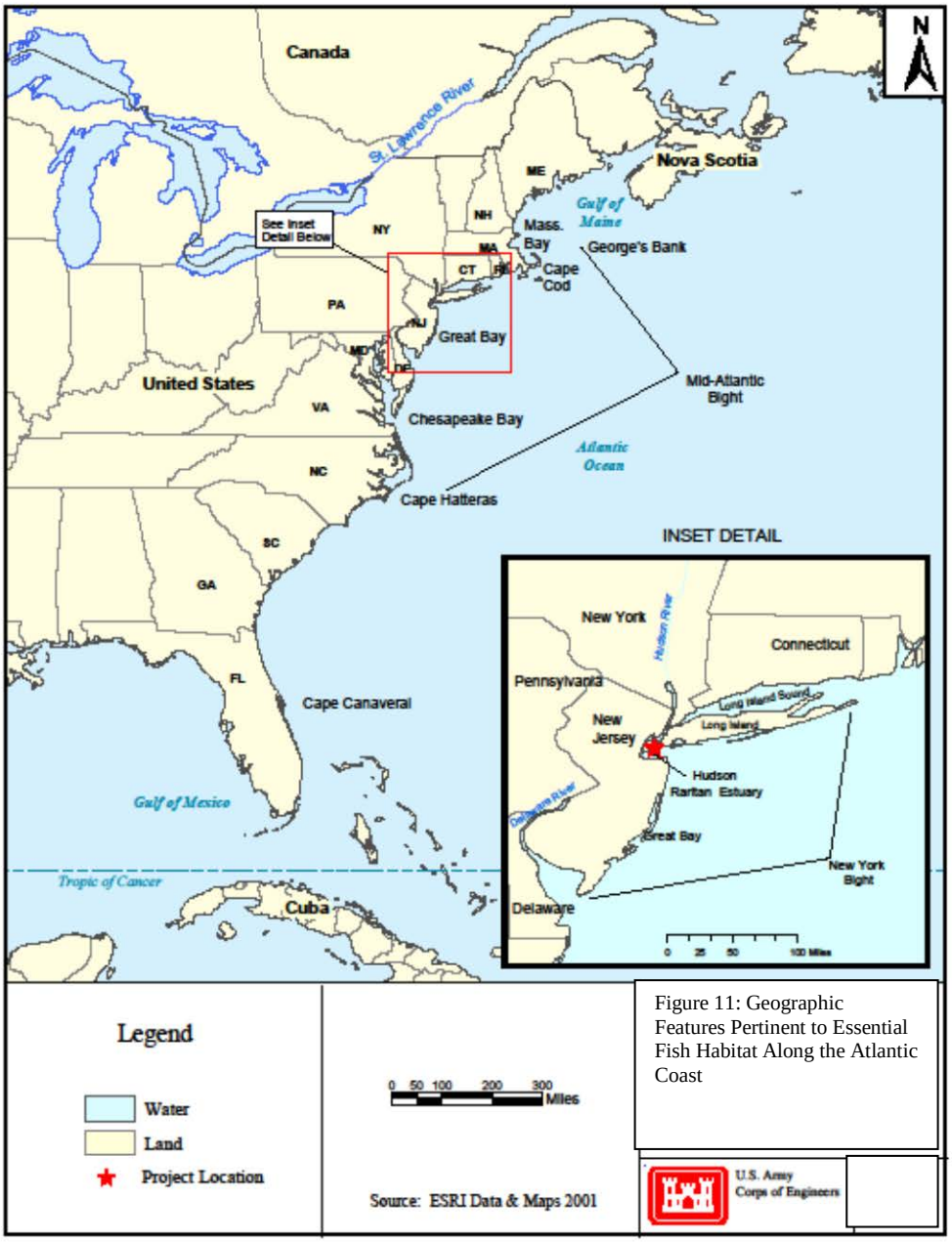


Figure 11: Geographic Features Pertinent to Essential Fish Habitat Along the Atlantic Coast

Table 1. EFH Designated Fish, Skate, and Shark Species and Life History Stages in the Project Area.

Fish Species	Life Stage			
	E	**L**	**J**	**A**
Atlantic butterfish (*Peprilus triacanthus*)		X	X	X
Atlantic mackerel (*Scomber scombrus*)			X	X
Atlantic sea herring (*Clupea harengus*)		X	X	X
Black sea bass (*Centropristis striata*)			X	X
Bluefish (*Pomatomus saltatrix*)			X	X
Cobia (*Rachycentron canadum*)	X	X	X	X
King mackerel (*Scomberomorus cavalla*)	X	X	X	X
Red hake (*Urophycis chuss*)	X	X	X	
Scup (*Stenotomus chrysops*)	X	X	X	X
Spanish mackerel (*Scomberomorus maculatus*)	X	X	X	X
Summer flounder (*Paralichthys dentatus*)		X	X	X
Windowpane (*Scophthalmus aquosus*)	X	X	X	X
Winter flounder (*Pseudopleuronectes americanus*)	X	X	X	X
Skate Species				
Clearnose skate (*Raja eglanteria*)			X	X
Little skate (*Leucoraja erinacea*)			X	X
Winter skate (*Leucoraja ocellata*)			X	X
Shark Species	**EJ**	**LJ**		**A**
Dusky shark (*Charcharinus obscurus*)	X	X		
Sandbar shark (*Charcharinus plumbeus*)	X			X
Sand tiger shark (*Odontaspis taurus*)	X			

Source: USDOC 2014.

Key to Life Stage:

E = egg
L = larval
J = juvenile
A = adult
EJ = early juvenile
LJ = late juvenile

Atlantic Butterfish (*Peprilus triacanthus*): Larvae, Juveniles, and Adults

Primary Source: Cross et al. (1999)

Butterfish are fast-growing, short-lived, pelagic fish that form loose schools, often near the surface. Larval butterfish are pelagic and occur from the outer continental shelf to the lower, high salinity parts of estuaries in the mid-Atlantic Bight. Juveniles and adults are common in inshore areas, including the surf zone, and occur in sheltered bays and estuaries in the mid-Atlantic Bight during the summer and fall. Juveniles and adults are eurythermal and euryhaline, and are frequently found over sand, mud, and mixed substrates. Smaller juveniles often aggregate under floating objects.

Larval butterfish occurs within a water temperature range of 4.0 to 28°C, salinity range of 5 to 32 ppt, and depth range of -10 to -1750 ft mean low water (MLW). Juvenile and adult butterfish in the HRE are typically found at depths ranging from -10 to -75 ft MLW, temperatures of 8 to 26°C, salinities of 19 to 32 ppt, and DO concentrations of 3 to 10 mg/l.

Project Area: Larval butterfish are pelagic and therefore their occurrence in the Project Area would be rare. Juvenile and adult butterfish are common inhabitants of the water column in shallow water over sandy substrates in the New York Bight and HRE in the summer and fall and would likely occupy the nearshore portions of the Project Area during those seasons.

Atlantic Mackerel (*Scomber scombrus*): Juveniles and Adults

Primary Source: Studholme et al. (1999)

Atlantic mackerel overwinter in deep water on the continental shelf from Sable Island Bank (Canada) to Chesapeake Bay, and in spring move inshore and northeast. This pattern in reversed in the fall. Juveniles are generally found in some inshore bays and estuaries as well as offshore at salinities greater than 25 ppt. Adults are commonly found in open sea, although occasionally they are found in open bays with lower salinity limits of approximately 25 ppt. The geographical and seasonal distribution of juveniles and adults is generally similar, although juveniles tend to be distributed further inshore than adults in the spring and fall.

Juvenile Atlantic mackerel are reported to be common in the HRE during the months of April to June and October to November, whereas adults are common during April, May, October, and November (Stone et al. 1994). Atlantic mackerel are not commonly collected in bottom trawl surveys in the HRE. Wilk et al. (1998) conducted a trawl survey in the HRE from 1992 to 1997 to measure natural as well as anthropogenic changes in fish distribution, abundance, ecology, and life history. Throughout their survey, Wilk et al. collected only 12 juvenile Atlantic mackerel from 1992 to 1997, with the collection that captured the juvenile Atlantic mackerel occurring on one occasion on the eastern shore of Staten Island in July 1997. All juveniles were collected at depths of -16 to -33 ft MLW, salinities of 26.1 to 28.9 ppt, DO concentrations of 7.3 to 8.0 mg/l, and temperatures of 17.6 to 21.7°C. Adults generally prefer temperatures of 4 to 6°C, salinities greater than 25 ppt, and depths of 0 to -1,250 ft MLW.

Project Area: Due to the pelagic preference of this species, both juveniles and adults are uncommon in the Project Area. Transient juveniles and adults may occupy the Project Area during the summer, but would be rare.

Atlantic Sea Herring (*Clupea harengus*): Larvae, Juveniles and Adults

Primary Source: Reid et al. (1999)

Adult Atlantic sea herring migrate south into southern New England and mid-Atlantic shelf waters in the winter after spawning in the Gulf of Maine, on Georges Bank, and Nantucket Shoals. Juvenile and adult herring are abundant in coastal and mid-shelf waters from southern New England to Cape Hatteras in the winter and spring. In the spring, adults return north, but juveniles do not undertake coastal migrations. Larval herring are limited almost exclusively to Georges Bank and the Gulf of Maine waters. Larvae typically metamorphose the following spring into young-of-the-year (YOY) juveniles.

In general, larval herring have a temperature preference of less than 16°C with salinity near 32 ppt and depths of -160 to -295 ft MLW. Juvenile and adult herrings have a temperature preference of less than 10°C, salinities of 26 to 32 ppt, and depths of -50 to -445 ft MLW. In the HRE, Atlantic herring prefer water depths greater than -25 ft MLW. Atlantic herring in the New York Bight generally prefer water depths greater than -60 ft MLW.

Project Area: Atlantic herring are pelagic species. Larval Atlantic herring are limited to northern waters and are rare in the Project Area. Due to the depth preference of this species, larval, juvenile, and adult Atlantic herring occurrence in the Project Area are likely rare during the summer and fall seasons.

Black Sea Bass (*Centropristis striata*): Juveniles and Adults

Primary Source: Steimle et al. (1999a)

Black sea bass are usually strongly associated with structured, sheltering habitats such as reefs and wrecks. Spawning occurs on the continental shelf, beginning in the spring off Cape Hatteras and progressing into the fall in the New York Bight and off southern New England. When larvae reach 10 to 16 millimeters (mm) total length, they tend to settle and become demersal on structured inshore habitat such as sponge beds. In the mid-Atlantic Bight, recently settled juveniles move into coastal estuarine nursery areas between July and September. The estuarine nursery habitat of YOY black sea bass is relatively shallow, hard bottom with some kind of natural or man-made structure, including amphipod tubes, eelgrass, sponges, and shellfish beds, in water with salinities above 8 ppt. Black sea bass do not tolerate cold inshore winter conditions. Following an overwintering period presumably spent on the continental shelf, older juveniles return to inshore estuaries in late spring and early summer. They are uncommon in open, unvegetated, sandy intertidal flats or beaches. Like juveniles, adult sea bass are very structure oriented, especially during their summer coastal residency. Unlike juveniles, adults

only enter larger estuaries and are most abundant along the outer Atlantic coast. Larger fish tend to be found in deeper water than smaller fish.

A few juveniles and adults were collected in the 1992–1997 HRE bottom trawl survey in the summer and fall, but in general, juvenile and adult black sea bass are uncommon in the HRE (Stone et al. 1994). Juveniles were more abundant in annual catches than adults and were most abundant in the summer and fall. In the HRE, black sea bass prefer depths greater than -30 ft MLW. Adults on the Atlantic coast occupy waters greater than -65 ft MLW in the fall and -260 to -460 ft MLW in the winter and spring.

Project Area: Due to the depth preference of black sea bass, juveniles and adults would not occupy the Project Area in significant numbers. However, the attraction of structures, such as piers and pilings, in the nearby Project Area may lure a few juveniles or adults in the summer and fall.

Bluefish (*Pomatomus saltatrix*): Juveniles and Adults

Source: Fahay et al. (1999)

Juvenile bluefish are found in estuaries, bays, and coastal ocean waters in the mid-Atlantic Bight and South Atlantic Bight in many habitats. Juveniles move inshore in early- to mid-June, arriving when temperatures reach approximately 20°C, and are typically found near shorelines, including the surf zone, during the day and in open waters at night. Like adults, they are active swimmers and feed on small forage fishes, which are commonly found in nearshore habitats. They remain inshore in water temperatures up to 30°C and return to the continental shelf in the fall when water temperatures fall below approximately 15°C. Juvenile bluefish are associated mostly with sand, but are also found over silt and clay bottom substrates. They usually occur at salinities of 23 to 33 ppt, but can tolerate salinities as low as 3 ppt. Adults are generally oceanic but are found near shore as well as offshore. Adults usually prefer warm water (at least 14 to 16°C) and full salinity.

One-year-old juveniles and adults are common in the HRE in the summer and fall in fairly shallow (-20 ft MLW) and deeper water (-40 to -45 ft MLW) in the shipping channels. YOY juveniles are very common in nearshore sub-tidal and intertidal waters of the HRE in the late spring and summer (USACE 2000). Bluefish of all ages occupy coastal waters in the mid-Atlantic Bight in the fall. Juveniles and adults are present in the fall and prefer depths greater than -35 ft MLW. Eggs and larvae are present in the New York Bight during the summer and are more commonly found at depths greater than -100 ft MLW.

Project Area: YOY juvenile bluefish prefer coastal embayments and estuaries in the summer and can be expected to occupy the Project Area during that time. Adults are typically pelagic and would be rare in the Project Area.

Cobia (*Rachycentron canadum*): All Stages

Primary Sources: Richards (1967), Bester (1984)

Cobia are distributed worldwide in tropical, subtropical, and warm-temperate waters. It is known as a southern, pelagic species that overwinters near the Florida Keys and migrates in late spring and summer to the mid-Atlantic states to spawn. Adults are rarely found as far north as Massachusetts. Spawning also occurs in the Gulf of Mexico from April through September. Spawning has been observed to occur in estuaries and shallow bays with the young heading offshore soon after hatching. Cobia are often found over the continental shelf as well as around offshore reefs. Habitat preference of this species are structures that interrupt the open water, such as pilings, buoys, platforms, anchored boats, and flotsam. It is also found in inshore waters inhabiting bays, inlets, and mangroves. Cobia prefer temperatures greater than 20°C and salinities greater than 25 ppt. In general, cobia are rare in the HRE (Stone et al. 1994).

Project Area: Cobia are pelagic, warm water species. The Project Area is the northern temperature limit for this species. Due to the habitat preference of this species, an occasional larval or juvenile cobia may occur in the water column of the Project Area during the summer, but other life history stages of this species are likely rare at the Project Area.

King and Spanish Mackerel (*Scomberomorus cavalla* and *S. maculatus*): All Stages

Primary Sources: Godcharles and Murphy (1986), Collette and Nauen (1983)

King and Spanish mackerels are highly migratory epipelagic, neritic fish that migrate north from Florida to as far north as the Gulf of Maine in the summer and fall. Both mackerel species prefer sandy shoals of capes and offshore bars, and high profile rock bottoms and barrier island ocean side waters. King mackerel spawn in coastal waters of the Gulf of Mexico and off the South Atlantic coast over the middle and outer continental shelf. Spanish mackerel spawn as far north as offshore Sandy Hook and Long Island in late August to late September over the inner and middle continental shelf.

The eggs and larvae of both species are pelagic. Juvenile Spanish mackerel use estuaries as nursery grounds and have been collected from low salinity estuaries and high salinity beaches, but most stay nearshore in open beach waters. In general, both mackerel species prefer temperatures greater than 18°C and salinities between than 32-36 ppt.

Project Area: Due to the migratory and epipelagic nature of the Spanish and king mackerels, all stages of both species are likely rare in the Project Area. However, a few juvenile and adult Spanish and king mackerels may utilize the Project Area to feed during their annual northward migration during the spring and summer and when they return south in the fall.

Red Hake (*Urophycis chuss*): Eggs, Larvae, and Juveniles

Primary Source: Steimle et al. (1999b)

Red hake spawn offshore in the mid-Atlantic Bight in the summer, primarily in southern New England. The distribution of eggs is unknown because they cannot be distinguished from other hakes, therefore the characteristics of the habitat in which red hake eggs are commonly found is poorly known. Larvae dominate the summer ichthyoplankton in the mid-Atlantic Bight and are most abundant on the mid- and outer-continental shelf. Larvae are transported into coastal waters and settle to the bottom in the fall. Juveniles seek shelter and commonly associate with scallops, surf clam shells, and seabed depressions. In addition, juveniles undertake seasonal migrations in response to changes in water temperatures. In the mid-Atlantic Bight, red hake are commonly found in coastal waters in the spring and fall and move offshore or into deeper inshore water to avoid warm, summer temperatures.

Hake eggs are commonly found buoyant in the upper water column of the inner shelf, and commonly found in the New York Bight from May to November. EFH for hake eggs is defined as areas with surface temperatures less than 10°C and salinity less than 25 ppt. Larval red hake are found primarily further offshore. Larvae are reported to be common in the HRE during June, and juveniles are commonly found from May to November (Stone et al. 1994). Larval red hake in the mid-Atlantic Bight are mostly collected in temperatures of 8 to 23°C, depths of -33 to -660 ft MLW, and salinities greater than 0.5 ppt. Juveniles in the HRE avoid depths less than -30 ft MLW and exhibit a preference for salinities above 27 ppt, temperatures above 5°C, and DO concentrations of 10 to 11 mg/l. Juvenile red hake can be found in the New York Bight throughout the year and prefer depths of -15 to -250 ft MLW during the spring and -70 to -250 ft MLW during the fall. Red hake in the HRE prefer depths greater than -35 ft MLW and congregate in the shipping channels.

Project Area: Red hake spawns in offshore waters, and therefore the presence of eggs in the Project Area is unlikely. In addition, due to the depth preference of this species, larvae are not likely to occupy shallow coastal waters. Juvenile red hake are attracted to deeper, cooler water in the shipping channels of the HRE, and therefore would be rare in the shallower, warmer waters found in the Project Area.

Scup (*Stenotomus chrysops*): All Stages

Source: Steimle et al. (1999c)

Scup spawn along the inner continental shelf from Delaware Bay to southern New England between May and August, mainly in bays and sounds in and near southern New England. Scup spawn in the HRE during July. Eggs are commonly found in larger bodies of coastal waters such as bays and sounds in and near southern New England during spring and summer. Larval scup are pelagic and occur in coastal waters during warmer months. YOY juveniles are commonly found from the intertidal zone to depths of about -100 ft MLW in portions of bays and estuaries where salinities are above 15 ppt. Juvenile scup use a variety of coastal intertidal and subtidal

sedimentary habitats during their seasonal inshore residency, including sand, mud, mussel beds, and eelgrass beds. Adults migrate inshore during early May and June between Long Island and Delaware Bay. Adults are found inside bays and sounds, but like juveniles, do not penetrate low salinity areas. Adults are often observed or caught over soft, sandy bottoms and in or near structured habitats, such as rocky ledges, wrecks, artificial reefs, and mussel beds. Adults move offshore once water temperatures fall below 7.5 to 10°C in the fall.

Scup eggs and larvae are pelagic and occur in coastal waters during warmer months (May to September) with temperature preference of 13 to 23°C, salinities greater than 15 ppt, and depths less than -164 ft MLW. Juveniles and adults are present in the HRE. Juveniles are much more abundant than adults, especially in the spring and summer. No juvenile or adult scup are present in the HRE in the winter. In general, juveniles are abundant and adults are common from June to October (Stone et al. 1994). Spawning takes place in July. Juveniles and adults in the HRE prefer depths greater than -30 ft MLW, temperatures above 15°C, DO concentrations of from 5 to 9 mg/l, and occur over a wide salinity range (20 to 30 ppt).

Project Area: Scup prefer pelagic areas therefore no eggs and larvae are expected in the Project Area. Juvenile and adult scup in the HRE prefer deeper waters and would be uncommon in the Project Area.

Summer Flounder (*Paralichthys dentatus*): Larvae, Juveniles, and Adults

Primary Source: Packer et al. (1999)

Summer flounder exhibit strong seasonal inshore-offshore movements. Planktonic larvae and post-larvae derived from offshore fall and winter spawning migrate inshore, entering coastal and estuarine nursery areas to complete transformation. Transforming larvae typically settle to the bottom and prefer sandy benthic substrate. Juveniles are distributed inshore and occupy estuaries during spring, summer, and fall. Some juveniles remain inshore for an entire year before migrating offshore, whereas others move offshore in the fall and return the following spring. Juvenile summer flounder utilize several different estuarine habitats such as marsh creeks, seagrass beds, mud flats, and open bay areas. As long as other conditions are favorable, substrate preferences and prey availability are the most important factors affecting distribution. Some studies indicate that juveniles prefer mixed or sandy substrate; others show that mud and vegetated habitats are used.

Adult summer flounder inhabit shallow, inshore, and estuarine waters during warmer months and migrate offshore in the fall. Adults are reported to prefer sandy habitats, but can be found in a variety of habitats with both mud and sand substrates. Adult summer flounder are present in moderate numbers in the HRE during all seasons except winter, and are most abundant in the summer. Juveniles are much less abundant than adults, but are caught throughout the year. In general, adults collected during the NOAA Fisheries bottom trawl surveys in the New York Bight showed no particular depth preference at any time of year.

Larval summer flounder prefer temperatures of 8 to 18°C, salinities of 23 to 33 ppt, depths of -33 to -230 ft MLW, and DO concentrations of greater than 5.3 mg/l. However, larval summer flounder in the HRE have been collected in great abundance in low to intermediate salinities (3 to 15 ppt). Juveniles prefer temperatures greater than 11°C, salinities of 10 to 30 ppt, and depths of -2 to -17 ft MLW in estuaries. Adults prefer temperatures of 2 to 27°C, depending on the time of the year, and high salinity (greater than 20 ppt). The distribution of adult summer flounder was correlated more closely to substrate than to salinity.

Project Area: Larval, juvenile, and adult summer flounder are expected to occupy the Project Area, given their association with sandy substrates and the fact that they feed on a variety of bottom-dwelling invertebrates and fish species that occupy the nearshore, intertidal zone. Larvae would probably be present from the fall to late winter of the following year, whereas juveniles are probably present in the spring and fall. Adults would be present at all times of year except winter, and would be most abundant in the fall.

Windowpane (*Scophthalmus aquosus*): All Stages

Primary Source: Chang et al. (1999)

Windowpane is a shallow water mid- and inner-shelf species found primarily between Georges Bank and Cape Hatteras on fine sandy sediment. Spawning occurs on inner shelf waters, including many coastal bays and sounds, and on Georges Bank. Juveniles and adults are similarly distributed. They are found in most bays and estuaries south of Cape Cod throughout the year at a wide range of depths (less than -5 to -130 ft MLW), bottom temperatures (3 to 18°C in the spring and 8 to 23°C in the fall), and salinities (18 to 32 ppt). Juveniles that settle in shallow inshore waters move to deeper offshore waters as they grow. Adults occur primarily on sand substrates off southern New England and the mid-Atlantic Bight.

Juveniles and adults are common in the HRE and New York Bight throughout the year, but are more common in the deeper shipping channels in the HRE in winter and summer. YOY and older juveniles are common within 100 ft of shore. In general, eggs are common in the HRE from April to July and September to October, larvae are common from April to November, and juveniles and adults are common throughout the year (Stone et al. 1994). Eggs are present in the New York Bight from March to December, and larvae are present from May to December.

Project Area: Juvenile and adult windowpane are commonly found on shallow, sandy substrates and are expected to occupy the Project Area throughout the year. Because this species spawns in inner shelf and nearshore waters, eggs and larvae are expected be found in the Project Area at all times of the year except during the winter. Smaller, YOY juveniles, as well as older juveniles and adults, are expected to be common in the Project Area throughout the year.

Winter Flounder (*Pseudopleuronectes americanus*): All Stages

Primary Source: Pereira et al. (1999)

Winter flounder spawning occurs from late winter through early spring, peaking south of Cape Cod in February and March. Eggs are found inshore in depths ranging from -1 to -13.5 ft MLW and have been collected in plankton nets offshore, e.g., on Georges Bank at depths of -300 ft MLW or less during March to May. Eggs are adhesive and demersal and are deposited on a variety of substrates, but sand is the most common; they also have been found attached to vegetation and on mud and gravel. Larvae are negatively buoyant and non-dispersive; they sink when they stop swimming. Thus, recently settled YOY juveniles are found close to spawning grounds and in high concentrations in depositional areas with low current speeds. YOY juveniles migrate very little in the first summer, move to deeper water in the fall, and remain in deeper cooler water for much of the following year. Habitat utilization by YOY is not consistent across habitat types and is highly variable among systems and from year to year. Several field and lab studies suggest a "preference" for muddy/fine sediment substrates where they are most likely to have been deposited by currents. Adult winter flounder prefer temperatures of 12 to 15°C, DO concentrations greater than 2.9 mg/l, and salinities above 22 ppt, although they have been shown to survive at salinities as low as 15 ppt. Mature adults are found in very shallow waters (less than -16 ft MLW) during the spawning season.

Juveniles and adults are present in the HRE year round, but juveniles are less common in the winter (except in the deeper channels) and adults are scarce in the summer. In general, eggs and larvae are abundant in the HRE from October to May, juveniles are abundant from June to November, and adults are abundant from January to April (Stone et al. 1994). In the HRE, one-year-old juveniles and adults prefer depths greater than -35 ft MLW. Larvae have been collected in the New York Bight in March and April. Juveniles and adults are present on the Atlantic coast year round and prefer depths of -15 to -165 ft MLW in the spring and -80 to -250 ft MLW in the fall.

Project Area: Due to their range of habitat utilization, larvae, juveniles, and adults can be expected to be common in the Project Area throughout the year. The sandy habitat of the Project Area may provide suitable spawning habitat for this species. In addition, winter flounder would also spawn on the neighboring shoal areas.

Clearnose Skate (*Raja eglanteria*): Juveniles and Adults

Primary Source: Packer et al. (2003a)

The clearnose skate occurs along the eastern United States coast from the Nova Scotian Shelf to northeastern Florida, as well as in the northern Gulf of Mexico from northwestern Florida to Texas. This species can be found on soft bottom substrates along the continental shelf, but also can be found in areas with rocky or gravelly bottoms. Both juveniles and adults are known to occupy the waters of HRE during spring, summer, and fall, with a depth preference of –16 to –26

ft MLW, temperature preference of 16 to 22°C, salinity preference of 21 to 37 ppt, and DO preference of 6 to 8 parts per million (ppm).

Project Area: Due to the habitat utilization of this species, both juvenile and adult clearnose skates would occupy the nearshore waters of the Project Area. However, the occurrence of this species throughout the Project Area would be uncommon.

Little Skate (*Leucoraja erinacea*): Juveniles and Adults

Primary Source: Packer et al. (2003b)

Little skates are found from Nova Scotia to North Carolina. They usually occupy areas with sandy or gravelly bottom substrates from shoal waters at depths up to -1,260 ft MLW, but are normally found in depths of -120 to -160 ft MLW in the region of the New York Bight. Both juveniles and adults can be found year-round in the HRE. However, adults are not as common in the HRE, particularly during the summer season when they migrate into deeper waters. Juveniles have a depth preference of –16 to –65 ft MLW, temperature preference of 4 to 18°C, salinity preference of 25 to 32 ppt, and DO preference of 6 to 12 ppm. Depth preference of adults ranges between –23 to –33 ft MLW, temperature preference of 3 to 12°C, salinity preference of 25 to 29 ppt, and DO preference of 8 to 12 ppm.

Project Area: Due to the habitat utilization of this species, juvenile little skates would occupy the nearshore waters of the Project Area and the occurrence of adults throughout the Project Area would be uncommon.

Winter Skate (*Leucoraja ocellata*): Juveniles and Adults

Primary Source: Packer et al. (2003c)

The winter skate, formerly *Raja ocellata*, can be found from the southern coast of Newfoundland and the southern Gulf of St. Lawrence to Cape Hatteras. Its center of abundance is on Georges Bank and in the northern section of the Mid-Atlantic Bight. In both areas it is often second in abundance to (and often confused with) the little skate, a sympatric species. Juveniles can be found year round in the HRE, with a summer migration into deeper waters. Juveniles have a depth preference ranging between –16 to –26 ft MLW, a temperature preference of 4 to 13°C, salinity preference of 23 to 32 ppt, and DO preference of 8 to 12 ppm. Adults have a depth preference ranging between –20 to –82 ft MLW, a temperature preference of 6 to 12°C, and salinity preference of 32 to 33 ppt.

Project Area: Similar to the little skate, juvenile winter skates would occupy the nearshore waters of the Project Area and the occurrence of adults throughout the Project Area would be uncommon.

Dusky Shark (*Charcharinus obscurus*): Early and Late Juveniles

Primary Sources: USDOC (1999) and Compagno (1984)

The dusky shark is a large, highly migratory species that is common in warm and temperate continental waters throughout the world. Dusky sharks are strongly migratory in temperate and subtropical waters in western north Atlantic, moving north during the summer and retreating south when the water cools. The dusky shark has an extensive lateral range from close inshore in the surf zone to well out to sea, and a depth preference from the surface to -1,315 ft MLW. Although nursery areas are in coastal waters, dusky sharks do not prefer areas with reduced salinities and tend to avoid estuaries. In the western Atlantic, dusky sharks are highly migratory with a geographical range from Nova Scotia to Cuba (including the northern Gulf of Mexico). Dusky sharks are viviparous. Females move inshore to drop their young and then return to deeper water. Young dusky sharks have been observed to form large feeding schools or aggregations.

Project Area: Although migratory and pelagic, dusky sharks spawn in nearshore water, and therefore juveniles are expected to occur in the Project Area, but not in significant numbers.

Sandbar Shark (*Charcharinus plumbeus*): Early Juveniles and Adults

Primary Sources: USDOC (1999) and Compagno (1984)

The sandbar shark is an abundant, coastal-pelagic shark of temperate and tropical waters that occurs inshore and offshore. It is found on continental and insular shelves and is common at bay mouths, in harbors, inside shallow muddy or sandy bays, and at river mouths, but tends to avoid sandy beaches and the surf zone. Sandbar sharks migrate north and south along the Atlantic coast, reaching as far north as Massachusetts in the summer. Sandbar sharks bear live young in shallow Atlantic coastal waters between Great Bay, New Jersey, and Cape Canaveral, Florida. The young inhabit shallow coastal nursery grounds during the summer and move offshore into deeper, warmer water in winter. Late juveniles and adults occupy coastal waters as far north as southern New England and Long Island. Sandbar shark prefers temperatures greater than 21°C, salinities greater than 22 ppt, and depth of -66 to -215 ft MLW.

Project Area: Sandbar sharks are a migratory and coastal-pelagic species. Due to the habitat utilization of this species, neonates/early juveniles are expected in the Project Area during the summer. Migrating adults are expected to make a transient appearance during the summer, but not in significant numbers.

Sand Tiger Shark (*Odontaspis taurus*): Early Juveniles

Primary Source: Compagno (1984)

The sand tiger shark is a species that occurs in tropical to warm-temperate waters, inshore to offshore locations, and from littoral to deepwater depths. The sand tiger shark occurs in

continental and insular waters from the outer shelves and down the slopes to seamounts, possibly 5,250 ft deep. Occasional individuals of this species have been observed to come into the tide line along beaches or enter mouths of rivers (Bigelow and Schroeder 1953). They may also be found in shallow bays and around coral reefs. The general range of sand tiger shark is from Brazil to Maine in the western Atlantic. Sand tiger sharks have been observed hovering motionless just above the seabed in or near deep sandy bottom gutters or rocky caves, usually in the vicinity of inshore rocky reefs and islands (NOAA Fisheries 2000).

Project Area: Based on their range of habitat utilization, sand tiger sharks are likely rare in the HRE and the Project Area.

4.2 NON-EFH-DESIGNATED FISH AND SHELLFISH SPECIES

This section provides information on life history and habitat requirements for important recreational and commercial, non-EFH-designated species, i.e., striped bass (*Morone saxatilis*), weakfish (*Cynoscion regalis*), American lobster (*Homarus americanus*), blue crab (*Callinectes sapidus*), and horseshoe crab (*Limulus polyphemus*). Similar to the EFH-designated species, primary reference sources are cited once, at the beginning of each summary. For each species, the primary source was one of a series of *Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates* reports prepared by the USFWS and USACE, Waterways Experiment Station, during the 1980s.

Unlike the EFH-designated species, no life stages of importance have been designated for the non-EFH-designated species, and therefore each species assessment addresses all life stages of that particular species. Conclusions regarding the likelihood of occurrence of each species and life history stage in the Project Area are presented at the end of each species assessment.

Striped Bass (*Morone saxatilis*)

Primary Source: Fay et al. (1983)

Striped bass is a "generalist" species because it can tolerate a variety of environmental conditions and eat a variety of organisms. The mid-Atlantic distribution ranges from Cape Hatteras to the St. Lawrence River, Canada. However, there are distinct populations associated with the Roanoke River, Chesapeake Bay, Delaware River, and the Hudson River. Striped bass are an anadromous species, spawning once a year in fresh or nearly fresh water. Spawning for the mid-Atlantic region takes place primarily in April, May, and June. Striped bass eggs tolerate temperatures of 14 to 23°C. Striped bass larvae tolerate temperatures of 8 to 25°C and generally stay in or near the area where they were spawned. Juvenile striped bass tolerate temperatures of 10 to 27°C, and also tend to remain in the river or estuarine habitat where they were spawned. Adult striped bass tolerate temperatures of 0 to 30°C. Striped bass is an opportunistic carnivore with a diet that may include a mix of fish and various invertebrates. A study of the mid-Atlantic stocks found that, as their size increases, diet switches from mainly invertebrates to a mixture of fish and invertebrates, and then to a diet of primarily fish supplemented with invertebrates.

Project Area: Striped bass eggs and larvae are unlikely to be found in the Project Area because they are spawned in fresh to nearly fresh water and the larvae stay in the area of spawning. Juvenile striped bass also tend to remain in the spawning habitat, but may use nearshore portions of the HRE as foraging areas. Both juvenile and adult striped bass are likely to occupy the Project Area because they rely on the nearshore HRE as a nursery and forage area.

Weakfish (*Cynoscion regalis*)

Primary Source: Mercer (1989)

Weakfish can be found from the southern coast of Florida to Massachusetts Bay. They spawn in the nearshore and estuarine areas of the coast after a spring inshore migration. Weakfish larvae have been found in nearshore waters to 70 kilometers offshore. Juvenile weakfish use estuarine areas as nursery grounds and are more commonly found in the deeper areas of rivers or bays. Adults migrate seasonally between inshore and offshore waters. In the spring, weakfish migrate north to warming inshore waters and reverse this migration in the fall. In northern areas, a greater proportion of adults spend the summer in oceanic waters rather than estuaries. Weakfish have been collected over a temperature range of 9.5 to 30.8°C and a salinity range of 0.1 to 32.3 ppt. However, areas with the most abundant juvenile catches had salinities of 2.0 to 10.8 ppt. Young weakfish feed primarily on mysid shrimp and anchovies; older weakfish feed primarily on available clupeid fish.

Project Area: Weakfish are expected to occupy the Project Area because they migrate in and out of the HRE on a seasonal basis and utilize the HRE as a foraging and nursery area.

Blue Crab (*Callinectes sapidus*)

Primary Source: Hill et al. (1989)

The blue crab is found in coastal waters from Massachusetts to South America. Its primary habitat is in bays and brackish estuaries. Substrate preference varies with life stage. Areas with submerged aquatic vegetation and soft sediments are important for juvenile crabs, which use the vegetation as a refuge from predation. Adult crabs prefer a wide range of substrates ranging from harder substrates, such as sand and rock, to mud bottoms. Mating takes place primarily in relatively low salinity waters in upper portions of estuaries and lower portions of rivers. After mating, females migrate to high salinity waters in lower estuaries, sounds, and nearshore spawning areas. Juveniles migrate to shallower low salinity waters where they grow and mature. Blue crabs prey on commercially important clams and oysters, and serve as food for commercially important species such as striped bass.

Project Area: Based on their range of habitat utilization and availability of food sources, blue crabs are expected to occur in the Project Area.

American Lobster (*Homarus americanus*)

Primary Source: MacKenzie and Moring (1985)

The American lobster occurs in coastal surf to continental slope waters up to 2,300 ft in depth. However, this range is divided between inshore and offshore groups, with some overlap occurring. Lobsters are solitary, territorial crustaceans that live in a variety of different habitats, preferring areas that have a rocky or soft mud bottom to one that is sandy. Lobsters reproduce when a recently molted soft-shelled female mates with a hard-shelled male in the summer or fall. The female generally extrudes and fertilizes the eggs about a year after mating, and then carries the eggs on her abdomen until they hatch the following spring or early summer. Hatched larvae go through a planktonic stage for about a month, and then permanently settle to the bottom. Seasonal distribution may be related to water temperature. Migrations into the shallow waters of the Lower Bay take place in spring and summer, and correspond with spawning episodes. Most lobsters are caught in shallow inshore waters, at depths of -15 to -100 ft MLW.

Project Area: American lobsters prefer sandy areas with rock overhangs. Although sandy substrates are abundant throughout the Project Area, there are a lack of rock overhangs or underwater structures, and therefore American lobsters are likely not present in significant numbers in the Project Area.

Atlantic Horseshoe Crab (*Limulus polyphemus*)

Primary Source: Atlantic States Marine Fishery Commission (1998)

The horseshoe crab is a benthic arthropod that utilizes both estuarine and continental shelf habitats. They are not a true "crab" and are classified in their own class (Merostomata), which is more closely related to arachnids. Horseshoe crabs range from the Yucatan peninsula to northern Maine but are most abundant between Virginia and New Jersey. The NOAA Fisheries, Northeast Fisheries Center bottom trawl surveys show that 92 percent of the horseshoe crabs caught were in waters shallower than -66 ft MLW. Horseshoe crabs are ecological generalists that can survive in a range of environmental conditions. Studies report that adult horseshoe crabs migrate from deep bay waters and the Atlantic continental shelf to spawn on intertidal sandy beaches. Spawning generally occurs from March to July. Eggs are laid in the sediment and hatch approximately 14 to 30 days after fertilization. Larvae may over-winter in the sediment but when they emerge they generally settle in shallow water areas to molt. Juvenile horseshoe crabs usually spend the first 2 years of life on intertidal flats near the breeding beaches. Older individuals move out of intertidal areas to a few miles offshore, but some remain in intertidal areas year round.

Larvae feed on a variety of small polychaetes and nematodes. Juvenile and adult horseshoe crabs feed primarily on mollusks, including various clams and blue mussels. Horseshoe crabs also prey on a wide variety of benthic organisms.

Project Area: Based on their range of habitat utilization and availability of food sources, horseshoe crabs are expected to occur in the Project Area.

4.3 PREY SPECIES

Principal prey items for the EFH-designated species that have been identified as probable occupants of the Project Area are listed in Table 2. Adults and juveniles with different diets are listed separately. Winter and windowpane flounder and clearnose, little, and winter skates are obligate bottom feeders. Dusky, sandbar, and sand tiger sharks also are bottom feeders, foraging mostly on fish species. Red hake, black sea bass, summer flounder, and scup feed on benthic and pelagic organisms and Atlantic butterfish, Atlantic herring, cobia, and the three mackerel species are pelagic feeders.

Table 2. Prey Species for EFH-Designated Fish Species.

Species	Life History Stage	Principal Prey
Bottom and Pelagic Feeders		
Black sea bass	Juveniles	Small benthic crustaceans (e.g., crustaceans and mollusks) and small fish.
	Adults	Benthic and near-bottom invertebrates and small fish.
Red hake	Larvae	Copepods and micro-crustaceans; feeding is usually nocturnal.
	Juveniles	Polychaetes and small benthic and pelagic crustaceans, including decapod shrimp and crabs, mysids, euphausiids, and amphipods.
Cobia	Juveniles and adults	Crustaceans, cephalopods, and small fishes, most notably portunid crabs.
Dusky shark	Early and late juveniles	Wide variety of fish species and crustaceans (e.g., squids).
Sandbar shark	Early juveniles and adults	Small bottom and pelagic fish with some mollusks and crustaceans.
Sand tiger shark	Early juveniles	Wide variety of fish species and epibenthic prey (e.g., crabs).
Scup	Larvae	Zooplankton.
	Juveniles	Polychaetes, amphipods, other small crustacea (copepods, mysids), small mollusks, and fish eggs and larvae.
	Adults	Benthic and near bottom invertebrates and small fish.
Summer flounder	Larvae	Calanoid and harpactacoid copepods and polychaete tentacles.
	Juveniles	YOY (<100 mm) feed on polychaetes and small crustaceans, and older juveniles have the same diet plus small fish.
	Adults	Crustaceans (e.g., crabs), bivalves, marine worms, sand dollars, and a variety of fish species.
Winter flounder	Larvae	Nauplii, invertebrate eggs, protozoans, and polychaetes.
	Juveniles and adults	Mostly polychaetes and amphipods (e.g., *Ampelisca abdita*); also *Crangon*, sand dollars, and bivalves.
Windowpane	Larvae	Copepods and other zooplankton.

Table 2. Prey Species for EFH-Designated Fish Species.

Species	Life History Stage	Principal Prey
	Juveniles and adults	Small crustaceans (e.g., mysids and decapod shrimp) and fish larvae.
Clearnose skate	Juveniles and Adults	Polychaetes, amphipods, mysid shrimp, crabs, bivalves, squid, and small fishes.
Little skate	Juveniles and Adults	Mostly decapods (e.g., crustaceans and amphipods) and followed by polychaetes, isopods, bivalves, hydroids, and fishes.
Winter skate	Juveniles and Adults	Mostly polychaetes and amphipods and followed by decapods, isopods, bivalves, and fishes.
Pelagic Feeders		
Atlantic butterfish	Larvae, juveniles and adults	Planktonic prey, squid, and crustaceans, polychaetes, and small fish.
Atlantic sea herring	Larvae, juveniles, and adults	Zooplanktons (e.g., copepods, crustacean eggs, decapod larvae, and shrimp).
Atlantic mackerel	Juveniles and adults	Crustaceans, pelagic mollusks, polychaetes, squid, and fish.
Bluefish	Juveniles	Polychaetes and crustaceans, but mostly fish.
	Adults	Wide variety of fish species.
King mackerel	Larvae	Larval fish, especially carangids, clupeids, and engraulids.
	Juveniles and adults	Crustaceans and variety of fish species.
Spanish mackerel	Larvae	Larval fish, especially carangids, clupeids, and engraulids; also some crustaceans.
	Juveniles and adults	Crustaceans and variety of fish species.

Sources: EFH Source Documents (see references).

No surveys of benthic prey species have been conducted in the immediate nearshore waters of the Project Area. However, El Paso Energy Bridge Holding Company, LLC (El Paso) (2003) conducted a benthic invertebrate survey in the nearshore waters at nearby Princess Bay in November 2002. Benthic samples were collected using a Smith-MacIntyre benthic grab sampler (0.1 square meter) or equivalent grab sampling device. Results of the benthic macroinvertebrate survey showed a total of five taxa collected in the nearshore waters of Princess Bay (Table 3). Oligochaeta was the most abundant benthic taxon and consisted of 68 percent of the total catch. Polychaeta was the second most abundant benthic taxon collected and consisted of 21.6 percent of the total catch. Gastropoda (4.8 percent), malacostraca (3.6 percent), and bivalvia (2.0 percent) comprised the remainder of the benthic macroinvertebrate taxons collected (Table 3) (El Paso 2003).

This survey indicates that benthic oligochaetes, polychaetes, and bivalves are common in the sandy, shoal areas in the vicinity of the Project Area. Given that Princess Bay is located just south of the Crescent Beach portion of the Project Area, the same taxons of benthic macroinvertebrates would also be present in the nearshore waters of the Project Area. These organisms represent food resources for bottom-feeding EFH-designated species and are thus a component of EFH for these species.

Table 3. Benthic Invertebrate Species Collected at Princess Bay, New York in 2002.

Taxon	Total Captured	Percent Composition
Oligochaeta	170	68.0
Polychaeta	54	21.6
Gastropoda	12	4.8
Malacostraca	9	3.6
Bivalvia	5	2.0
Total	**250**	**100**

Source: El Paso 2003, compiled by Northern Ecological Associates, Inc.

5.0 IMPACTS

This section identifies the direct, indirect, and cumulative impacts of the proposed Project activities on the relevant life history stages of EFH-designated species, their habitats, and their prey species.

5.1 HABITAT IMPACTS

The proposed Project involves the construction of coastal storm risk management measures for the southern Staten Island shoreline areas. The proposed measures for the line of protection include road raising, levee, floodwall, buried seawall (including a segment of raised boardwalk and sand fill/dune grass placement on adjacent slopes) and tidal marsh, to preserve the functional effectiveness of tidal exchange. The road raising, levee, floodwall and seawall would be constructed in areas of the southern Staten Island shoreline that are landward of the mean high tide line, and therefore would not cause any direct habitat impacts on the nearshore Staten Island area. The tidal marsh, to preserve the functional effectiveness of tidal exchange, will include construction seaward of the mean high tide line. However the impacts from this construction, such as increased turbidity, will be minimal and temporary. In additional, the long term impacts of this project feature, such as creation of forage habitat for juvenile fish, will be beneficial to the environment. This increase in habitat will support the target ecosystem characteristic (TEC) goals for the Hudson Raritan Estuary, such as coastal wetlands, shorelines and shallows and habitat for fish, crab and lobsters.

The construction of minimum facilities to provide interior drainage for the Project Area would be located in areas of Staten Island shoreline that are landward of the mean high tide line and with the exception of tide/slide gates at existing sewer outfalls and the tide gates in Oakwood Creek (removal of 1 existing tide gate near WWTP and construction of 2 new tide gates), would not cause any direct habitat impacts in the Project Area. Habitat impacts from tide and slide gates would be limited to the footprint of the gates. Overall impacts to the nearshore Project Area would be minimal as the new construction would be limited to the addition of 2 tide gates and slide gates at existing storm sewer outfalls.

Water Quality

The building materials for levees, floodwalls and seawalls consist of stones, sheet pilings, and sand. Proper erosion control measures, such as hay bales and silt fences, would be erected if necessary to prevent project related erosion and runoff from entering the bay during upland construction. Should erosion and runoff from upland construction occur, a temporary, short-term increase in sedimentation and turbidity can be expected, but the sediments will settle quickly out of the water column causing minimal impacts on water quality. Sand will be from material excavated for the foundation of the line of protection and therefore sand composition is similar to the existing habitat and contains little organic matter and no unacceptable levels of toxic materials, thereby avoiding significant impact on water quality at the Project Area. Additionally, the stones and sheet pilings used for the proposed Project would be clean and contain little

organic matter and no hazardous materials, and therefore would not cause a significant impact on water quality in the Project Area.

Construction of interior drainage facilities, including pond excavation, would have no foreseeable impact on water quality to the nearshore waters surrounding the Project Area, given the distance of the proposed locations from the shore and the planned use of best management practices to control soil erosion and sedimentation during periods of soil disturbance.

5.2 DIRECT IMPACTS

The placement of Oakwood Creek slide gates and tide gates at sewer outfalls, as well as the tidal marsh to preserve the functional effectiveness of tidal exchange, within the Project Area may cause direct mortality (burial) of demersal eggs and any small larval and juvenile EFH and non-EFH-designated species that may be present at the footprint of the construction area during the time of construction. This type of direct impact is expected to be limited primarily to egg and larval stages of windowpane, winter flounder, blue crab, and horseshoe crab, the larval stage of summer flounder, and YOY juvenile windowpane and summer and winter flounders. The overall mortality of any finfish or crustacean species would be limited to the footprint of the construction area and is not expected to be significant because these species are highly mobile and individuals tend to move away from areas where large construction equipment is working (Table 4).

Construction of the Oakwood Creek tide gates and tide/slide gates at existing sewer outfalls, as well as the tidal marsh to preserve the functional effectiveness of tidal exchange, may also cause a temporary increase in sedimentation and turbidity. The increase in sedimentation and turbidity could potentially lead to gill abrasion and cause suffocation (Uncles et al. 1998) to fish and crustacean species, as well as hinder predation efficiency of sight-feeding fish, such as summer flounder at or adjacent to the Project Area. However, placement of the coastal storm risk management measures would be localized and limited to the footprint of each individual outfall and the proposed tidal marsh footprint. Additionally, placement of the coastal storm risk management measures would be in the sandy nearshore zone of the Project Area, where the increase in sedimentation and turbidity are expected to be minor and the sand would quickly settle out of the water column or be dispersed by the currents at the Project Area (Table 4).

For upland coastal storm risk management measures (i.e., levees, floodwalls and seawalls), proper erosion control measures, such as hay bales and silt fences, would be erected where necessary to prevent construction related erosion from entering the nearshore zone during construction. Should erosion and runoff from upland construction occur, a temporary, short-term increase in sedimentation and turbidity can be expected, but the sediments are expected to settle quickly out of the water column and cause minimal impacts.

Table 4. Potential Impacts on EFH-Designated Species in the Project Area.

Species	Stage	Potential Impacts
Atlantic butterfish	Larvae	Pelagic. No significant impact.
	Juveniles	Pelagic, zooplankton-feeding species. No significant impact.
	Adults	Pelagic, zooplankton-feeding species. No significant impact.
Atlantic mackerel	Juveniles	Transient, pelagic species. No significant impact.
	Adults	Transient, pelagic species. No significant impact.
Atlantic sea herring	Larvae	Pelagic. No significant impact.
	Juveniles	Pelagic, zooplankton-feeding species. No significant impact.
	Adults	Pelagic, zooplankton-feeding species. No significant impact.
Black sea bass	Juveniles	Depth and structure preference will limit this species from occurring in great numbers at the Project Area. No significant impact.
	Adults	Depth and structure preference will limit this species from occurring in great numbers at the Project Area. No significant impact.
Bluefish	Juveniles	Temporary displacement of fish and their prey (forage fish). No significant impact due to the ability to relocate for food.
	Adults	Pelagic, temporary displacement of fish and their prey (forage fish). No significant impact.
Clearnose skate	Juveniles	Short-term, temporary loss of a small fraction of benthic infaunal prey organisms. No significant impact because fish also feed on pelagic prey organisms or are able to relocate for food.
	Adults	Short-term, temporary loss of a small fraction of benthic infaunal prey organisms. No significant impact because fish also feed on pelagic prey organisms or are able to relocate for food.
Cobia	Eggs	No significant impact.
	Larvae	No significant impact.
	Juveniles	Transient pelagic species. No significant impact.
	Adults	Transient pelagic species. No significant impact.
King mackerel	Eggs	No significant impact.
	Larvae	No significant impact.
	Juveniles	Transient pelagic species. No significant impact.
	Adults	Transient pelagic species. No significant impact.
Little skate	Juveniles	Short-term, temporary loss of a small fraction of benthic infaunal prey organisms. No significant impact because fish also feed on pelagic prey organisms or are able to relocate for food.
	Adults	Depth preference limits this species from occurring in great numbers at the Project Area. No significant impact.
Red hake	Eggs	No significant impact.
	Larvae	Pelagic. No significant impact.
	Juveniles	Depth preference will limit this species from occurring in great numbers at the Project Area. No significant impact.
Scup	Eggs	Pelagic. No significant impact.
	Larvae	Pelagic. No significant impact.

Table 4. Potential Impacts on EFH-Designated Species in the Project Area.

Species	Stage	Potential Impacts
	Juveniles	Depth preference will limit this species from occurring in great numbers at the Project Area. No significant impact.
	Adults	Depth preference will limit this species from occurring in great numbers at the Project Area. No significant impact.
Spanish mackerel	Eggs	No significant impact.
	Larvae	No significant impact.
	Juveniles	Transient pelagic species. No significant impact.
	Adults	Transient pelagic species. No significant impact.
Summer flounder	Larvae	Short-term, temporary loss of a small fraction of benthic infaunal prey organisms. No adverse impact because fish also feed on pelagic prey organisms or are able to relocate for food.
	Juveniles	Short-term, temporary loss of a small fraction of benthic infaunal prey organisms. No adverse impact because fish also feed on pelagic prey organisms or are able to relocate for food.
	Adults	Short-term, temporary loss of a small fraction of benthic infaunal prey organisms. No adverse impact because fish also feed on pelagic prey organisms or are able to relocate for food.
Windowpane	Eggs	Placement of outfall extension and tide and slide gates may cause mortality of demersal eggs in the spawning area during the February-November spawning season. Minimal impact expected.
	Larvae	Placement of outfall extension and tide and slide gates may cause mortality of recently-hatched larvae near the bottom, but have no significant impact on larvae in surface waters.
	Juveniles	Placement of outfall extension and tide and slide gates may impact smaller and slower YOY juveniles. No significant impact from loss of benthic infaunal species because primary prey are more mobile epifaunal species.
	Adults	No significant impact from loss of benthic infaunal species because primary prey are more mobile epifaunal species and fish will relocate for food. Construction during spawning season will cause females to move to nearby unaffected areas to spawn, but should have no significant impact on egg production.
Winter flounder	Eggs	Placement of outfall extension and tide/slide gates may cause mortality of demersal eggs in the spawning area during the January-April spawning season. Minimal impact expected.
	Larvae	Placement of outfall extension and tide/slide gates may cause mortality of recently-hatched larvae near the bottom, but have no significant impact on larvae in surface waters.
	Juveniles	Loss of benthic infaunal prey organisms will cause larger juveniles to relocate to nearby, unaffected areas; smaller YOY juveniles are less able to relocate and are vulnerable to mortality from construction activities.

Table 4. Potential Impacts on EFH-Designated Species in the Project Area.

Species	Stage	Potential Impacts
	Adults	Loss of benthic infaunal prey organisms will cause adults to relocate to nearby, unaffected areas to feed. Construction during spawning season will cause females to move to nearby, unaffected areas to spawn, but should have no significant impact on egg production.
Winter skate	Juveniles	Short-term, temporary loss of a small fraction of benthic infaunal prey organisms. No significant impact because fish also feed on pelagic prey organisms or are able to relocate for food.
	Adults	Depth preference limits this species from occurring in great numbers at the Project Area. No significant impact.
Dusky shark	Early Juveniles	Short-term, temporary loss of a small fraction of benthic infaunal prey organisms. No adverse impact because shark will relocate for food.
	Late Juveniles	Short-term, temporary loss of a small fraction of benthic infaunal prey organisms. No adverse impact because shark will relocate for food.
Sandbar shark	Early Juveniles	Short-term, temporary loss of a small fraction of benthic infaunal prey organisms. No adverse impact because sharks are able to relocate for food.
	Adults	Short-term, temporary loss of a small fraction of benthic infaunal prey organisms. No adverse impact because sharks are able to relocate for food.
Sand tiger shark	Early Juveniles	Pelagic, transient species. May experience a short-term, temporary loss of benthic infaunal prey organisms. No adverse impact because sharks are able to relocate for food.

Source: Compiled by Northern Ecological Associates, Inc. 2004.

The preferred spawning habitat of windowpane and winter flounder are sandy substrates from the nearshore waters to the outer continental shelf, similar to the areas at or near the footprints of the tide/slide gates at existing sewer outfalls. Spawning of winter flounder can be expected to occur between January and March, whereas spawning of windowpane can be expected to occur between February and November. Winter flounder eggs are demersal and adhere to the bottom until they hatch, whereas windowpane eggs are buoyant and remain in the water column. Therefore, eggs of winter flounder could potentially be present on the bottom of the nearshore zone of the Project Area throughout most of the year and would be most vulnerable in the spring and summer just after they settle to the bottom and are still very small. The sandy habitats of the nearshore waters of Raritan Bay are ideal nursery grounds for newly hatched larval and juvenile flounders (i.e., windowpane and summer and winter flounders). The small, larval and juvenile flounders, which live in contact with the bottom and are poor swimmers, would be most at risk during construction of the tide gates. Direct impacts would potentially include burial of flounder eggs, larvae, and YOY juveniles, but due to the small size of the required construction area for the tide gate construction, minimal impacts are expected. Older juveniles and adults of both species that are likely to occupy the Project Area are not at risk from construction because of their mobility.

Eggs and larvae of all the other EFH-designated species in the Project Area are pelagic and not at risk from nearshore and dredging construction activities. None of the other EFH-designated fish species or life history stages that are likely to occupy the Project Area are at risk because they are either pelagic species, large demersal species (sharks), or adults of demersal species that are only at risk as juveniles (Table 4).

Due to the habitat utilization of horseshoe and blue crabs, these two non-EFH-designated species would be present throughout the nearshore zone of the Project Area and may be subject to some direct impact from the placement of the tide gates at existing sewer outfalls. Spawning of horseshoe crabs generally occurs from March to July with eggs laid in the sediment. Larval horseshoe crabs may over-winter in the sediment but when they emerge they generally settle in shallow water areas to molt. Mating of blue crabs typically takes place in relatively low salinity waters in upper portions of estuaries and lower portions of rivers, and subsequently females migrate to higher salinity waters in the lower portions of estuaries, sounds, and nearshore areas to spawn. Juvenile blue crabs migrate to shallow, low salinity waters to grow and mature. The placement of the tide gates may cause direct mortality of horseshoe crab eggs and larvae and impact larval blue crabs. However, the footprints of the tide gates are small and localized. Therefore, minimal impacts to horseshoe and blue crabs are anticipated (Table 5).

5.3 INDIRECT IMPACTS

The most significant impact from the placement of the Oakwood Creek tide gates and slide gates at existing sewer outfalls, as well as the tidal marsh to preserve the functional effectiveness of tidal exchange, on EFH and non-EFH-designated species would be the indirect effects caused by the burial of benthic infaunal prey organisms and some epifaunal prey organisms for the bottom-feeding EFH and non-EFH-designated species. Any benthic organism that lives in the sand (infauna) and the smaller, less motile organisms that live on the bottom (epifauna) that are not capable of avoiding the construction activities will be smothered. Most of these organisms will be invertebrates, but a few small forage fish such as sand lance (*Ammodytes americanus*), which burrow into the sand, will also be impacted. However, impacts to benthic organisms would be minimal, localized, and limited to the footprint of the slide and tide gates.

Table 5. Potential Impacts on Non-EFH Designated Species with Commercial and/or Recreational Value in the Project Area.

Species	Stage	Potential Impacts
Striped Bass	Eggs	No significant impact.
	Larvae	No significant impact.
	Juveniles	Loss of benthic prey species. No significant impact.
	Adults	Loss of small benthic prey organisms would have minimal impact because fish also feed on pelagic prey organisms and larger, more mobile benthic epifauna (*e.g.,* crabs). No significant impact.
Weakfish	Eggs	No significant impact.
	Larvae	No significant impact.
	Juveniles	Loss of benthic prey organisms would have minimal impact because fish also feed on more mobile benthic epifauna. No significant impact.
	Adults	Temporary displacement of fish and their prey species. No significant impact.
American lobster	Eggs	No significant impact.
	Larvae	No significant impact.
	Juveniles	Loss of infaunal and benthic prey species. No significant impact.
	Adults	Loss of infaunal prey species. No significant impact.
Blue crab	Eggs	No significant impact.
	Larvae	No significant impacts.
	Juveniles	Loss of infaunal prey species. No significant impact.
	Adults	Loss of infaunal prey species. No significant impact.
Horseshoe crab	Eggs	Eggs attached to female may be lost if female was impacted by construction.
	Larvae	Placement of outfall extension and tide and slide gates may cause burial/mortality for those located within the nearshore sediments of the Project footprint. Minimal impact expected.
	Juveniles	Placement of outfall extension and tide and slide gates will cause a lost of available habitat at the footprint of the Project Area and loss of infaunal prey species. Minimal impact expected.
	Adults	Loss of infaunal prey species. No significant impact.

Because juvenile and adult winter flounder and windowpane feed primarily on benthic infaunal organisms (Table 2), they are most likely to be indirectly affected as a result of impacts to their prey during construction of the Project. However, bottom-feeding finfish that have trouble finding sufficient prey in the Project Area during and following construction would be expected to simply relocate to an adjacent unaffected portion of the nearshore zone to feed. Pelagic piscivorous (fish-feeding) species might leave the immediate area during construction because of the noise, but would resume feeding as soon as the construction ceases and forage fish re-occupy the area.

The temporary loss of benthic prey resources caused by the proposed construction activities will not have any serious adverse effects on EFH for any species that feeds primarily on more motile epifaunal organisms (e.g., crabs, mysids, sand shrimp) or fish, because these organisms are readily available throughout the nearshore zone of the Project Area. For this reason, most of the EFH and non-EFH-designated species present would probably continue to feed in or adjacent to the Project Area even during construction (Table 4 and Table 5).

5.4 Cumulative and Synergistic Impacts

Cumulative impacts in the Project Area could result if the same area is subjected to repeated construction activities before the fish and benthic community has enough time to recover from the initial construction. The entire Coastal Storm Risk Management effort for southern Staten Island is anticipated to be a one-time construction project, with subsequent minor maintenance and/or repair, if necessary. Recruitment and re-colonization of the Project Area will begin immediately following completion of the construction activities. Impacts to the benthic and epibenthic fauna of the Project Area would be minimal, localized, and limited to the footprint of the size of the outfall extension and slide and tide gates, and therefore, the overall cumulative impact to bottom feeding EFH and non-EFH-designated species resulting from the proposed Project is expected to be minimal.

Synergistic effects associated with water quality changes due to resuspension of sand and from erosion would be limited and localized throughout the Project Area. Best management practices would be implemented during construction of upland coastal storm risk management measures (i.e., levees, floodwalls and seawalls consist of stones and sheet pilings). Proper erosion control measures, such as hay bales and silt fences, would be erected where necessary to prevent erosion and runoff from entering the nearshore zone during construction. Additionally, sedimentation from upland erosion or resuspended sand from placement of slide or tide gates is expected to rapidly settle out of the water column with currents in the nearshore zone of the Project Area rapidly dispersing suspended sediments that remain in the water column. Therefore, the cumulative and synergistic impacts associated with this Project are expected to be minimal.

6.0 CONCLUSION

This assessment concludes that the overall potential adverse impacts to EFH and non-EFH-designated species and EFH in the Project Area will not be significant. Most EFH and non-EFH-designated species that are expected to be present in the Project Area feed on more motile epifaunal organisms or on small forage fish and will not be significantly affected. For any bottom-feeding EFH and non-EFH species, the impact of sedimentation and turbidity would be localized and temporary.

Due to their association with benthic sandy habitats, flounders (windowpane and summer and winter flounders) would be the EFH-designated species that will experience the most direct impacts. Similarly, horseshoe and blue crabs would be the non-EFH-designated species that will experience the most direct impacts. If present, eggs, larvae, and juveniles of the EFH-designated flounder species may suffer burial and mortality from the placement of the outfall extension and tide gates at existing sewer outfalls. The increase sedimentation and turbidity from construction activities could also cause an indirect impact to fish species by causing gill abrasion and affect sight feeders. To avoid potential direct impacts to EFH and non-EFH-designated species, the Project will be constructed in accordance with mitigation and prevention measures recommended by the NOAA Fisheries, if required. Additionally, erosion control measures, such as hay bales and silt fences, would be erected to minimize upland erosion and sedimentation into the Lower New York Bay.

The most significant indirect impact of the proposed Project would be caused by the burial of benthic infaunal prey organisms and some epifaunal prey organisms for the bottom-feeding EFH and non-EFH-designated species. However, impacts to benthic organisms would be minimal, localized, and limited to the footprint of the slide and tide gates.

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APPENDIX A

**Detailed Plan Drawings of Proposed Project,
Including Proposed Line of Protection,
Interior Drainage Facilities, and
Typical Cross-Section Figures**

United States Department of the Interior

NATIONAL PARK SERVICE
Gateway National Recreation Area
210 New York Avenuet
Staten Island, NY 10305

IN REPLY REFER TO :

A00(NER/GATE)

April 9, 2015

Frank Verga
Programs and Project Management Division
US Army Corps of Engineers, NY District
26 Federal Plaza
New York, NY 10278

Re: NPS comments on USACE Draft South Shore EIS

Mr. Verga:

Thank you for the advance opportunity to comment on the South Shore of Staten Island Coastal Storm Risk Management Draft Environmental Impact Statement (EIS) being conducted by US Army Corps of Engineers (USACE). We appreciate the outreach and coordination shown by your agency in this matter. We are sensitive to the critical nature of this project, and the impact it will have on the future safety of the highly vulnerable shore communities of Staten Island during major storm events. Towards this end, we look forward to continuing to work with you to see this project to fruition.

On National Park Service (NPS) lands it is our mission to manage for the preservation of and access to natural, cultural and recreational resources. Understanding that this project is necessary for the protection of the adjacent communities, our focus is to avoid and minimize adverse impacts of any proposed interventions from the project on park resources, and incorporate appropriate mitigation measures where such impacts are unavoidable. We also seek to ensure that the project is planned in coordination with the CERCLA response effort being conducted at Great Kills. Lastly, we are looking to see that tradeoffs in management objectives are weighed and analyzed through alternatives in the EIS process. More detailed comments are provided below in the following sections:

1. EIS scope and process
2. Natural Resources
3. Cultural Resources
4. Recreational Resources
5. Great Kills CERCLA site
6. Permitting

1. EIS Scope and Process

We have identified two issues related to Gateway NRA that are missing from the analysis presented in the draft EIS: the alignment of the seawall at Miller Field (either landward or seaward of the hangar), and the location of the multi-use path at Miller Field (on top of the seawall or at ground level). We request that these be addressed in separate alternatives in the EIS analysis in order to fully compare the impacts that the proposed actions will have, adequately weigh the trade-offs among conflicting management goals, and allow for public input into the decision. We are sensitive to the need to keep this project on schedule, so if the timing is such that this analysis is not ready to be released to the public with the draft EIS, a supplemental analysis could be released at a later date as long as it has the opportunity to be publicly vetted and is included in the final decision document for the overall project.

2. Natural Resources

Overall we believe the EIS needs more in-depth evaluation of the impacts to natural resources. In particular, we are requesting additional analysis of impacts to the berm and dune system at Miller Field as well as erosional impacts along the entire shoreline. We also request incorporation of appropriate mitigation for likely impacts.

a. Erosional Impacts

We request that the analysis be revised to incorporate the issues detailed below. We believe there is a high probability of impacts from the loss of sediment transport, and that mitigation should be included in the form of periodic sediment nourishment along the shoreline, with particular attention to Great Kills.

- Construction of an engineered line of protection from Fort Wadsworth to Great Kills in conjunction with existing and planned groin and groin-like features (sewage discharge pipes) has a high probability of further depleting westward transport of sediment in an already sediment starved system. Reduction of sediment within cells R2, R3 and R5 of the historical sediment budget (Figure 2.3 page 13 of Appendix A: Engineering and Design) would directly impact park resources. Sediment transport through cells R2 and R3 directly impact dune and berm development at Miller Field. Sediment transport to and through cell R5 impacts Great Kills. Over the entire project length, Operations and Maintenance estimates loss of 5% of 135,000 cy annually and an annual nourishment cost for replacement of that sand at $337,000 (p 7-7 South Shore of Staten Island, New York Coastal Storm Risk Management Interim Feasibility Study for Fort Wadsworth to Oakwood Beach Draft Main Report, November 2014). Current annual loss from system is 46,000 cy (Figure 2.3 page 13 of Appendix A: Engineering and Design).

- In addition, impacts to sediment budget by existing New York City beach management practices is not identified within the sediment budget or estimates for annual sediment nourishment within project O&M. Please include this in the analysis.

- We also note that no analysis of how climate change may impact sediment transport processes is provided within the report or appendices, and request its inclusion.

- It is not clear that evaluation of the NED plan fully accounts for the impacts of sand loss from the Line of Protection during future storm events. A buried seawall should not impact shoreline processes. However, if sediments in front of the seawall are eroded and the seawall is exposed, shoreline processes would be significantly impacted by an exposed seawall. We request that this be evaluated in the analysis.

- We note that the economic analysis accounts for substantial storm damage reduction within the project area. To justify the economic analysis, the project area, and thus the Line of Protection, must be assumed to withstand numerous severe storm events during the 50 year project lifespan. The EIS and Appendices do not specify assumptions regarding frequency or intensity of storms used to justify project cost benefits. Appendix A (p 60) indicates that "In general the with-project coastal impacts are minor for the proposed line of protection since the majority of the proposed structures are set back from the shoreline and will only be exposed to nearshore wave processes during extreme storm events. The With Project storm induced erosion results indicate the structures have a minor impact on the profile change during storm events." No detailed analysis of with-project shoreline recession and dune/beach recession is presented within the EIS or Appendices. Appendix A (Tables 3-3 and 3-4, p 33) presents without-project shoreline recession and dune/berm recession. At Miller Field, recession rates for storm return periods of 2-500 years fall within range of 13-16 feet and 0-12 feet for shoreline and dune/berm, respectively. Recession rates are greater in other project reaches. If the LOP will only have minor impact on profile change during storm events, it follows that recession rates presented in Tables 3-3 and 3-4 should approximate with-project conditions. We request more information be presented in the EIS so that we may understand the assumptions regarding storm frequency and intensity during 50 year project lifespan; otherwise it is not possible to evaluate shoreline and dune/berm recession over the project lifespan to determine likelihood that part or all of the seawall will be exposed during the 50 year project.

- We have concerns for management of the shoreline that extend beyond the 50-year project lifespan; specifically, that without a program of beach and dune nourishment, the buried seawall will become exposed at some time in the future which will greatly alter the sediment budget and sediment transport processes. An exposed seawall is likely to severely decrease sediment transport to Miller

Field which may result in erosion of the beach and dune. Great Kills is currently sediment starved due to existing shoreline structures. Reduction in sediment transport will exacerbate erosion and further impact Gateway NRA resources. Understanding that the EIS analysis focuses on a more limited project lifespan, we would still like to gain a better sense of the long-term implications since we will be responsible for this area far into the future.

- The NPS is also interested in understanding more about how the proposed structures will impact Great Kills Park water flow/drainage during future rain events and coastal storm events. We request that the EIS include an analysis of how these structures will impact the effectiveness of a particular treatment technology, and whether there will be a different erosion rate to consider.

b. Dune System

The best examples of "natural" coastal dune systems on Staten Island are at Crooke's Point and Miller Field. Construction of a buried sea wall on the existing sand dunes at Miller Field will replace this natural resource feature. This will also have additional adverse impacts on other specific natural resources, as described in the subheadings below. For this reason we believe that a thorough analysis of natural resource impacts and appropriate mitigation should be included in the EIS.

Mitigation proposed should offset the disruption of beach-dune ecosystem functions, especially where they interface with coastal maritime plant communities, such as those existing at Crooke's Point. Ecosystem restoration (removal of invasive exotic vegetation with restoration of native vegetational communities) at Crooke's Point would be one recommendation for such an offset. Construction of a sustainable saltmarsh / beach-dune complex at the erosional zone of Great Kills may be another viable mitigative measure to replace coastal maritime habitats lost along the shoreline affected by the buried sea wall. We are happy to work with your office to identify the appropriate mitigation strategy.

i. Natural Processes

The identified placement of the buried seawall through the existing dune is generally inconsistent with NPS policies for managing natural systems because it transforms a dynamic feature that is formed and morphed by coastal processes into a static engineered feature. Current management provides for future management alternatives, such as strategic retreat, to allow for dune migration. Construction of an engineered seawall through the current dune alignment is essentially an irreversible management decision that artificially fixes the location of the dune and berm system. The EIS does not adequately consider natural resource impacts of replacing a dynamic shoreline with a fixed engineered structure within the context of a national park.

ii. Vegetation

- This alignment of the buried seawall will eliminate a sand dune plant community that colonized the site more than half a century ago. The NPS has undertaken substantial ecological restoration efforts on the dunes (removal of tens of thousands of non-native plants) since 2011, as well as post-Sandy reconstruction that includes about 30,000 grass stems and nearly 2,000 shrubs and trees.

- The new construction will replace compacted and root-stabilized sand. The existing sand dune crest at Miller Field beach is approximately 10.0 to 12.5 feet NAVD (compared with the NYC berms of 14 feet NAVD on either side of Miller Field). The multi-use path on the inland side of the dunes has an elevation of about 8.0 feet NAVD. These NPS dunes cover an area of approximately 1785 feet by 170 feet, or 7 acres.

- We request that the EIS include mitigation for these impacts in the form of planting efforts on the buried seawall with an intense and species-rich revegetation plan in order to rapidly re-establish native maritime plant and animal communities.

- If the promenade is located on top of the dune rather than alongside it, this will constitute an additional loss of available habitat. This should be factored into the impacts analysis.

- Long-term disruption to sediment transport and the resulting increased erosion could also lead to the loss of the oceanside saltmarsh at Great Kills. Again, we request that this be evaluated in the impacts analysis.

iii. Fauna

We request that the EIS analyze potential impacts to fauna, including a projection and timeline for the reestablishment of habitat and the wildlife it supports. Such impacts may include:

- how the loss of the Miller Field dune system may deprive this area of habitat for native pollinators and migratory passerines during construction and re-vegetation as the new system gets established

- the cumulative impacts of erosion of the remaining beach over time on nesting habitat for Horseshoe Crabs, feeding and resting habitat for shorebirds, and habitat needed for feeding and resting by migratory passerines and raptors.

3. Cultural Resources

We request a more thorough analysis of impacts to cultural resources be included in the EIS (such as on pages 2-34 and 4-41). Please note that compliance with Section 106 does not fulfill compliance with the analytic requirements of NEPA, which also includes cultural resources.

Regardless of the alignment of the buried seawall, the project will have an unavoidable major adverse impact on the historic district at Miller Field. We are ready to assist if requested in describing the impacts, such as severing Hangar 38 from its seaplane context, driving sheet piling near the Hangar and Elm Tree Light, etc. We believe this will constitute a major adverse impact under NEPA and an adverse effect under Section 106. We are happy to work with your office and the SHPO to identify the appropriate mitigation strategy.

More specific textual comments are included below.

a. 1.5 Project Area Description

The extent of the project area within the legislated boundaries of Gateway NRA and their National Register (NR) status should be clearly identified. For example, Lines 22 - 27 read as follows:

> "The shoreline in the Project area consists entirely of city-owned beaches and lands of the Gateway National Recreation Area (NRA), owned by the Federal government and administered by the former military installation, currently a historic site) at the northeast end of the Project area, Miller Field (a former Army airfield, currently a park with athletic fields) in the New Dorp Beach area, and Great Kills Park (an undeveloped natural area) southwest of Oakwood Beach."

It should be noted that the project begins adjacent to the National Register Fort Wadsworth Historic District, runs through the Miller Field Historic District and to Great Kills, all units of Gateway NRA, a national park.

Figure 1.3 should clearly identify NPS property. All three units are identified, but only Fort Wadsworth is indicated to be part of Gateway NRA. The reference to Fort Wadsworth lists it as a former military site, suggesting the history of the site; we request that this history and/or the impacts to Fort Wadsworth be discussed in the EIS.

Maps throughout the document should clearly identify Gateway NRA sites. The references to the sites should be consistent as well.

b. 3.1 Affected Environment

The description of the South Beach area should clearly indicate that this begins at Fort Wadsworth and describe the topography at this location.

c. 3.7 Cultural Resources

The first 46 lines of this section appear to discuss archaeological sites but it is not identified as such. The paragraph noted below begins with a discussion about historic structures but continues with the archaeology discussion, so should be clarified. Page 3-39 lines:

> "The only historic structures noted in the APE are at Miller Field. Although the Phase I study did not identify and Native American resources along the proposed alignment, the shoreline was determined sensitive for deeply buried sites (Panamerican 2005). The potential for deeply buried sites was corroborated by a geomorphological study conducted for the District's New York and New Jersey Harbor Navigation Project (Geoarchaeological Research Associates 2014). While this study's APE was offshore, it suggested that the south shore of Staten Island is moderately sensitive for now inundated or deeply buried shoreline sites."

Page 40 - lines 24-43 discuss Miller Field. The hangar is identified as is the concrete fire tower. There is little information on the history or significance of Miller Field; Elm Tree Light and the apron are not identified at all. All are part of the historic district. The history of Miller Field should be included in the text, and all historic resources should be clearly identified.

In this section there is no discussion about Fort Wadsworth and its historic structures, although Fort Wadsworth is discussed under many other headings in the text. Given that Fort Wadsworth is discussed and identified, a description of the site should be included and the impact if any should be discussed in 4.0. There is also no discussion about Great Kills, and although this is not a historic district, there are archaeology sites. These sites are outside of the APE, but the fact that they exist and are outside of the APE should be noted.

We suggest that a map of each Gateway NRA area should be included and each area should be clearly described. A subheading titled "Gateway NRA" or a subheading for each site might be helpful.

d. Consultation

"In accordance with the NHPA, implementing regulations, and New York State laws, the District has been in consultation with the New York SHPO and has prepared a Programmatic Agreement (Appendix F), which describes the roles and responsibilities of all parties in complying with cultural resource requirements."

Please add the NPS to this consultation. We will submit comments on the Programmatic Agreement separately.

e. 4.7 Cultural Resources Environmental Consequences

We concur with the process and impacts identified in the following statement:

> "The District would continue to work with the NPS to minimize and/or mitigate for impacts to the Miller Army Airfield Historic District. The District would also evaluate the NRHP-eligibility of the 1943 fire control tower. The proposed Project would sever the connection of Hangar No. 38, a seaplane hangar, from the sea, thereby impacting the setting of this historic district. Construction of the proposed alignment would require that the fire tower be demolished."

Additionally we request that the analysis incorporate the visual impact as well as direct impacts on Miller Field's historic resources, including the hangar, Elm Tree Light and the apron. Given the proposed alignment within feet of the Hangar and virtually wrapping around the Elm Tree Light, we anticipate a major adverse impact.

We also request that an analysis of the impacts on Fort Wadsworth and Great Kills be included in the text, particularly in regards to the viewsheds.

f. Section 106 coordination

As discussed during a recent call, NPS consults with 3 federally recognized tribes. Please add the Stockbridge Munsee tribe to this list.

g. Tribal Consultation

We would like to confirm whether USACE has initiated tribal consultation, and if so, whether this has been limited to submission of the draft Programmatic Agreement or has the USACE submitted (or will it submit) the draft EIS and/or archeological reports to the tribes for review. We request to be kept informed regarding the extent of tribal consultation the USACE has completed and plans to complete.

h. 4.10 Aesthetics and Scenic Resources

This section does not include any discussion of the impact on NPS resources. Impacts should include a discussion of the view sheds at Great Kills, Fort Wadsworth and Miller Field.

i. Chart 4.5 Table 4-5. Summary Comparison of the No-Action Alternative a 1 and the NED Plan

This chart indicates that the NED plan will have no additional impacts to cultural resources. As proposed, the construction of the wall will have an adverse impact at Miller Field, and may have visual impacts at Great Kills and Fort Wadsworth, pending analysis of these viewsheds as noted above.

4. Recreational Resources

As a National Recreation Area, these resources are fundamental to our mission. If the buried seawall is located landward of Hangar 38 at Miller Field, there will be a loss of the recreational fields currently occupying that area. This should be considered as an adverse impact to the park. Mitigation measures should be specified an included as a part of the EIS analysis.

The buried seawall will also impede public access to the shoreline. We request that the EIS specifically state that public access to the waterfront will be provided, and include the impacts from the change in access in the analysis, including potential mitigation.

We request that the EIS assess other potential impacts to the visitor experience, which may include:

- the seawall may block sea breezes, creating a hotter and drier microclimate inland

- the loss of the visitors' sense of connection with the sea and the natural environment, especially in the context that this is one of the few areas on Staten Island where a visitor can currently experience a natural dune system.

Seawall construction will destroy the recently constructed Multi-Use Path, but will replace it with a promenade. The location of the promenade on top of or behind the seawall will have differing impacts. A seawall topped with a heavily-trafficked promenade through the middle of the vegetated dune community may create an enforcement issue for NPS. Alternatively, the visitor experience behind the dune will be substantially different than what visitors currently experience, or will experience on lands adjacent to NPS lands under this scenario. We ask that these and any other tradeoffs be addressed and analyzed in the EIS alternatives.

Long-term, the disruption of sediment transport and resulting erosional impacts could lead to the eradication of recreational opportunities along the shoreline, such as access to the beaches. Of particular concern is any acceleration of erosion near the narrow area at Great Kills leading to the marina. If this area is breached, it would mean a loss of the road that is the only land access to the marina and Crooke's Point. We request that these potential long-term impacts be analyzed in the EIS and appropriate mitigation measures be evaluated.

5. Great Kills Park CERCLA site

The USACE proposed plan for Reach 1 calls for a vertical flood wall around the Oakwood Waste Water Treatment Facility and then an earthen levee extending up to Hylan Blvd. The construction footprint of these storm protection structures will likely overlap with the eastern boundary of the Great Kills Park CERCLA project (the Site). Based on current information on the Site, the radioactive contamination was brought to the Site with the waste fill material. The extent of the waste fill material along the park's southeastern boundary has not yet been fully delineated. The first phase of the Remedial Investigation (planned to start in 2015) will include further investigation of the footprint of the former landfill area.

The current steps for the GKP CERCLA project are:

- Remedial Investigation 2015-2017
- Feasibility Study 2018
- Proposed Plan
- Record of Decision
- Remedial Design/Remedial Action

To the extent practicable, NPS will consider prioritizing the investigation and clean up along the eastern boundary. However, the CERCLA process will still take several years to complete. We will work with you to factor this into the planning and construction of the project, both in terms of design as well as schedule.

6. Permitting

NPS is working to determine the legal authority and instrumentation under which the project will take place on NPS lands. It may not be the permanent easement mentioned in the EIS and we ask that you take this out of the draft EIS. We will continue to work with your office on this.

A few more textual errors and housekeeping issues:

- Need to ensure accurate differentiation throughout the EIS between the NYC's Great Kills Park, and that of Gateway NRA

- Page 3-52: There seems to be some misclassification and misstatements about Gateway throughout this page. (e.g. Fort Wadsworth is a national park, Miller Field is an "abandoned" airfield, etc.). Please correct these inaccuracies in the draft EIS. We will be glad to help with this.

- Missing words in the paragraph about Gateway on p. 1-10 that starts "Terrain..."

- **1.6 Planning Objectives**

  Please add the following objective:

  Where project activities are proposed for NPS lands, project will consider consistency with NPS policies (2006 NPS Management Policies) and Gateway National Recreation Area General Management Plan (2014).

- **1.8 Permits, Approvals, and Regulatory Requirements**

  Please include in Table 1-1:

  NPS
  - 2006 NPS Management Policies
  - Gateway National Recreation Area General Management Plan (2014)

- Authorization, through a yet to be determined instrument, to conduct work on NPS land

Thank you for your consideration of these issues. We look forward to working with you to achieve a project that best serves the overall interests of the public, provides for the safety of the South Shore communities, and maintains the type of experience expected at a National Park. If you have any questions or wish to convene another call or meeting with our team, please feel free to contact me at *jen_nersesian@nps.gov* or 718-354-4665. Additionally, if there is any data or assistance we can provide for the analyses we have requested, please let us know.

Sincerely,

Jennifer T. Nersesian
Superintendent

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

8 May 2015

Environmental Analysis Branch

Jennifer T. Nersesian
Superintendent
Gateway National Recreation Area
210 New York Avenue
Staten Island, New York 10305

Dear Ms. Nersesian:

Thank you for your comments on the U.S. Army Corps of Engineers, New York District, (District) South Shore of Staten Island Coastal Storm Damage Reduction Project Draft Environmental Impact Statement (DEIS). Please find enclosed our responses (Enclosure 1). Your concerns are addressed in greater detail in the DEIS which will be provided for your review prior to public release.

The District is committed to working with you to ensure we consider the needs and mission of the National Park Service as this project proceeds. Should you require additional information or have any questions, please contact me at (917) 790-8634 or by email at Peter.M.Weppler@usace.army.mil.

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosure

1. EIS Scope and Process

We have identified two issues related to Gateway NRA that are missing from the analysis presented in the draft EIS: the alignment of the seawall at Miller Field (either landward or seaward of the hangar), and the location of the multi-use path at Miller Field (on top of the seawall or at ground level). We request that these be addressed in separate alternatives in the EIS analysis in order to fully compare the impacts that the proposed actions will have, adequately weigh the trade-offs among conflicting management goals, and allow for public input into the decision. We are sensitive to the need to keep this project on schedule, so if the timing is such that this analysis is not ready to be released to the public with the draft EIS, a supplemental analysis could be released at a later date as long as it has the opportunity to be publicly vetted and is included in the final decision document for the overall project.

USACE Response: The alignment of the seawall at Miller Field (either landward, seaward of or through the hanger) and the multi-use path at Miller field (on top of the seawall or at ground level) will be described in the draft EIS as sub-alternatives specific to Miller Field.

2. Natural Resources

Overall we believe the EIS needs more in-depth evaluation of the impacts to natural resources. In particular, we are requesting additional analysis of impacts to the berm and dune system at Miller Field as well as erosional impacts along the entire shoreline. We also request incorporation of appropriate mitigation for likely impacts.

USACE Response: The draft EIS will present additional details to evaluation impacts to the berm and dune at Miller Field. Text will be added to the Feasibility Study as well as to the EIS to address any potential erosional impacts along the shoreline. Additionally, the USACE is committed to working with NPS to avoid and minimize impacts in the Gateway NRA while still providing the coastal storm risk management needed for SSSI. Any mitigation commitments will be identified in the EIS Record of Decision.

a. Erosional Impacts

We request that the analysis be revised to incorporate the issues detailed below. We believe there is a high probability of impacts from the loss of sediment transport, and that mitigation should be included in the form of periodic sediment nourishment along the shoreline, with particular attention to Great Kills.

USACE Response: Text will be added to the Feasibility Study as well as to the EIS to address any potential erosional impacts along the shoreline.

- Construction of an engineered line of protection from Fort Wadsworth to Great Kills in conjunction with existing and planned groin and groin-like features (sewage

discharge pipes) has a high probability of further depleting westward transport of sediment in an already sediment starved system. Reduction of sediment within cells R2, R3 and R5 of the historical sediment budget (Figure 2.3 page 13 of Appendix A: Engineering and Design) would directly impact park resources. Sediment transport through cells R2 and R3 directly impact dune and berm development at Miller Field. Sediment transport to and through cell R5 impacts Great Kills. Over the entire project length, Operations and Maintenance estimates loss of 5% of 135,000 cy annually and an annual nourishment cost for replacement of that sand at $337,000 (p 7-7 South Shore of Staten Island, New York Coastal Storm Risk Management Interim Feasibility Study for Fort Wadsworth to Oakwood Beach Draft Main Rep01i, November 2014). Current annual loss from system is 46,000 cy (Figure 2.3 page 13 of Appendix A: Engineering and Design).

- In addition, impacts to sediment budget by existing New York City beach management practices is not identified within the sediment budget or estimates for annual sediment nourishment within project O&M. Please include this in the analysis.

- We also note that no analysis of how climate change may impact sediment transport processes is provided within the repo1i or appendices, and request its inclusion.

- It is not clear that evaluation of the NED plan fully accounts for the impacts of sand loss from the Line of Protection during future storm events. A buried seawall should not impact shoreline processes. However, if sediments in front of the seawall are eroded and the seawall is exposed, shoreline processes would be significantly impacted by an exposed seawall. We request that this be evaluated in the analysis.

- We note that the economic analysis accounts for substantial storm damage reduction within the project area. To justify the economic analysis, the project area, and thus the Line of Protection, must be assumed to withstand numerous severe storm events during the 50 year project lifespan. The EIS and Appendices do not specify assumptions regarding frequency or intensity of storms used to justify project cost benefits. Appendix A (p 60) indicates that "In general the with-project coastal impacts are minor for the proposed line of protection since the majority of the proposed structures are set back from the shoreline and will only be exposed to nearshore wave processes during extreme storm events. The With Project storm induced erosion results indicate the structures have a minor impact on the profile change during storm events." No detailed analysis of with- project shoreline recession and dune/beach recession is presented within the EIS or Appendices. Appendix A (Tables 3-3 and 3-4, p 33) presents without-project shoreline recession and dune/berm recession. At Miller Field, recession rates for storm return periods of2-500 years fall within range of 13-16 feet and 0-12 feet for shoreline and dune/berm, respectively. Recession rates are greater in other project reaches. If the LOP will only have minor impact on profile change during storm events, it follows that recession rates presented in Tables 3-3 and 3-4

should approximate with-project conditions. We request more information be presented in the EIS so that we may understand the assumptions regarding storm frequency and intensity during 50 year project lifespan; otherwise it is not possible to evaluate shoreline and dune/berm recession over the project lifespan to determine likelihood that part or all of the seawall will be exposed during the 50 year project.

- We have concerns for management of the shoreline that extend beyond the 50-year project lifespan; specifically, that without a program of beach and dune nourishment, the buried seawall will become exposed at some time in the future which will greatly alter the sediment budget and sediment transport processes. An exposed seawall is likely to severely decrease sediment transport to Miller

Field which may result in erosion of the beach and dune. Great Kills is currently sediment starved due to existing shoreline structures. Reduction in sediment transpo1t will exacerbate erosion and further impact Gateway NRA resources. Understanding that the EIS analysis focuses on a more limited project lifespan, we would still like to gain a better sense of the long-term implications since we will be responsible for this area far into the future.

- The NPS is also interested in understanding more about how the proposed structures will impact Great Kills Park water flow/drainage during future rain events and coastal storm events. We request that the EIS include an analysis of how these structures will impact the effectiveness of a particular treatment technology, and whether there will be a different erosion rate to consider.

b. Dune System

The best examples of "natural" coastal dune systems on Staten Island are at Crooke's Point and Miller Field. Construction of a buried sea wall on the existing sand dunes at Miller Field will replace this natural resource feature. This will also have additional adverse impacts on other specific natural resources, as described in the subheadings below. For this reason we believe that a thorough analysis of natural resource impacts and appropriate mitigation should be included in the EIS.

Mitigation proposed should offset the disruption of beach-dune ecosystem functions, especially where they interface with coastal maritime plant communities, such as those existing at Crooke's Point. Ecosystem restoration (removal of invasive exotic vegetation with restoration of native vegetational communities) at Crooke's Point would be one recommendation for such an offset. Construction of a sustainable saltmarsh/beach-dune complex at the erosional zone of Great Kills may be another viable mitigative measure to replace coastal maritime habitats lost along the shoreline affected by the buried sea wall. We are happy to work with your office to identify the appropriate mitigation strategy.

USACE Response: The draft EIS will cite the NPS Gateway General Management Plan to

present additional detail as well as impacts (for each sub-alternative, landward seaward or through the Hanger) to the existing dune at Miller Field. The dune at Miller Field has been actively managed by NPS, including re-contouring the slopes to minimize sand moving onto the adjacent parking lot the additions of plantings (most recently Ammophila breviligulata) to attempt to stabilize the sand). USACE's NED plan includes covering the slopes of the line of protection (LOP) with the excavated material (sand) and via coordination with the USFWS, the plan will also include planting native dune grass on the slopes. Existing dune habitat at Miller Field will be disturbed if the LOP seaward of the hanger sub-alternative is constructed; however this habitat will reestablish after construction is complete. In addition, USACE will be constructing a continuous line of dune habitat along the entire line of protection, a total of approximately 21 acres of dune habitat creation.

i. Natural Processes

The identified placement of the buried seawall through the existing dune is generally inconsistent with NPS policies for managing natural systems because it transforms a dynamic feature that is formed and morphed by coastal processes into a static engineered feature. Current management provides for future management altematives, such as strategic retreat, to allow for dune migration. Constmction of an engineered seawall through the current dune alignment is essentially an management decision that artificially fixes the location of the dune and berm system. The EIS does not adequately consider natural resource impacts of replacing a dynamic shoreline with a fixed engineered structure within the context of a national park.

USACE Response: The draft EIS will cite the NPS Gateway General Management Plan to present any additional detail as well as impacts (for each sub-alternative) to the existing dune at Miller Field. The LOP is a fixed engineered structure, however, the existing dune at Miller Field is manmade and has been managed by NPS, including the addition of plantings.

ii. Vegetation

- This alignment of the buried seawall will eliminate a sand dune plant community that colonized the site more than half a century ago. The NPS has undertaken substantial ecological restoration efforts on the dunes (removal of tens of thousands of non-native plants) since 2011, as well as post-Sandy reconstruction that includes about 30,000 grass stems and nearly 2,000 shrubs and trees.

- The new construction will replace compacted and root-stabilized sand. The existing sand dune crest at Miller Field beach is approximately I0.0 to 12.5 feet NAVD (compared with the NYC berms of 14 feet NAVD on either side of Miller Field). The multi-use path on the inland side of the dunes has an elevation of about 8.0 feet NAVD. These NPS dunes cover an area of approximately 1785 feet by 170 feet, or 7 acres.

- We request that the EIS include mitigation for these impacts in the form of planting efforts on the buried seawall with an intense and species-rich revegetation plan in order to rapidly re-establish native maritime plant and animal communities.

USACE Response: See response above in Section 2 regarding mitigation. USACE will include native planning efforts on the buried seawall and is in coordination with USFWS regarding the species. USACE would also welcome NPS input on planting efforts, including species list.

- If the promenade is located on top of the dune rather than alongside it, this will constitute an additional loss of available habitat. This should be factored into the impacts analysis.

USACE Response: The EIS will add detail regarding the potential impacts of disturbing the existing dune for the sub-alternatives in which the LOP is constructed seaward of the hanger and/or the multi-use path at Miller field is on top of the seawall. In this scenario, a boardwalk (replacement of multi-use path) will be located at the top of the line of protection and habitat in this location will not be reestablished after construction is complete. However, USACE will be constructing a continuous line of dune habitat along the entire LOP, a total of approximately 21 acres of dune habitat creation. This habitat creation is greater than the amount that will be impacted because of the boardwalk on top of the LOP.

- Long-term disruption to sediment transport and the resulting increased erosion could also lead to the loss of the oceanside saltmarsh at Great Kills. Again, we request that this be evaluated in the impacts analysis.

USACE Response: Text will be added to the Feasibility Study as well as to the EIS to address any potential erosional impacts along the shoreline.

iii. Fauna

We request that the EIS analyze potential impacts to fauna, including a projection and timeline for the reestablishment of habitat and the wildlife it supports. Such impacts may include:

- how the loss of the Miller Field dune system may deprive this area of habitat for native pollinators and migratory passerines during construction and re-vegetation as the new system gets established

USACE Response: The EIS will add detail to consider the impacts of temporary habitat loss as the dune at Miller Field is disturbed during construction. This habitat will reestablish and USACE will be constructing a continuous line of dune habitat along the

entire LOP, a total of approximately 21 acres of dune habitat creation.

- the cumulative impacts of erosion of the remaining beach over time on nesting habitat for Horseshoe Crabs, feeding and resting habitat for shorebirds, and habitat needed for feeding and resting by migratory passerines and raptors.

USACE Response: Text will be added to the Feasibility Study as well as to the EIS to address any potential erosional impacts along the shoreline.

3. Cultural Resources

We request a more thorough analysis of impacts to cultural resources be included in the EIS (such as on pages 2-34 and 4-41). Please note that compliance with Section 106 does not fulfill compliance with the analytic requirements of NEPA, which also includes cultural resources.

USACE Response: Additional analysis will be added to the EIS.

Regardless of the alignment of the buried seawall, the project will have an unavoidable major adverse impact on the historic district at Miller Field. We are ready to assist if requested in describing the impacts, such as severing Hangar 38 from its seaplane context, driving sheet piling near the Hangar and Elm Tree Light, etc. We believe this will constitute a major adverse impact under NEPA and an adverse effect under Section 106. We are happy to work with your office and the SHPO to identify the appropriate mitigation strategy.

USACE Response: USACE, as stated in the EIS, concurs with NPS that there will be impacts to the Miller Field Historic District. We will continue to coordinate with NPS and SHPO to develop mitigation strategies.

More specific textual comments are included below.

a. 1.5 Project Area Description

The extent of the project area within the legislated boundaries of Gateway NRA and their National Register (NR) status should be clearly identified. For example, Lines 22 - 27 read as follows:

> "The shoreline in the Project area consists entirely of city-owned beaches and lands of the Gateway National Recreation Area (NRA), owned by the Federal government and administered by the former military installation, currently a historic site) at the no11heast end of the Project area, Miller Field (a former Army airfield, currently a park with athletic fields) in the New Dorp Beach area, and Great Kills Park (an undeveloped natural area) southwest of Oakwood Beach."

It should be noted that the project begins adjacent to the National Register Fort Wadsworth Historic District, runs through the Miller Field Historic District and to Great Kills, all units of Gateway NRA, a national park.

Figure 1.3 should clearly identify NPS property. All three units are identified, but only F011Wadsworth is indicated to be part of Gateway NRA. The reference to Fort Wadsworth lists it as a former military site, suggesting the history of the site; we request that this history and/or the impacts to Fm1Wadsworth be discussed in the EIS.

Maps throughout the document should clearly identify Gateway NRA sites. The references to the sites should be consistent as well.

USACE Response: The draft FS and EIS will update figures to clearly identify Gateway NRA sites.

b. 3.1 Affected Environment

The description of the South Beach area should clearly indicate that this begins at Fort Wadsworth and describe the topography at this location.

USACE Response: The draft EIS will update the description of the South Beach area per the comment above

c. 3.7 **Cultural Resources**

The first 46 lines of this section appear to discuss archaeological sites but it is not identified as such. The paragraph noted below begins with a discussion about historic structures but continues with the archaeology discussion, so should be clarified. Page 3-39 lines:

> "The only historic structures noted in the APE are at Miller Field. Although the Phase I study did not identify any Native American resources along the proposed alignment, the shoreline was determined sensitive for deeply buried sites (Panamerican 2005). The potential for deeply buried sites was corroborated by a geomorphological study conducted for the District's New York and New Jersey Harbor Navigation Project (Geoarchaeological Research Associates 2014). While this study's APE was offshore, it suggested that the south shore of Staten Island is moderately sensitive for now inundated or deeply buried shoreline sites."

USACE Response: Will edit.

Page 40 - lines 24-43 discuss Miller Field. The hangar is identified as is the concrete fire tower. There is little information on the history or significance of Miller Field; Elm Tree Light and the apron are not identified at all. All are part of the historic district.

The history of Miller Field should be included in the text, and all historic resources should be clearly identified.

USACE Response: The EIS will include additional details on the history and significance of Miller Field, the Elm Tree Light and the apron. The apron is mentioned already in the EIS on line 27. In reference to the apron, the USACE is not clear on the location and extent of it as the NRHP nomination form is vague about it, the GMP does not mention the apron at all and the GMP Figure 3-12, which outlines the historic district, depicts what is assumed to be the apron to the south of Hangar 38. It seems to make more sense that apron is to the north of the hangar.

In this section there is no discussion about Fort Wadsworth and its historic structures, although Fort Wadsworth is discussed under many other headings in the text. Given that Fort Wadsworth is discussed and identified, a description of the site should be included and the impact if any should be discussed in 4.0. There is also no discussion about Great Kills, and although this is not a historic district, there are archaeology sites. These sites are outside of the APE, but the fact that they exist and are outside of the APE should be noted.

USACE Response: A discussion of Fort Wadsworth will be included in the EIS. The archaeological sites at Great Kills will be noted.

We suggest that a map of each Gateway NRA area should be included and each area should be clearly described. A subheading titled "Gateway NRA" or a subheading for each site might be helpful.

d. Consultation

"In accordance with the NHPA, implementing regulations, and New York State laws, the District has been in consultation with the New York SHPO and has prepared a Programmatic Agreement (Appendix F), which describes the roles and responsibilities of all parties in complying with cultural resource requirements."

Please add the NPS to this consultation. We will submit comments on the Programmatic Agreement separately.

USACE Response: This section will be removed as Consultation was included in Chapter 4 under "Section 106 Coordination" where coordination with NPS is already included. The comments on the Programmatic Agreement were received by email. Thank you.

e. 4.7 Cultural Resources Environmental Consequences

We concur with the process and impacts identified in the following statement:

"The District would continue to work with the NPS to minimize and/or mitigate for impacts to the Miller Army Airfield Historic District. The District would also

evaluate the NRHP-eligibility of the 1943 fire control tower. The proposed Project would sever the connection of Hangar No. 38, a seaplane hangar, from the sea, thereby impacting the setting of this historic district. Construction of the proposed alignment would require that the fire tower be demolished."

Additionally we request that the analysis incorporate the visual impact as well as direct impacts on Miller Field's historic resources, including the hangar, Elm Tree Light and the apron. Given the proposed alignment within feet of the Hangar and virtually wrapping around the Elm Tree Light, we anticipate a major adverse impact.

USACE Response: The USACE will incorporate an analysis of the visual impact to the district as well potential for direct impacts. Renderings are being prepared for Miller Field.

We also request that an analysis of the impacts on Fort Wadsworth and Great Kills be included in the text, particularly in regards to the viewsheds.

USACE Response: The USACE will provide an analysis of impacts to the Fort Wadsworth Historic District and Great Kills and their viewsheds. Please see enclosed views from Fort Wadsworth (Attachment 1).

f. Section 106 coordination

As discussed during a recent call, NPS consults with 3 federally recognized tribes. Please add the Stockbridge Munsee tribe to this list.

USACE Response: USACE has since the phone call initiated consultation with the Stockbridge-Munsee.

g. Tribal Consultation

We would like to confirm whether USACE has initiated tribal consultation, and if so, whether this has been limited to submission of the draft Programmatic Agreement or has the USACE submitted (or will it submit) the draft EIS and/or archeological reports to the tribes for review. We request to be kept informed regarding the extent of tribal consultation the USACE has completed and plans to complete.

USACE Response: As per Section 4.7 of the EIS, the USACE has initiated tribal consultation. As per correspondence in the EIS, the USACE provided the tribes with the Draft Programmatic Agreement and a CD with the Phase I cultural resources report. As per the correspondence in the EIS, the Delaware Tribe concurred with the Phase I recommendations for deep testing. The Delaware Nation indicated that the USACE should continue with the project as planned. The tribes will be provided copies of the Draft EIS. The USACE will keep NPS informed of all future tribal consultation.

h. 4.10 Aesthetics and Scenic Resources

This section does not include any discussion of the impact on NPS resources. Impacts should include a discussion of the view sheds at Great Kills, Fort Wadsworth and Miller Field.

USACE Response: The draft EIS will be updated to include a discussion of impacts to NPS resources, including viewsheds at Great Kills, Fort Wadsworth and Miller Field. Images from Fort Wadsworth are enclosed (Enclosure 2). Renderings are being prepared for Miller Field.

i. Chart 4.5 Table 4-5. Summary Comparison of the No-Action Alternative a 1 and the NED Plan

This chart indicates that the NED plan will have no additional impacts to cultural resources. As proposed, the construction of the wall will have an adverse impact at Miller Field, and may have visual impacts at Great Kills and F011Wadsworth, pending analysis of these viewsheds as noted above.

4. Recreational Resources

As a National Recreation Area, these resources are fundamental to our mission. If the buried seawall is located landward of Hangar 38 at Miller Field, there will be a loss of the recreational fields currently occupying that area. This should be considered as an adverse impact to the park. Mitigation measures should be specified an included as a pmt of the EIS analysis.

USACE Response: See response above in Section 2 regarding mitigation. The draft EIS will add analysis of impacts to portions of the recreational fields if the landward of the hanger sub-alternative is constructed.

The buried seawall will also impede public access to the shoreline. We request that the EIS specifically state that public access to the waterfront will be provided, and include the impacts from the change in access in the analysis, including potential mitigation.

USACE Response: See response above in Section 2 regarding mitigation. USACE NED Plan will replace the amount of access to the shore that is currently in place. On a recent field visit, USACE staff observed rope lined access points through the dune. If the seaward of the hanger sub-alternative is constructed, the same number of access points would be constructed over the buried seawall for access to the shoreline. Language will be added to the draft EIS to clarify this.

We request that the EIS assess other potential impacts to the visitor experience, which may include:

- the seawall may block sea breezes, creating a hotter and drier microclimate inland

- the loss of the visitors' sense of connection with the sea and the natural environment, especially in the context that this is one of the few areas on Staten Island where a visitor can currently experience a natural dune system.

USACE Response: The draft EIS will add language stating that there could be minimal impact to sea breezes or the microclimate. Regarding visitor's sense of connection, CEQ states that NEPA does not require that an EIS speculate with respect to the potential impacts associated with feelings and personal perceptions.

Seawall construction will destroy the recently constructed Multi-Use Path, but will replace it with a promenade. The location of the promenade on top of or behind the seawall will have differing impacts. A seawall topped with a heavily-trafficked promenade through the middle of the vegetated dune community may create an enforcement issue for NPS. Alternatively, the visitor experience behind the dune will be substantially different than what visitors currently experience, or will experience on lands adjacent to NPS lands under this scenario. We ask that these and any other tradeoffs be addressed and analyzed in the EIS alternatives.

USACE Response: Correct, if the seaward of the hanger sub-alternative is constructed, the Multi-Use Path would be impacted and USACE's project would provide a functional equivalent pathway in the form of a promenade on top of the buried sea wall or a promenade at ground level behind the buried seawall (sub-alternatives), based on input from NPS. If NPS selects the on top of the buried seawall sub-alternative, the promenade would be on the crest of the seawall and the vegetated dune would be on the slopes of the seawall, therefore traffic on the promenade would be over and not through the vegetated dune. Many beaches have wooden platforms located above planted communities to allow pedestrian traffic (over) but not impact the plantings. If NPS is concerned about promenade users stepping off the path and into the dune, the project includes a fixed railing on either side of the promenade for safety. It's a federal requirement if you have a drop of 3 feet or more adjacent to the walkway. This could help with NPS's enforcement concern by discouraging people from walking off of promenade and into the vegetated dune on the slopes of the seawall.

Long-term, the disruption of sediment transport and resulting erosional impacts could lead to the eradication of recreational opportunities along the shoreline, such as access to the beaches. Of pa1iicular concem is any acceleration of erosion near the narrow area at Great Kills leading to the marina. If this area is breached, it would mean a loss of the road that is the only land access to the marina and Crooke's Point. We request that these potentiallong-te1m impacts be analyzed in the EIS and appropriate mitigation measures be evaluated.

USACE Response: Text will be added to the Feasibility Study as well as to the EIS to address any potential erosional impacts along the shoreline

5. Great Kills Park CERCLA site

The USACE proposed plan for Reach 1 calls for a vertical flood wall around the Oakwood Waste Water Treatment Facility and then an earthen levee extending up to Hylan Blvd. The construction footprint of these storm protection structures will likely overlap with the eastern boundary of the Great Kills Park CERCLA project (the Site). Based on current information on the Site, the radioactive contamination was brought to the Site with the waste fill material. The extent of the waste fill material along the park's southeastern boundary has not yet been fully delineated. The first phase of the Remedial Investigation (planned to start in 2015) will include further investigation of the footprint of the former landfill area.

The current steps for the GKP CERCLA project are:

- Remedial Investigation 2015-2017
- Feasibility Study 2018
- Proposed Plan
- Record of Decision
- Remedial Design/Remedial Action

To the extent practicable, NPS will consider prioritizing the investigation and clean up along the eastern boundary. However, the CERCLA process will still take several years to complete. We will work with you to factor this into the planning and construction of the project, both in terms of design as well as schedule.

USACE Response: Noted, thank you for the schedule and potential prioritization of the eastern boundary information. USACE will continue to coordinate closely with NPS on the cleanup at Great Kills Park.

6. Permitting

NPS is working to determine the legal authority and instrumentation under which the project will take place on NPS lands. It may not be the permanent easement mentioned in the EIS and we ask that you take this out of the draft EIS. We will continue to work with your office on this.

USACE Response: Reference to the permanent easement in the EIS will be replaced with a note saying that NPS is working with USACE to determine the legal authority and instrumentation under which the project will take place on NPS lands. Thank you.

A few more textual errors and housekeeping issues:

- Need to ensure accurate differentiation throughout the EIS between the NYC's Great Kills Park, and that of Gateway NRA

USACE Response: The draft EIS will be updated to ensure the language is clear when referring to NYC's Great Kills Park and that of Gateway NRA.

- Page 3-52: There seems to be some misclassification and misstatements about Gateway throughout this page. (e.g. Fort Wadsworth is a national park, Miller Field is an "abandoned" airfield, etc.). Please correct these inaccuracies in the draft EIS. We will be glad to help with this.

USACE Response: The draft EIS will be corrected per the comment above.

- Missing words in the paragraph about Gateway on p. 1-10 that sta11s "Tenain..."

USACE Response: The draft EIS will be corrected per the comment above.

- 1.6 **Planning Objectives**

  Please add the following objective:

  Where project activities are proposed for NPS lands, project will consider consistency with NPS policies (2006 NPS Management Policies) and Gateway National Recreation Area General Management Plan (2014).

USACE Response: The draft EIS (and FS) will add language per the comment above, to the extent practicable.

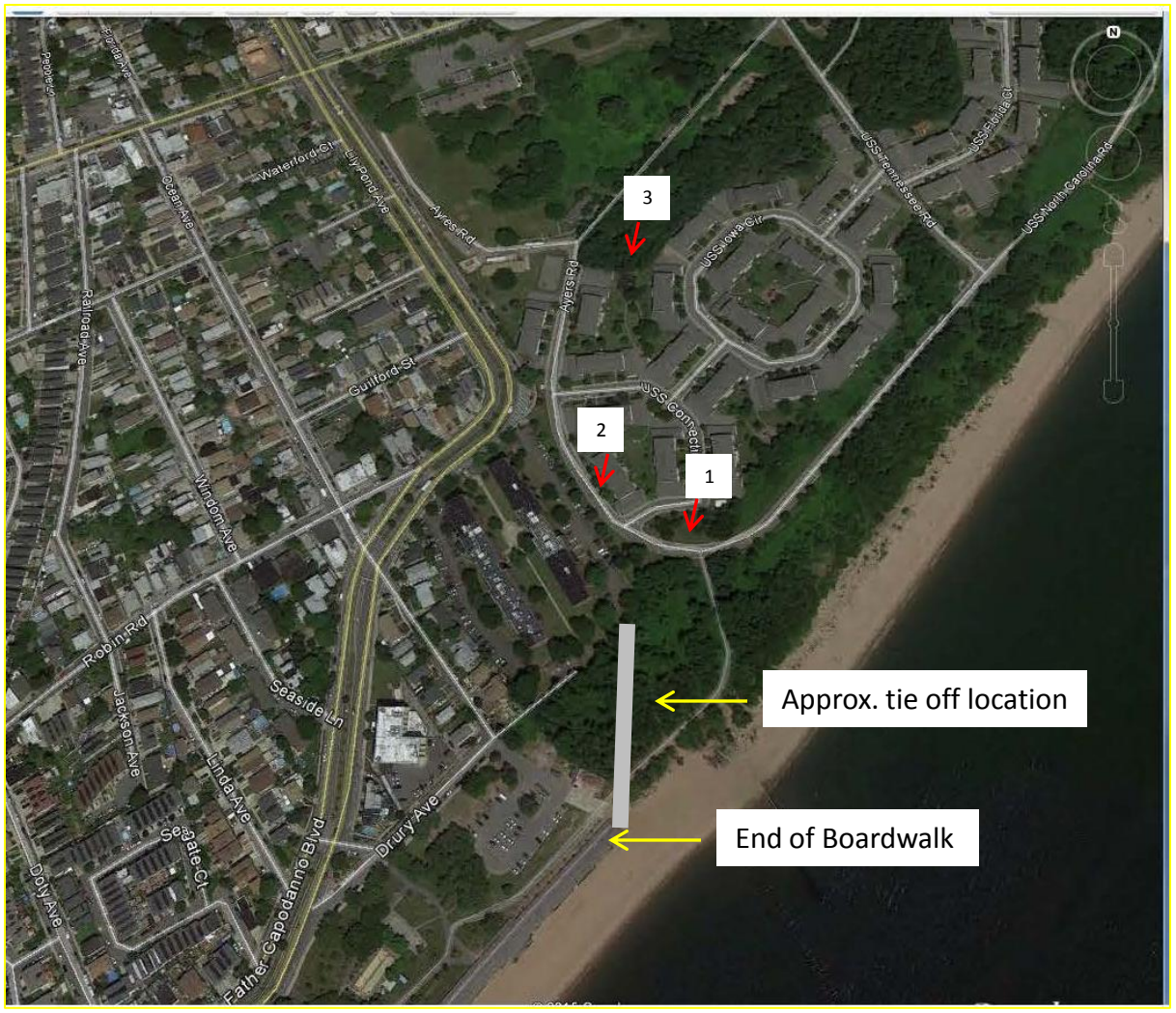
- 1.8 **Permits, Approvals, and Regulatory Requirements**

  Please include in Table 1-1:

  NPS
  - 2006 NPS Management Policies
  - Gateway National Recreation Area General Management Plan (2014)
  - Authorization, through a yet to be determined instrument, to conduct work on NPS land

USACE Response: The draft EIS (and FS) will add language per the comment above, to the extent practicable.

Attachment 1



Fort Wadsworth: Locations of Views 1, 2, and 3. Source GoogleEarth 2015.

Fort Wadsworth: View 1, looking SSW from USS Connecticut (or Constitution) Court to beach. Red arrow points to end of boardwalk, tie in to high ground would extend from boardwalk to the right of photo. Photographer L. Rakos, April 2015.

Fort Wadsworth: View 2, looking SSW from USS North Carolina /Ayers Road to beach. Red arrow points to end of boardwalk, tie in to high ground would extend from boardwalk to edge of parking lot. Photographer L. Rakos, April 2015.

Fort Wadsworth: View 3, looking SSW from Battery Ayres towards the beach. Red arrow points to end of boardwalk.
Photographer L. Rakos, April 2015.

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF
Environmental Analysis Branch

November 17, 2014

Mr. Nick Conrad
New York Natural Heritage Program
New York State Department of Environmental Conservation
625 Broadway, 5th Floor
Albany, NY 12233-4757

Dear Mr. Nick Conrad,

With the passage of the Hurricane Sandy Disaster Relief Appropriations Act of 2013 (Public Law 113-2), the U.S. Army Corps of Engineers has been given the authority and funding to complete ongoing coastal storm risk management projects and studies in the Northeast. As part of the planning and implementation process for the South Shore of Staten Island Coastal Storm Risk Management Project, New York District (NYD) will be completing the Feasibility Study and associated environmental compliance.

The project is located in Staten Island, Richmond County, New York. NYD is currently drafting an Environmental Impact Statement (EIS) for the project and requests that your office review the location for any records in your database of rare species or significant natural communities in the vicinity which may be impacted by the project.

Please find attached for your review: (1) project description, including maps and (2) plan sheets. The Draft EIS will be available for public and agency review in January 2015.

I look forward to working with you and your staff on this effort. If you should have any questions, please contact Ms. Catherine Alcoba of my staff at 917-790-8216.

Sincerely,

Peter Weppler
Chief, Environmental Analysis Branch

Attachments

1. SOUTH SHORE OF STATEN ISLAND PROJECT DESCRIPTION

1.1 Description of the National Economic Development (NED) Plan

1. The NED Plan for the Interim Feasibility Study on the South Shore of Staten Island from Fort Wadsworth to Oakwood Beach incorporates the optimum design stillwater height for the Tentatively Selected Line of Protection Plan and Tentatively Selected Interior Drainage Plans. The NED Plan meets the needs of the Disaster Relief Appropriations Act of 2013 (Public Law 113-2; herein P.L. 113-2).

2. Figure 1 below provides an overview of the NED Plan.

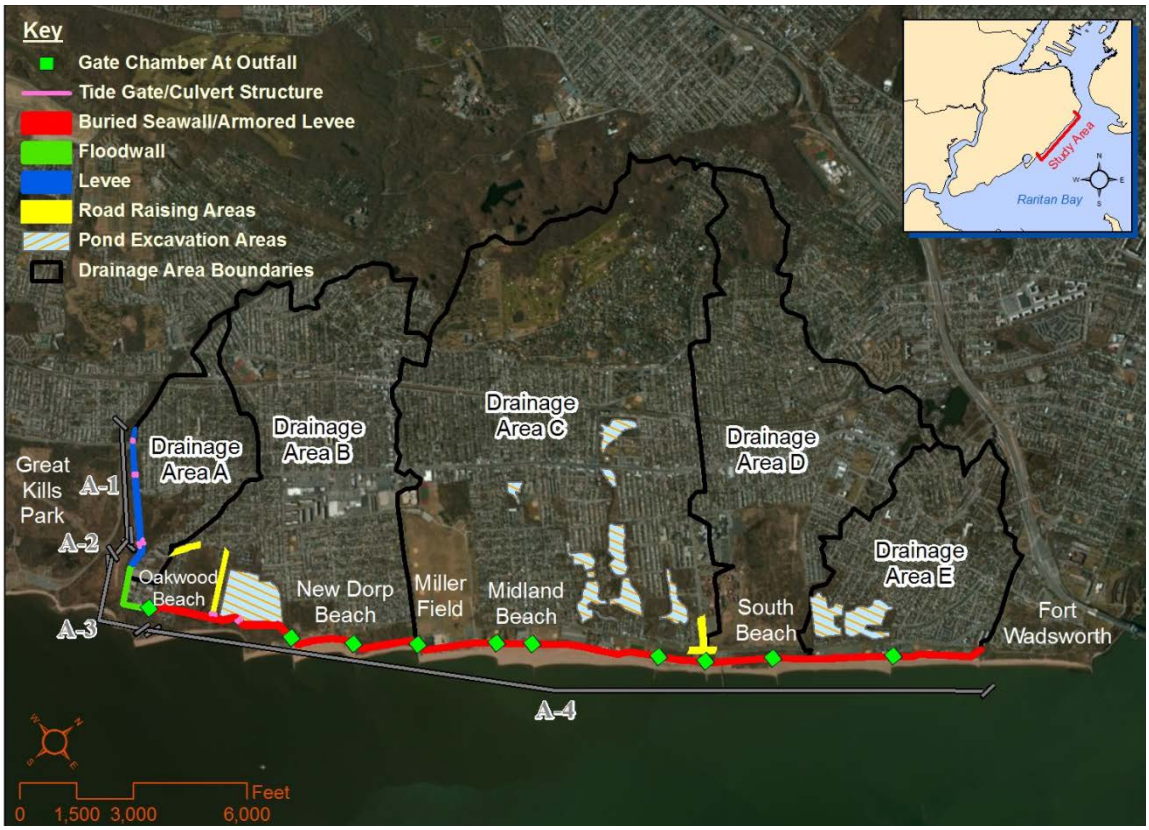


Figure 1 - NED Plan Overview

1.1.1 Line of Protection

3. The NED Plan includes the Line of Protection Alternative that consists of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the Plan consists of a T-Type Vertical Floodwall, and Levee. The Plan also includes a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures. In general the Plan structure was split into four engineering reaches based on different design sections as listed below and depicted in Figure 2:

- Reach A-1: Levee
- Reach A-2: Levee
- Reach A-3: Floodwall
- Reach A-4: Buried Seawall

Figure 2 - Overview of Line of Protection

Alignment

4. Starting in Oakwood Beach in Reach A-1, the earthen levee with a 10-foot wide crest ties into high ground on the northwest side of Hylan Boulevard. A stop-log structure, consisting of H-shaped posts that accommodate the stacking of metal panels, is proposed at Hylan Boulevard to prevent floodwaters from flanking the levees during rare high water events. The earthen levee continues southeast through Oakwood Beach parallel to Oakwood Creek and Buffalo Street until the levee crosses over Oakwood Creek. A tide gate structure is proposed at this location. The total length of this Reach A-1 is 2,800 ft.

5. Reach A-2 begins on the eastern side of the creek and includes a levee that extends approximately 600 feet up to the Oakwood Beach Waste Water Treatment Plant.

6. In Reach A-3 the Line of Protection transitions to a Vertical T-type Floodwall surrounding two sides of the Waste Water Treatment Plant at Oakwood Beach. The total length of the floodwall is 1,800 feet.

Reach A-4 extends 22,700 feet from the southeast corner of the WWTP to Fort Wadsworth. In previous alternatives Reach 4 consisted of a mixture of exposed armor stone revetments, buried seawalls, and vertical steel sheet pile flood walls. The structure was revised to a continuous buried seawall. The alignment of the buried seawall through Oakwood Beach deviates from previously developed alternatives, extending across a portion of the Fox Beach neighborhood that is being environmental restored as part of the State of New York's Bluebelt Plan. The alignment continues across the marshes of Oakwood Beach and past Kissam Ave. The alignment in this marshy area is landward of New York City's sanitary sewer trunk line to the WWTP. A service road is proposed along the seaward edge of the buried seawall to facilitate access to the trunk line. A bend in the alignment occurs at the eastern end of Oakwood Beach to accommodate a second proposed tide gate structure.

7. From Midland Beach to Fort Wadsworth the alignment generally follows the footprint of the existing promenade and FDR Boardwalk. There are a few exceptions where the alignment was shifted landward to maintain a protective buffer between the shoreline and buried seawall/armored levee. This is most noticeably at the eastern end of the project area where the beach narrows. The buried seawall/armored levee ties-in to high ground at Fort Wadsworth. The buried seawall/armored levee in this reach extends 22,700 feet from the Oakwood Beach to Fort Wadsworth.

Levee

8. An 3,415-foot long earthen levee is proposed in Reaches A-1 and A-2 to terminate the structures in the LOP plan into high ground, thereby creating a closed system that protects the project area from floodwaters. The proposed levee in Reach A-1 and A-2 has a crest elevation of 18 foot NGVD29. The proposed Levee consists of compacted impervious fill that extends a minimum of 6 feet below the existing ground surface to prevent seepage. Common fill would be placed at a 2.5H:1V slope to stabilize the core and provide a solid basis for vegetation. The Levee along Reach A-1 has a crest width of 10 feet. The crest width of the A-2 Levee section (approximately 615 feet) was increased to 15 feet to allow maintenance vehicle access to the tide gates. Figure 3 presents a typical section of the Levee in Reach A-1. Figure 4 presents a typical section for the levee in reach A-2.

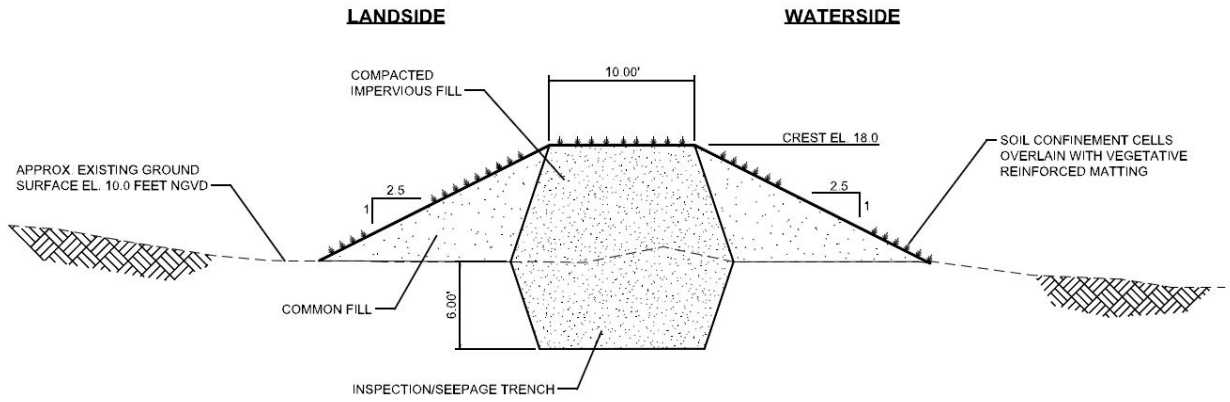


Figure 3 – Levee Typical Section (Reach A-1)

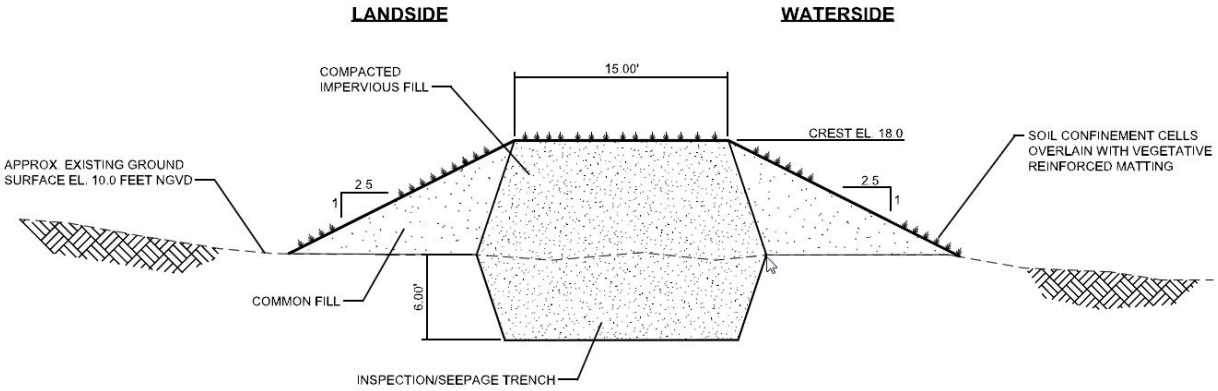


Figure 4 -Levee Typical Section (Reach A-2)

Floodwall

9. A reinforced concrete floodwall was proposed for Reach A-3 where a confined footprint is necessary to minimized impacts to the Oakwood Beach WWTP. The floodwall design consists of an H-pile supported T-wall with top of wall elevation of 20.5 feet NGVD29.

10. The structure footing was designed to accommodate localized wave induced and overtopping jet scour by defining a 4-foot thick base set 2-feet below grade. In addition, a rock blanket extends 15-foot seaward side of the wall to address wave scour and a rock splash apron extends 10 to 15 feet landward from the concrete footing to provide adequate overtopping jet scour protection. A vertical steel sheet pile wall has been added beneath the wall to prevent seepage below the footing. Figure 5 presents a typical section of the Floodwall (Reach A-3).

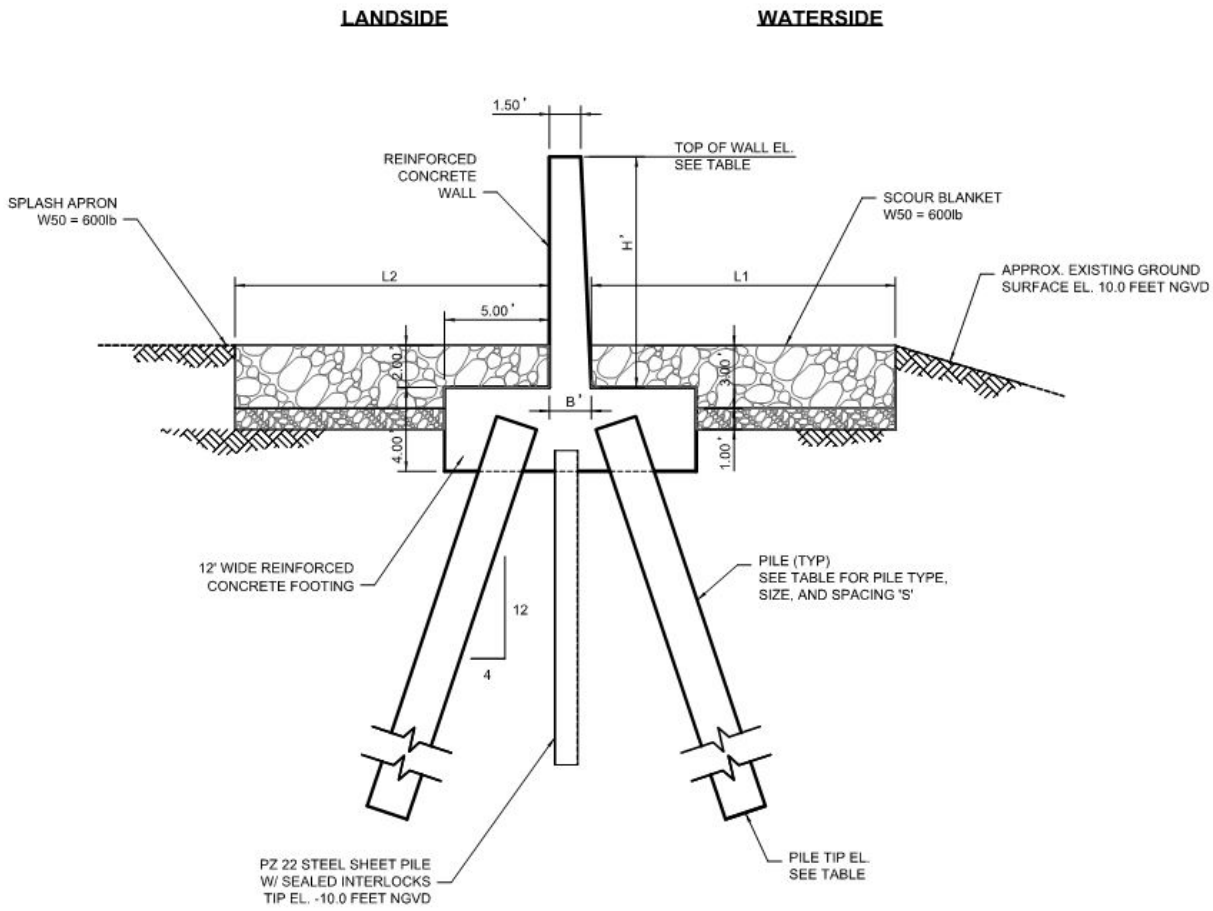


Figure 5 – Floodwall Typical Section (Reach A-3)

Buried Seawall

11. A buried seawall is selected for Reach A-4 which spans the majority of the project reach from Fort Wadsworth to Oakwood Beach. The designed crest elevation of the Buried Seawall is 20.5 feet NGVD 1929.

12. The buried seawall comprises a trapezoidal shaped core structure with a 10-foot wide crest and 1.5:1 (horizontal: vertical) side slopes. The core is constructed with two-stone thickness armor stone and bedding stone layers. A 10-foot wide scour apron is incorporated into the seaside structure toe. The entire above-grade portion of the structure is covered with material excavated to accommodate the structure foundation. This material, primarily sand with some clay, silts, and topsoil, will support grass and other native beach vegetation. The material cover is used to visually integrate the buried seawall with surrounding topography and to protect the public from climbing and/or falling on the uneven rock surface. Geotextile fabric is placed underneath the bedding layer to reduce settlement and around the core structure to minimize loss of fill through the voids. The material cover will be placed on 2:1 side slopes with a vegetative reinforced matting to provide additional protection and stabilization of the seaward face during less intense storm events. A vertical steel sheet pile wall will be installed in the interior of the structure to prevent seepage.

13. The buried seawall incorporates a promenade, replacing the continuous at-grade paved and pile supported promenade from Fort Wadsworth to Miller Field and FDR Timber Boardwalk. Roller compacted concrete is constructed atop the crest to create a 17-foot wide paved promenade. Figure 6 presents a typical section of the Buried Seawall (Reach A-4).

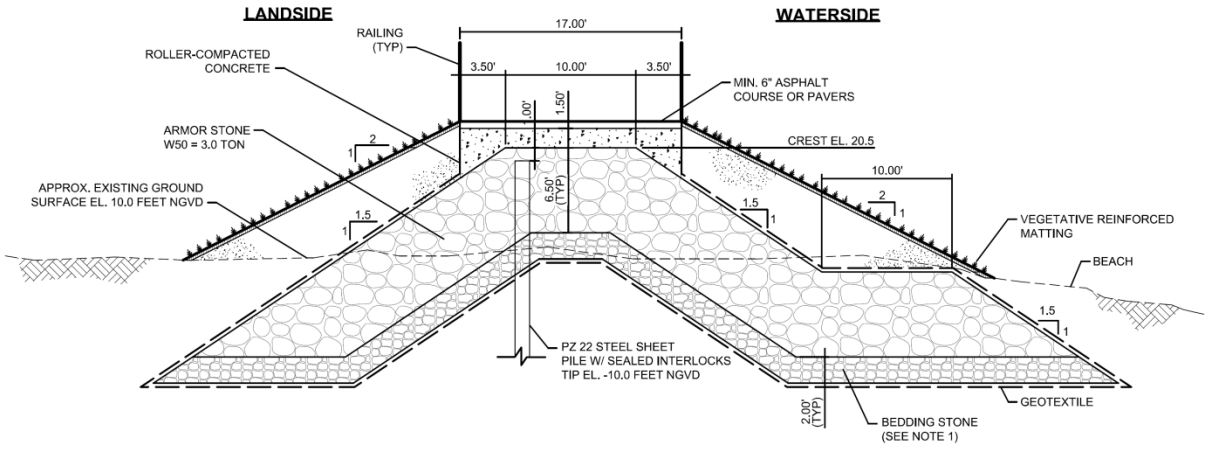
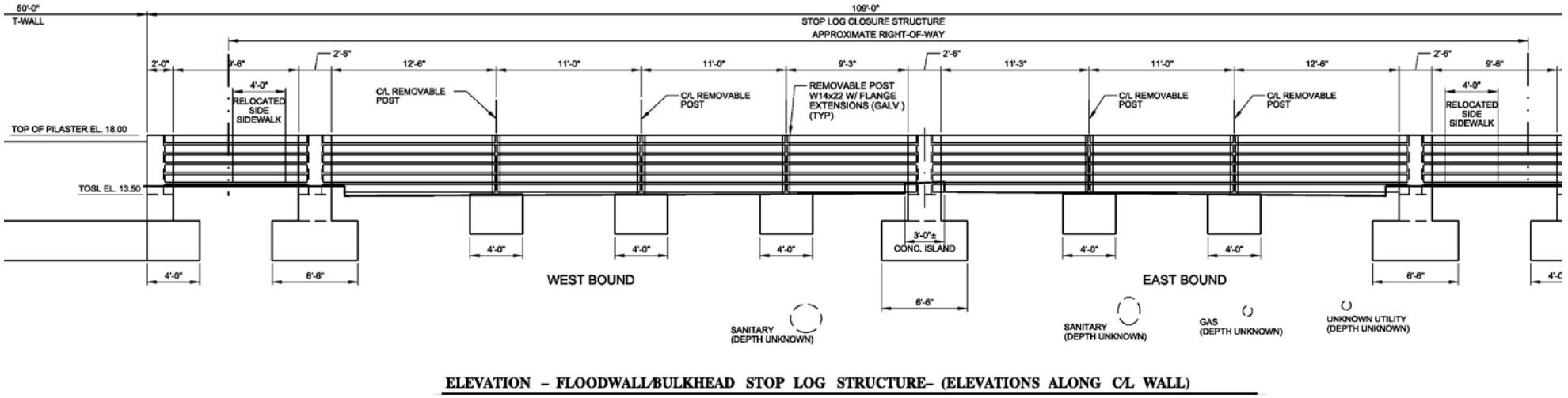


Figure 6 –Buried Seawall Typical Section (Reach A-4)

Stoplog Structure

14. At Hyland Boulevard a stoplog closure gate closure structure will be used to close off the roadway as needed to prevent flooding during rare storm events. The structure is approximately 106 feet long and 4 to 4.5 feet high and will be supported by a concrete foundation which consists of a series of footings located within the roadway adjacent to each lane of traffic along with footings located in the center median and each side of the Hylan Boulevard. During a flood event removable posts will be installed within the roadway and the stoplogs installed within the frame/guide. There are nine spans in the design. The multiple spans allow for testing the stoplog structure to be staged, precluding a full closure of Hylan Boulevard. Figure 7 presents a typical section view.



ELEVATION – FLOODWALL/BULKHEAD STOP LOG STRUCTURE– (ELEVATIONS ALONG C/L WALL)

Figure 7 – Typical Section of Stoplog Structure

Tidal Marsh

15. The shorelines along the southeastern shore of Staten Island have generally been mildly erosional, which indicate that the rate of erosion over most large areas of the shoreline is low, averaging less than 1 foot per year of shoreline loss. However, the segment near the Oakwood Beach area is at a much lower elevation (within 5 feet or less of sea level), and shoreline recession has been as high as 20 feet per year. Physical properties of the area seaward of the LOP in Oakwood Beach include poorly drained, organic and erosive soils.

16. As part of the integrated approach for the Oakwood Beach area, the District considered increasing human and ecosystem community resilience as part of the overall solution to manage risk. To inhibit erosion, attenuate wave energy that can cause scour to the Project area, and to reduce sedimentation through the creek and tide gate into the freshwater wetland, the NED Plan has been designed to preserve the functional effectiveness of tidal exchange. This would facilitate wetland drainage and enable the tidal wetlands seaward of the LOP to help filter sediments so they are not brought into the freshwater wetlands (see Figure 4-3). In addition, the NED plan will utilize sand excavated during construction of the foundation for the Line of Protection.

17. To accomplish this enhancement, the existing channel would be relocated from along the inside toe of the existing natural berm to a central location within the site. The mouth of the existing channel would be widened from 22 feet (at elevation 2.0 feet NGVD 1929) to 30 feet wide. Widening the channel mouth and relocating the channel itself would allow for proper flooding and draining of the proposed marsh. The channel would be extended into the upper portion of the site to allow drainage from runoff from the scrub-shrub and maritime forest. The channel would also branch off and would connect with the proposed tide gate under the proposed access road that would run parallel to the LOP (USACE 2014a).

18. As shown on Figure 4-4, the proposed measures along the coastline include constructing approximately 46 acres of tidal wetlands on the seaward side of the proposed revetment. Approximately 10.1 acres of maritime forest/scrub-shrub habitat would also be planted along the front of the revetment, while 12.9 acres of low marsh and 6 acres of high marsh acres of living shoreline are proposed in the shallow waters adjacent to the existing beachfront. Further, 17 acres of dune grass is proposed to be planted. These measures include multiple habitats that would provide environmental and public benefits to the Oakwood Beach area (USACE 2014a).

Stormwater Outfalls/Gate Chambers

19. Existing stormwater outfalls, consisting of single and double concrete box culverts, pass beneath the Buried Seawall at nine locations. At these locations, the sheet pile seepage wall terminates either side of the existing culverts and the buried seawall rock structure will be constructed around the culverts and proposed gate chambers. A typical section view of the designed gate chamber is presented in Figure 8.

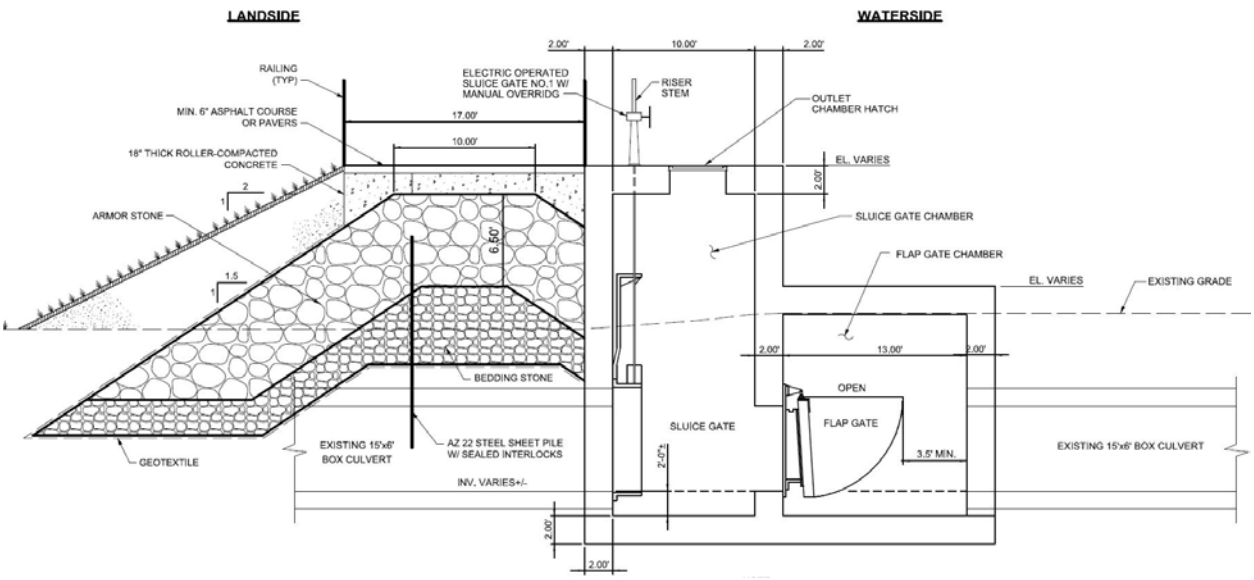


Figure 8 - Typical Section Gate Chamber

Tide Gates

20. Tide gate structures with reinforced concrete wing walls are proposed at two locations along the Line of Protection in the vicinity of Oakwood Beach. Aside from increases in wall height and thickness, the basic design of the proposed tide gate structures is consistent with the design of the existing tide gate structure located to the east of the Water Treatment Plant at Oakwood Beach. The tide gate structures are not designed for vehicular loading. Figure 9 presents a typical section of the tide gates.

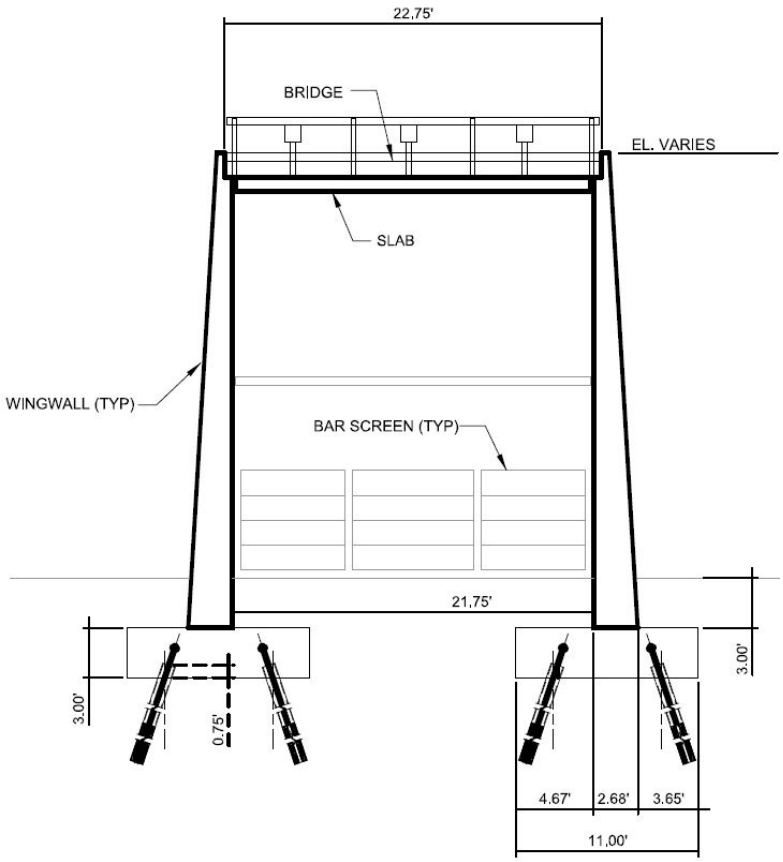


Figure 9 - Typical Section Tide Gate

Pedestrian and Vehicular Access

21. Three types of access points are provided along the Line of Protection: Maintenance vehicle access (MVA), combined truck and pedestrian access (DTP), and pedestrian access (PA).

22. Maintenance vehicle access is provided at one location in Reach A-2 and at four locations along Reach A-4 between New Dorp Beach and Oakwood Beach to provide vehicular access to the tide gate and stormwater outfall gate chambers. Earthen ramps are proposed to provide vehicular access to the tide gate and stormwater outfall gate chambers. These ramp sections are designed to handle HS-20 loading to allow maintenance vehicles to access the sluice gates in the drainage structures from above.

23. An additional nine earthen ramps are proposed between Oakwood Beach and South Beach. These ramps are designed for both pedestrian and HS-20 vehicular access and meet the 1:12 maximum slope required by ADA guidelines. The ramps have been located to provide beach access from existing roads and access paths.

24. Pedestrian access points, spaced approximately every 500 feet, are located along the Buried Seawall between Midland Beach and South Beach. Each access point consists of 10-foot wide reinforced concrete stairs on both the landward and seaward sides of the buried seawall that provide access to the promenade and the beach. There are a total of 27 access points for pedestrians along the promenade including the 9 combined vehicle/pedestrian access ramps.

25. The buried seawall crest elevation exceeds the existing deck elevation for the Ocean Breeze fishing pier. The pier segments nearest to the promenade will need to be reconstructed to ramp up to the promenade at a 1:12 maximum slope required by ADA guidelines.

1.1.2 Interior Drainage Measures

26. The Interior Drainage measures as part of the NED Plan include tide gates, sluice gates, stormwater outfall structures, road raisings, and excavated ponds. The tide gates, sluice gates and outfall chambers are listed above as part of the Line of Protection design but are also included in this summary. The Interior Drainage Measures utilized in each of Drainage Areas include:

Area A: Minimum Facility

Natural Storage:	17.19 acres
Tide Gate	
Length:	22.75 ft. along levee alignment
Height:	18 ft. NGVD 1929 crest elevation
Width:	16 ft. wide
Features:	3 @ 5 ft. by 5 ft. sluice gates, wingwalls, pre-engineered bridge on top of the tide gate
Outlets:	2 sluice gate structures (2 ft. by 2ft.) & 2 intermediate pipe outlets with flap gates

Area B: Minimum Facility

Natural Storage:	81.23 acres
Excavated Pond:	1 Pond
Volume:	204,000 c.y.
Invert:	2 ft. NGVD 1929
Tide Gate	
Length:	22.75 ft. along levee alignment
Height:	20.5 ft. NGVD 1929 crest elevation
Width:	16 ft. wide
Features:	3 @ 5 ft. by 5 ft. sluice gates, wingwalls, pre-engineered bridge on top of the tide gate
Road Raising	Kissam Ave. to 7.1 ft. NGVD 1929, Mill Rd. to 7.1 ft. NGVD 1929
Length:	1,730 lf. @ Kissam Avenue & 630 lf. @ Mill Road
Width:	30 ft. @ Kissam Avenue & 60 ft. @ Mill Road
Avg. Height:	3 ft. @ Kissam Avenue & 1 ft. @ Mill Road
Outlets:	Ebbits Street, New Dorp Lane, Tysens Lane Gate Chambers

Area C: Alternative 4

Natural Storage:	120.44 acres
Excavated Ponds	
Volume:	377,200 c.y.
Area:	42.2 acres

Invert:	2 ft. NGVD 1929
Road Raising	Seaview Ave. & Father Capodanno Blvd. to 10 ft. NGVD 1929
Length:	820 lf. @ Seaview Ave & 300 lf @ Father Capodanno Blvd.
Width:	90 ft. @ Seaview Ave & 60 ft. @ Father Capodanno Blvd.
Avg. Height:	1 ft. for both
Outlets:	Greely Avenue, Midland Avenue, Naughton Avenue, Seaview Avenue Gate Chambers

Area D: Minimum Facility

Natural Storage:	30.76 acres
Outlets:	Quintard Street Gate Chamber

Area E: Alternative 2

Natural Storage:	46.7 acres
Excavated Ponds:	2 Ponds
Volume:	222,720 c.y.
Area:	34.0 acres
Invert:	2 ft. NGVD 1929
Outlets:	Sand Lane Gate Chamber, Quincy Ave. Chamber

Ponds

27. Drainage Areas B, C, and E include ponds excavated to 2 ft. NGVD 1929 (Drainage areas A and D involve acquisition and or preservation of open space and do not require ponding). The proposed pond locations and associated excavation areas are shown on the attached sheets.

28. For the potential pond excavation in Drainage Areas B, C and E, the depth of ponding will be no lower than 2 feet, NGVS29 since the ground water table in the project area is near this elevation. The potential location f the ponds for each proposed plan, in Drainage Area B, C and E, will be show in the Feasibility Study Interior Drainage Appendix. The final pond dimensions should not exceed the excavated amount and will be within the minimum facility footprint for natural storage. Please done that excavated amount needed for each pond can change based upon additional data being acquired during the PED/Plans and Specifications Phase (i.e., boring data within the pond footprint). A typical plan view of a Pond layout from the Interior Drainage Plates is presented in Figure 10. The Figure and Plates also include overlays of all of the other Interior Drainage Measures included in the NED Plan such as flowage easements, road raisings, tide gates, etc. as well as the alignment of the Line of Protection.

Figure 10 -Typical Plan View of Pond

Road Raisings

29. In Drainage Area B, Mill Road and Kissam Avenue will be raised to control the spillover of interior stormwater collections to and from Drainage Area A. In Drainage Area C Seaview Ave. will be raised to control the spillover of interior stormwater to/from Drainage Area D and Father Capodanno Blvd will be raised to meet the new crest elevation at Seaview Ave.

30. The road raising along Mill Road and Kissam Ave. will be implemented as part of the Minimum Facility for Area B and the road raising along Seaview Avenue & Father Capodanno Blvd will be implemented as part of an Alternative for Area C.

Interior Drainage Area A

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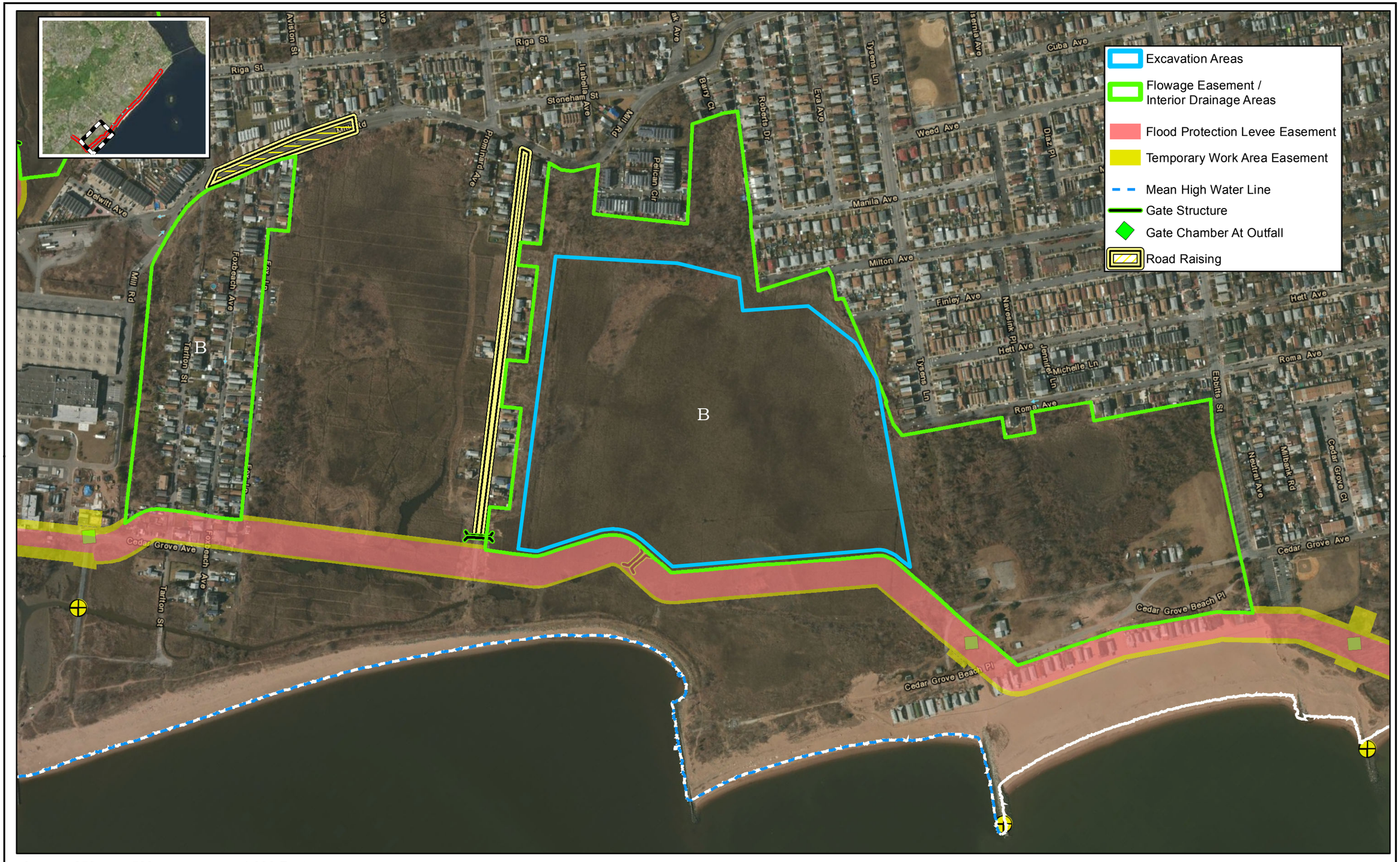

Interior Drainage Area B

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Interior Drainage Areas D and E

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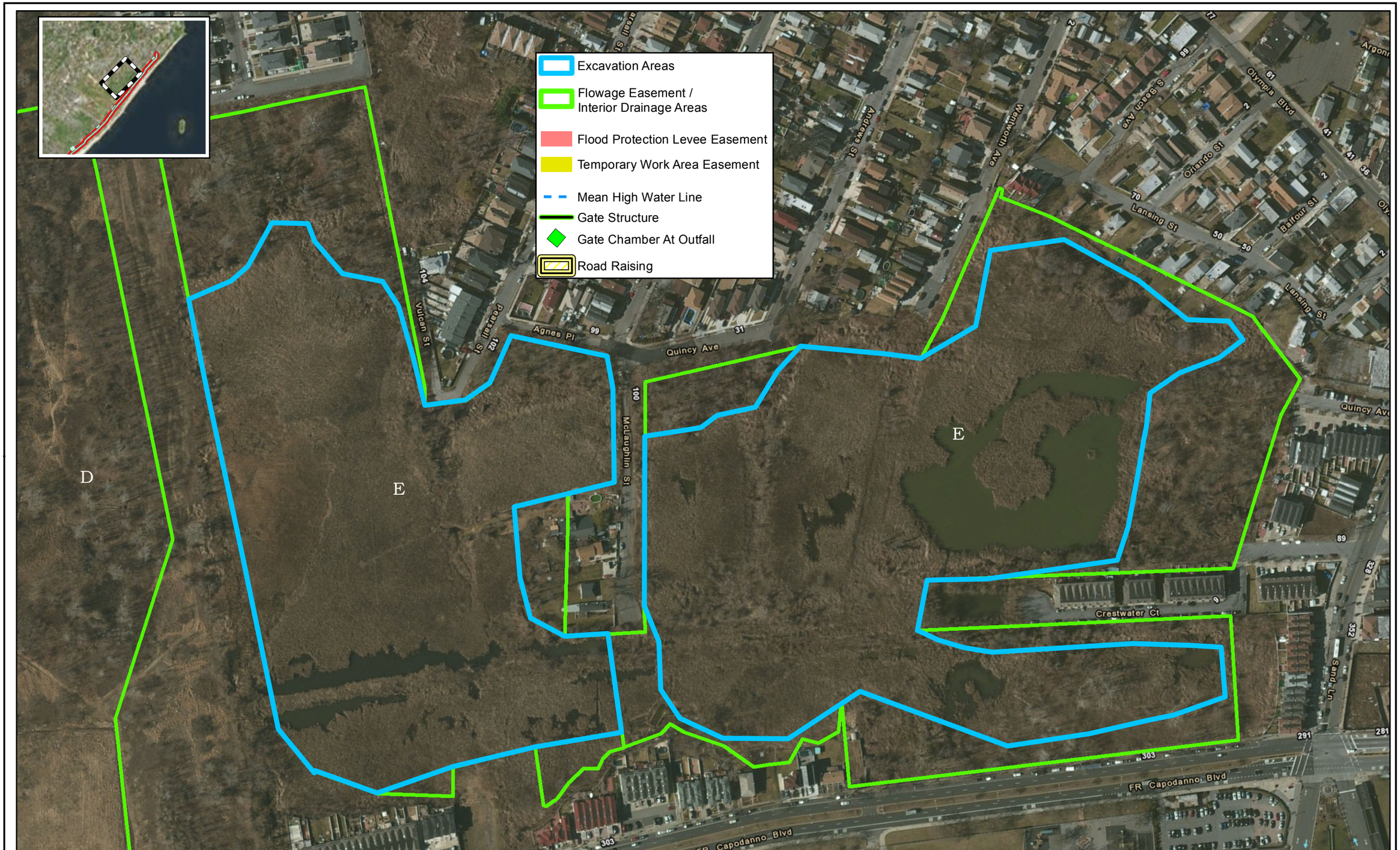

Interior Drainage Area E

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

Joe Martens
Commissioner

December 02, 2014

Peter Weppler
U.S. Army Corps of Engineers, New York District
Jackb K. Javits Federal Building
New York, NY 10278

Re: South Shore of Staten Island Coastal Storm Risk Management Project
Town/City: New York. County: Richmond.

Dear Peter Weppler :

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

1217

The following rare plants and rare animals have been documented at your project site, or in its vicinity.

We recommend that potential onsite and offsite impacts of the proposed project on these species be addressed as part of any environmental assessment or review conducted as part of the planning, permitting and approval process, such as reviews conducted under SEQR. Field surveys of the project site may be necessary to determine the status of a species at the site, particularly for sites that are currently undeveloped and may still contain suitable habitat. Final requirements of the project to avoid, minimize, or mitigate potential impacts are determined by the lead permitting agency or the government body approving the project.

The following animals, while not listed by New York State as Endangered or Threatened, are of conservation concern to the state, and are considered rare by the New York Natural Heritage Program.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*

Birds

Barn Owl — *Tyto alba* — Protected Bird — Critically Imperiled in NYS

Breeding

Miller Field, 2002-06-15: The nest was found in a tower at Miller Field, a large manicured field. The field is bordered by abandoned buildings, a stand of pines and extensive residential area, a beach, and a small patch of deciduous trees and houses. (Near **STA 153** on plan maps.) 11357

Dragonflies and Damselflies

Needham's Skimmer — *Libellula needhami* — Unlisted — Vulnerable in NYS

Interior Drainage Area C, Seavers Creek at Olympia Boulevard, 1997-07-11: The dragonflies were observed on both sides of the road along a creek bordered by thick stands of Phragmites. 11184

The following plants are listed as Endangered or Threatened by New York State, and/or are considered rare by the New York Natural Heritage Program, and so are a vulnerable natural resource of conservation concern.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*

Vascular Plants

Green Milkweed — *Asclepias viridiflora* — Threatened — Imperiled in NYS

Ocean Breeze Park, South Beach, near Quintard Street near its end, 1998-07-22: Open grassland habitat on artifically deposited sand, now resembling a maritime grassland. Grassland about 175+ acres surrounded by heavy development. Grassland varies in quality, but the highest quality is located along the northeast side. **Near Interior Drainage Area D.** 7904

Globose Flatsedge — *Cyperus echinatus* — Endangered — Critically Imperiled in NYS

Ocean Breeze Park, South Beach, near Quintard Street near its end, 1998-07-22: Large open grassland outlined by major roads. Soil is very sandy. **Near Interior Drainage Area D.** 7425

This report only includes records from the NY Natural Heritage databases. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of

all rare or state-listed species. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

The following rare plants have historical records at your project site, or in its vicinity.

The following rare plants were documented in the vicinity of the project site at one time, but have not been documented there since 1919 or earlier, and/or there is uncertainty regarding their continued presence. There is no recent information on these plants and animals in the vicinity of the project site and their current status there is unknown. In most cases the precise location of the plant or animal in this vicinity at the time it was last documented is also unknown.

We provide this information for your general reference. If suitable habitat for these plants or animals is present in the vicinity of the project site, it is possible that they may still occur there. We recommend that any field surveys to the site include a search for these species, particularly at sites that are currently undeveloped and may still contain suitable habitat.

COMMON NAME	*SCIENTIFIC NAME*	*NYS LISTING*	*HERITAGE CONSERVATION STATUS*	
Vascular Plants				
Straw Sedge	*Carex straminea*	Endangered	Critically Imperiled in NYS	
1915-06-13: South Beach.				1889
Straw Sedge	*Carex straminea*	Endangered	Critically Imperiled in NYS	
1896-06-15: Grant City.				5017
Primrose-leaf Violet	*Viola primulifolia*	Threatened	Imperiled in NYS	
1907-05-30: Grant City. Open moist soil.				6294
Downy Carrion-flower	*Smilax pulverulenta*	Endangered	Critically Imperiled in NYS	
1919-05-17: Grant City.				8699
Spring Ladies'-tresses	*Spiranthes vernalis*	Endangered	Critically Imperiled in NYS	
1892-08-07: South Beach				7984

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org.

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF
Environmental Analysis Branch

November 17, 2014

Mr. Jeff Zappieri
NYS Department of State
Consistency Review Unit, Office of Planning and Development
One Commerce Place, 99 Washington Avenue Suite 1010
Albany, NY 12231-0001

Dear Mr. Zappieri,

With the passage of the Hurricane Sandy Disaster Relief Appropriations Act of 2013 (Public Law 113-2), the U.S. Army Corps of Engineers has been given the authority and funding to complete ongoing coastal storm risk management projects and studies in the Northeast. As part of the planning and implementation process for the South Shore of Staten Island Coastal Storm Risk Management Project, Staten Island, New York, New York District (NYD) will be completing the Feasibility Study and environmental compliance.

Please find attached for your review: (1) project description, (2) plan sheets and (3) Appendix D (New York City and New York State Coastal Zone Management Program Consistency Determination) of the Draft Environmental Impact Statement (EIS). The Draft EIS is undergoing internal review and will be available for public and agency review in January 2015.

NYD requests a Consistency Statement for the South Shore of Staten Island Coastal Storm Risk Management Project, Staten Island, New York.

I look forward to working with you and your staff on this effort. If you should have any questions, please contact Ms. Catherine Alcoba of my staff at 917-790-8216.

Sincerely,

Peter Weppler
Chief, Environmental Analysis Branch

Cc: Michael Marrella, NYC Department of City Planning
Attachments

NEW YORK CITY AND NEW YORK STATE COASTAL ZONE MANAGEMENT PROGRAM CONSISTENCY DETERMINATION

Project: South Shore of Staten Island Coastal Storm Risk Management Project (Project). For a complete Project history and description refer to Chapters 1 and 2 of the Environmental Impact Statement (EIS).

Applicant: U.S. Army Corps of Engineers, New York District (District).

Applicable Policies: Based on a review of the Coastal Management Program policies for New York, 20 state policies and 9 New York City policies were found to be potentially applicable to the proposed Project. These policies are listed below.

Consistency Determination: All of the applicable policies were evaluated with respect to the Project's consistency with their stated goals. The Project has been found to be consistent with each policy.

State Policy 1 – Restore, revitalize and redevelop deteriorated and underutilized waterfront areas for commercial, industrial, cultural, recreational and other compatible uses.

Also applicable: **NYC Policy 1 --** Support and facilitate commercial and residential redevelopment in areas well-suited to such development; and

NYC Policy 2 – Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation.

Determination – Construction of the NED Plan would contribute to the revitalization of the waterfront area associated with the Project area. The Project would provide coastal risk management of the south shore of Staten Island (from Fort Wadsworth to Oakwood Beach), protecting life, property and existing infrastructure from storm damage and erosive forces from coastal storm events. The physical integrity of the south shore of Staten Island's coastline must be maintained to protect these uses. Therefore, the District has determined that the proposed NED Plan would be consistent with this policy.

State Policy 2 – Facilitate the siting of water dependent uses and facilities on or adjacent to coastal waters.

Determination – The area/land on which the Project's line of protection (LOP) is being built is publicly owned, and supports a variety of public recreational activities. The south shore of Staten Island's coastline must be maintained to protect these uses. The without Project condition would eventually impact public recreational activities. The District has determined that the NED Plan would be consistent with, and would advance, this policy.

State Policy 4 – Strengthen the economic base by encouraging the development and enhancement of those traditional uses and activities that have provided such areas with their unique maritime identity.

Determination – The NED Plan would insure that historic recreational use of the south shore of Staten Island beaches would be enhanced and preserved. The NED Plan would stabilize the shoreline and manage the risk from coastal storm damage to the surrounding area, thus enabling continued recreational enjoyment. Therefore, the District has determined that the NED Plan would be consistent with this policy.

State Policy 5 – Encourage the location of development in areas where public services and facilities essential to such development are adequate.

Determination – The NED Plan would manage the risk of coastal storm damage to existing infrastructure along the south shore of Staten Island from hurricane and storm surge flooding. Risk management would provide stability and enhancement to existing and future development Projects. The without Project condition would eventually impact development as contractors would be hesitant to develop in an unstable, unprotected environment. Therefore, the District has determined that the NED Plan would be consistent with this policy.

State Policy 7 – Significant coastal fish and wildlife habitats would be protected, preserved, and where practical, restored so as to maintain their viability as habitats.

Also applicable: **NYC Policy 4** – Protect and restore the quality and function of ecological systems within the New York City coastal area.

NYC Policy 5 – **Protect and improve water quality in the New York City coastal area.**

Determination – The District calculated that the NED Plan would reduce freshwater wetland acreage by approximately 10.9 acres and would create/restore approximately 18.9 acres of tidal wetlands. Overall, the NED Plan would improve wetland quality and enhance wetlands by increasing diversity with expanded open water (low-flow channels and ponds) and permanent pool (emergent wetlands) habitats. The NED Plan is also expected to result in improved water quality in the watershed. Proposed ponds function as wetlands that provide physical, chemical, and biological treatment of pollutants contained within runoff; flow rates into wetlands are attenuated, allowing sediment and organic debris to settle. During this process, nutrients undergo both chemical and biological transformation. Nitrogen can be naturally altered into forms that are more favorable to uptake by wetland plants and phosphorus is readily precipitated out of water in many of its chemical forms, depending on the pH of the water and is also utilized by plants. Proposed ponds can also reduce fecal coliform concentrations by detaining water, allowing for die-off of microorganisms. Beneficial impacts to aquatic ecosystem would occur through improved habitats. To achieve the goal of habitat enhancements, natural features have been designed into the Project for the purposes of providing ecological

diversity in addition to (and in support of) the functions of stormwater management and flood control. The objective of these diverse design elements is to enhance the overall habitat complexity and ecological values in the Project area. Accordingly, the District has determined that the NED Plan would be consistent with this policy.

State Policy 8 – Protect fish and wildlife resources in the coastal area from the introduction of hazardous wastes and other pollutants which bio-accumulate in the food chain or which cause significant sublethal or lethal effect on those resources.

Also applicable: **NYC Policy 7** – Minimize environmental degradation from solid waste and hazardous substances.

Determination – The NED Plan would involve the disturbance of soil and groundwater in areas where prior uses, regulatory database searches, and testing have indicated a potential for the presence of hazardous materials in the soil and/or groundwater. Under the NED Plan, these locations would be tested in accordance with NYCDEP protocols prior to construction. If contaminated materials are found, they would be removed and disposed of in accordance with all City, State, and Federal regulations. In addition, the NED Plan would handle contaminated groundwater in accordance with all regulations. If hazardous materials are encountered, the NED Plan could provide beneficial impacts associated with the cleanup of such hazardous materials. Accordingly, the District has determined that NED Plan would be consistent with this policy.

State Policy 12 – Activities or development in the coastal area would be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.

Also applicable: **NYC Policy 6** – Minimize loss of life, structures and natural resources caused by flooding and erosion.

Determination – The primary goal of the Project is to manage the risk of damages from hurricane and storm surge flooding along the south shore of Staten Island. The NED Plan involves the construction of a LOP consisting of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the LOP would consist of a T-Type vertical floodwall, and earthen levee. The crest elevation of the LOP would be 18 feet NGVD 1929 to 20.5 feet NGVD 1929. The LOP would also include a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures, and demolition of the existing boardwalk. The NED Plan also involves excavation of interior areas to augment/create 10 ponds that would alleviate flooding that may subsequently occur from interior runoff. Therefore, the District has determined that the NED Plan would be consistent with this policy.

State Policy 13 – The construction or reconstruction of erosion protection structures shall be undertaken only if they have a reasonable probability of controlling erosion for at least

30 years as demonstrated in design and construction standards and/or assured maintenance or replacement programs.

Determination – The construction and maintenance of the LOP would provide coastal storm risk management for a minimum of 50 years after initial construction (note: 50 years was the minimum life of the Project analyzed by the District). Therefore, the District has determined that the NED Plan would be consistent with this policy.

State Policy 14 – Activities and development including the construction or reconstruction of erosion protection structures, shall be undertaken so that there would be no measurable increase in erosion or flooding at the site of such activities or development, or at other locations.

Determination – The primary goal of the Project is to manage the risk of damages from hurricane and storm surge flooding along the south shore of Staten Island. The LOP and interior ponds would alleviate flooding and reduce interior runoff by reducing water surface elevations. Therefore, the District has determined that the NED Plan would be consistent with this policy.

State Policy 16 – Public funds shall only be used for erosion protective structures where necessary to protect human life, and new development which requires a location within or adjacent to an erosion hazard area to be able to function, or existing development; and only where the public benefits outweigh the long term monetary and other costs including the potential for increasing erosion and adverse effects on natural protective features.

Determination – The without Project alternative would result in increased flood risks and associated negative consequences to life, property and the environment. Coastal storm risk management provides significant public benefits. The District has weighed the public costs of the Project against the benefits and has determined that the public benefits outweigh the public costs because beach protection would provide a significant reduction in damages to housing, infrastructure, and the environment. Additionally, the Project would improve water quality in the Project area, which would also be positive for recreation. Therefore, the District has determined that the NED Plan would be consistent with this policy.

State Policy 17 – Non-structural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible.

Determination – The NED Plan utilizes both structural and non-structural measures to minimize damage to natural resources and property from flooding and erosion. Non-structural measures alone would not provide the required coastal storm risk management. The policy explanation states that consistency with this policy requires the use of such non-structural measures when they are appropriate and available. Given the need to provide coastal storm risk management to the Project area, structural measures are required. Therefore, the District has determined that the NED Plan would be consistent with and would advance this policy.

State Policy 18 – To safeguard the vital economic, social and environmental interests of the state and of its citizens, proposed major action in the coastal area must give full consideration to those interests, and to the safeguards which the state has established to protect valuable coastal resource areas.

Determination – The area on which the LOP would be constructed is publicly owned and supports a variety of public recreational activities. The south shore of Staten Island's coastline must be maintained to protect these uses. The without Project condition would eventually impact public recreational activities. The Project would provide coastal storm risk management to an important public recreational area and adjacent commercial and residential properties with minimal short-term impacts to economic, social, and environmental resources. Therefore, the District has determined that the NED Plan would be consistent with this policy.

State Policy 19 – Protect, maintain, and increase the level and types of access to public water-related recreation resources and facilities.

Also applicable: **NYC Policy 8** – Provide public access to and along New York City's coastal waters.

Determination – The NED Plan would result in positive impacts on recreation as a result of improved water quality and better coastal storm risk management in the Project area. The without Project alternative would result in increased flood risks, increased erosion, and decreased water quality, thereby decreasing recreational potential in the area. Consequently, the District has determined that the NED Plan would be consistent with this policy.

State Policy 20 – Access to publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided and it shall be provided in a manner compatible with adjoining uses.

Determination – The NED Plan would not adversely affect public access along the south shore of Staten Island. Fourteen (14) earthen ramps are proposed between Oakwood Beach and South Beach. These ramps would be designed for both pedestrian and vehicular access and meet the 1:12 maximum slope required by ADA guidelines. The ramps would be strategically located to provide beach access from existing roads and access paths. Pedestrian access points, spaced approximately every 500 feet, would be located along the Buried Seawall between Midland Beach and South Beach. There would be a total of 27 access points for pedestrians along the promenade. Because the Project would be compatible with adjoining uses and provides adequate public access, the District has determined that the NED Plan would be consistent with this policy.

State Policy 21 – Water-dependent and water-enhanced recreation would be encouraged and facilitated, and would be given priority over non-water related uses along the coast.

Determination – The NED Plan would result in positive impacts on recreation as a result of improved water quality and better coastal storm risk management in the Project area. The without Project alternative would result in increased flood risks, increased erosion, and decreased water quality, thereby decreasing recreational potential in the area. Consequently, the District has determined that the NED Plan would be consistent with the policy to encourage and enhance water-dependent and water-enhanced recreation.

State Policy 22 – Development when located adjacent to the shore would provide for water-related recreation whenever such use is compatible with reasonably anticipated demand for such activities, and is compatible with the primary purpose of the development.

Determination – The NED Plan would result in positive impacts on recreation as a result of improved water quality and better coastal storm risk management in the Project area. The without Project alternative would result in increased flood risks, increased erosion, and decreased water quality, thereby decreasing recreational potential in the area. Consequently, the District has determined that the NED Plan would be consistent with this policy.

State Policy 23 – Protect, enhance and restore structures, districts, areas of sites that are of significance in history, architecture, archeology or culture of the State, its communities, or the Nation.

Also applicable: **NYC Policy 10** – Protect, preserve and enhance resources significant to the historical, archaeological, and cultural legacy of the New York City coastal area.

Determination – The NED Plan would provide coastal storm risk management to the south shore of Staten Island. No New York City designated landmarks are present in the area. The alignment passes adjacent to, and at times crosses into, the Miller Army Air Field Historic District which is a National Register of Historic Places listed property. The NED Plan would impact Miller Field; however the District is working with the National Park Service and the New York State Historic Preservation office on a Programmatic Agreement to mitigate any impacts.

The NED Plan would protect the structures within the historic district from further flood damage. The NED Plan would also reduce risk identified in Policy 23; therefore, the District has determined that the NED Plan would be consistent with this policy.

State Policy 24 – Prevent impairment of scenic resources of statewide significance.

Also applicable: **NYC Policy 9** – Protect scenic resources that contribute to the visual quality of the New York City coastal area.

Determination – The NED Plan would help manage the risk of flood damages in the area, would enhance water quality, and would create more and improved wetland habitats. No

known scenic resources of statewide significance exist in the immediate Project area, therefore, the District has determined that the proposed NED Plan would be consistent with this policy.

State Policy 25 – Protect, restore or enhance natural and man-made resources which are not identified as being of statewide significance, but which contribute to the overall scenic quality of the coastal area.

Determination – The NED Plan would help manage the risk of flood damages in the area, would enhance water quality, and would create more and improved wetland habitats. The District is working closely with NYC Parks to avoid or minimize potential impacts to recreational impacts. The revitalized and protected beach would enhance the scenic quality of the coastal area, therefore, the District has determined that the NED Plan would be consistent with this policy.

State Policy 44 – Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.

Determination – Proposed tidal gates associated with the LOP would remain open during normal tidal elevations to allow passage of saline tidewater into marsh areas and drainage of rainfall runoff. Consequently, no salinity effects are expected. The NED Plan is expected to result in improved water quality in the watershed compared to the No-Action (without-project) Alternative. Without the NED Plan, runoff would not be collected and directed to the proposed ponds. In contrast, proposed ponds function as wetlands that provide physical, chemical, and biological treatment of pollutants contained within runoff; flow rates into wetlands are attenuated, allowing sediment and organic debris to settle. During this process, nutrients undergo both chemical and biological transformation in a wetland. Nitrogen can be naturally altered into forms that are more favorable to uptake by wetland plants and phosphorus is readily precipitated out of water in many of its chemical forms, depending on the pH of the water and is also utilized by plants. Proposed ponds can also reduce fecal coliform concentrations by detaining water, allowing for die-off of microorganisms. The interior drainage features of the NED Plan would also improve wetland quality and enhance wetlands by increasing diversity with expanded open water (low-flow channels and ponds) and permanent pool (emergent wetlands) habitats. The District calculated that the NED Plan would reduce freshwater wetland acreage by approximately 10.9 acres and would create/restore approximately 18.9 acres of tidal wetlands. Consequently, the District has determined that the NED Plan would be consistent with this policy.

REFERENCES

New York State Department of State (NYSDOS). Coastal Management Program, State Coastal Policies (Including Program changes from 1982-2006). 2006.

NYC Department of City Planning (NYCDCP), New York City Comprehensive Waterfront Plan: Vision 2020. 2011.

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

5 November 2104

Environmental Assessment Section
Environmental Analysis Branch

Ruth Pierpont, Director
New York State Office of Parks, Recreation & Historic Preservation
Historic Preservation Field Service Bureau
Peebles Island, P.O. Box 189
Waterford, New York 12188-0189

Dear Ms. Pierpont:

The U.S. Army Corps of Engineers, New York District, (Corps), is authorized to undertake construction of the South Shore of Staten Island Coastal Storm Damage Reduction Project, Richmond County, New York under P.L. 113-2, the Disaster Relief Appropriations Act of 2013, following Hurricane Sandy in October 2012. The Corps is presently completing the feasibility study of the Phase I portion of the project which runs along the Atlantic Ocean shoreline from just outside the Fort Wadsworth boundary to Oakwood Beach (Enclosure 1). The recommended Line of Protection Plan (LOP) consists of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the LOP consists of a T-Type Vertical Floodwall and Levee. The LOP also includes a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures, and demolition of the existing boardwalk. The Interior Drainage Plan includes pond excavation, construction of tide gates and gate chambers along the LOP, road raisings, and other minor interior drainage facilities. The Area of Potential Effect (APE) for this undertaking includes all areas impacted by activities required to construct the above listed features as well as construction access and staging areas and, if required, environmental mitigation measures. The locations of some of these features have yet to be determined. Maps and proposed plans are contained in the enclosed Preliminary Case Report and Programmatic Agreement (PA) referenced below.

A Phase I survey was completed for the Corps in 2005 and your office reviewed the resulting report and had no comments (OPRHP No 05-4225). The Corp proposes several changes, outlined below, to the recommendations that were issued in the Phase I report. A Preliminary Case Report was prepared which summarizes all cultural resources work conducted to date and outlines future studies (Enclosure 2). The Corps has prepared a Draft PA which stipulates further studies the Corps will undertake. The draft PA for your review and comment is included as Enclosure 7 in the Preliminary Case Report.

The bungalow community at Cedar Grove was determined eligible for the National Register of Historic Places (NRHP) by your office in 2011. The New York City Department of Parks and Recreation (Parks), our non-federal sponsor on this project, was addressing mitigation measures associated with their removal. Parks was to remove these structures before initiation of construction by the Corps. Since that time the structures were severely impacted by Hurricane Sandy in October 2012 and just two remain extant although severely damaged. The Corps will undertake no further study of the bungalow community. The Corps in 2005 excavated 68 shovel tests on the beach at Cedar Grove and found only modern materials. No additional shovel testing will be conducted at Cedar Grove.

At New Dorp Beach the remains of several concrete structures were encountered. These remains are likely from the St. John's Guild Hospital (also known as the Seaside Hospital) built in 1881, closed in the 1960s, but extant until 1988. The 2005 report recommended Phase II field and documentary investigations to define specific structural features and make direct linkages with the documented structures from the shoreline inland to Cedar Grove Avenue. As discussed in the Preliminary Case Report, the lack of structural integrity and lack of documented stratigraphy suggests that further field work will not yield any significant information. It is the Corps' opinion that no further work be undertaken in connection with these structural remains along the beach front. However, the alignment has recently been redesigned and moved landward where buried intact archaeological remains of the hospital may be encountered. This shift may also impact remains associated with the original site of the Britton Cottage which is now located in Historic Richmondtown. Archaeological studies will be conducted of the new proposed alignment.

The project alignment crosses the NRHP-listed Miller Army Air Field Historic District and will sever the connection between the historic seaplane airfield and the sea. The Corps has been working with the National Park Service (NPS), owners of Miller Field which is part of the Gateway National Recreation Area (GNRA), to develop mitigation measures for impacts to the property. Measures may in part be based on the final PA for the GNRA General Management Plan (GMP) signed this year by NPS and your office.

The 1943 World War II Fire Control Tower on the beach at Miller Field was not included as a contributing element to the property in the National Register Nomination Form prepared in 1976. The 2005 Corps report indicates that due to the structure's lack of integrity it was neither an individually eligible resource nor a contributing element to the historic district but recommended further study. The recent GMP /Environmental Impact Statement for the GNRA by the NPS does not mention the fire control tower. The Corps will work with the NPS to determine eligibility of this structure. The proposed alignment will likely destroy the tower.

The project alignment ties into high ground just outside the southern boundary of the NRHP-listed Fort Wadsworth Historic District and will have no direct impact on the historic district. The proposed project will be visible from Fort Wadsworth however the historically significant views from the fort, from the time the initial defenses were constructed through the Endicott Era, face towards the Narrows and the entrance to New York Harbor. Endicott-Era Batteries Ayres and Richmond are the only two historic structures in the historic district that are oriented

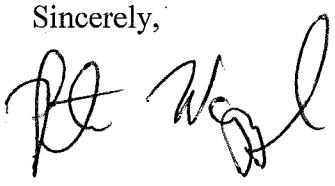
somewhat towards the project alignment although both face southeast towards the main approach channel and not the beach. It is the Corps' opinion that the project will not impact the viewshed from these historic structures or from the Fort Wadsworth Historic District. While there may have been observations from the fort along the ocean the focus of the defensive systems were towards the approach channels to New York Harbor. The proposed seawall will be built to elevation 20 feet above sea level (ASL), approximately 12 to 14 feet above grade, which is significantly lower than the elevation of 100 feet ASL at Fort Wadsworth and would still allow an observer an unobstructed view to the sea.

Several locations are proposed to be acquired for interior drainage facilities. Excavation may be required to increase water storage capacity at these sites. The Corps' work will largely be within areas identified by New York City Department of Environmental Protection (NYCDEP) as part of their Staten Island Blue Belt Initiative. A Phase I study was conducted on the Blue Belt for NYCDEP by Historical Perspectives (OPRHP No. 10PR02085). The Corps will follow on with studies recommended by that work where relevant to our project actions. Features not contained within the Blue Belt program will be further investigated by the Corps. This work will be coordinated with your office as outlined in the draft PA.

All other work recommended in the 2005 report will be undertaken. The Corps will excavate borings along the project alignment where construction by open trenching is proposed to provide an understanding of shoreline development as sea level rose and to determine areas sensitive for deeply buried landforms and Native American resources. No borings will be conducted where construction will entail just pile driving. The locations and number of borings will be determined by a geoarchaeologist or a geomorphologist with archaeological experience. Please note that work at Crescent Beach (Study Area C in the 2005 report) has been postponed as Phase II of this project and no further work will be conducted in that segment at this time.

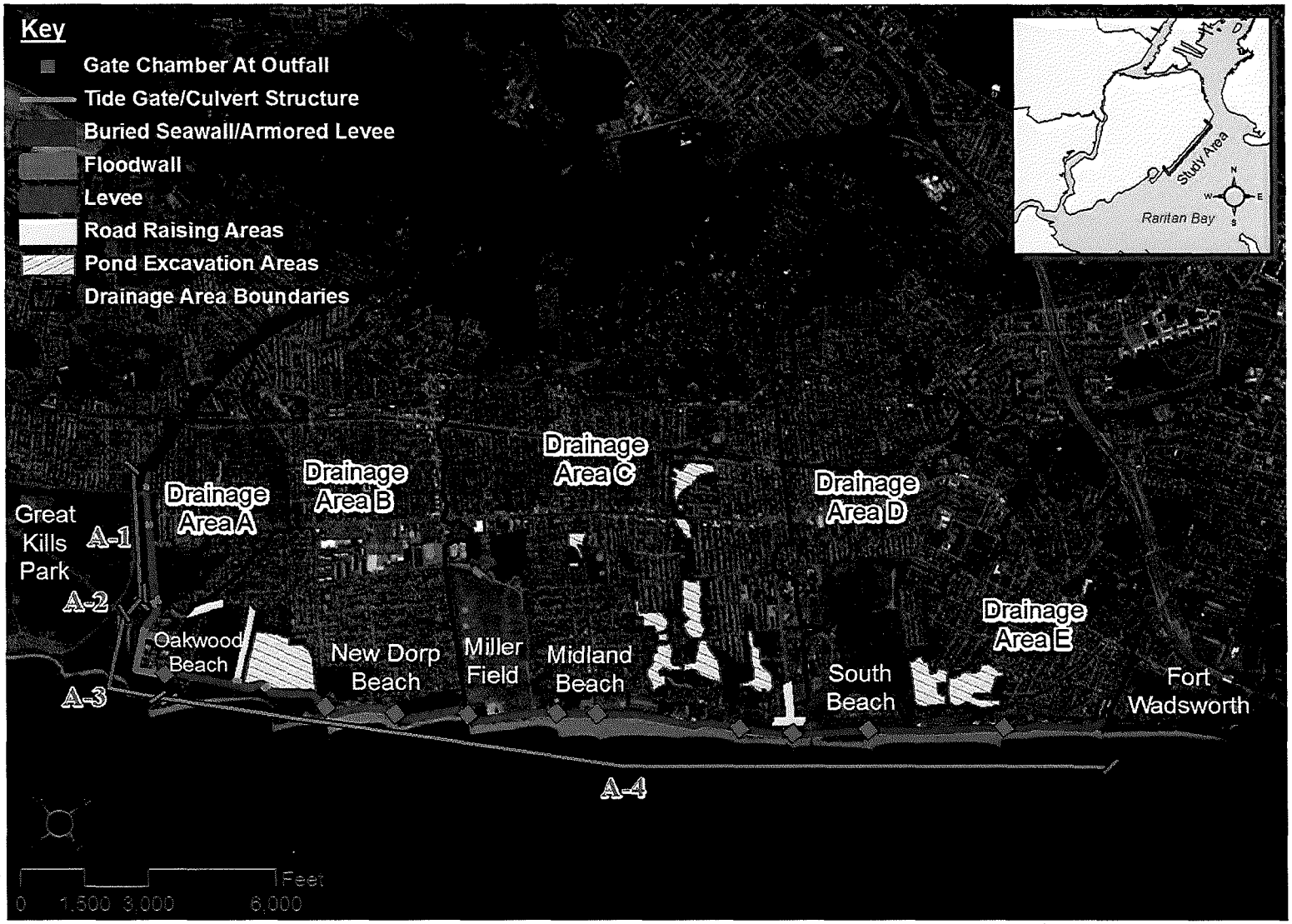
The direction of studies to be undertaken, including in those locations where the proposed alignment has shifted or where locations of features such as staging areas have yet to be defined, are stipulated in the Draft PA. The Corps is coordinating the document with NPS, Delaware Tribe of Indians, Delaware Nation, New York City Landmarks Preservation Commission and other interested parties (Enclosure 3). The draft PA will also be available for public review in the project's Draft Environmental Impact Statement. Please review the enclosed materials and provide Section 106 comments, pursuant to 36 CFR 800.5. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (917) 790-8629.

Sincerely,



Enclosures

Peter M. Weppler
Chief, Environmental Analysis Branch



Enclosure 1 - Overview of NED Plan

Enclosure 3

Ed Wiseman
Executive Director
Staten Island Historical Society
Historic Richmond Town
441 Clarke Avenue
Staten Island, NY 10306

Elizabeth Egbert
President & CEO
Staten Island Museum
75 Stuyvesant Place
Staten Island, New York 10301

Dr. Thomas Matteo
Staten Island Historian
460 Brielle Avenue
Staten Island, N.Y. 10314

Barnett Shepherd
Executive Director
Preservation League of Staten Island
54 Port Richmond Avenue
Staten Island, NY 10302

Mr. Paul Morando, Director
Harbor Defense Museum of Fort Hamilton
230 Sheridan Loop ,
Fort Hamilton Military Community
Brooklyn, NY 11252-5701

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

November 5, 2014

Environmental Assessment Section
Environmental Analysis Branch

Mr. Reid Nelson, Director
Office of Federal Agency Programs
Advisory Council on Historic Preservation
The Old Post Office Building
1100 Pennsylvania Avenue, N.W., Suite 809
Washington, D.C. 20004

Dear Mr. Nelson:

The U.S. Army Corps of Engineers, New York District, (Corps), is authorized to undertake construction of the South Shore of Staten Island Coastal Storm Damage Reduction Project, Richmond County, New York under P.L. 113-2, the Disaster Relief Appropriations Act of 2013, following Hurricane Sandy in October 2012. The Corps is presently completing the feasibility study of the Phase I portion of the project which runs along the Atlantic Ocean shoreline from just outside the Fort Wadsworth boundary to Oakwood Beach (Enclosure 1). The recommended Line of Protection Plan (LOP) consists of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the LOP consists of a T-Type Vertical Floodwall and Levee. The LOP also includes a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures, and demolition of the existing boardwalk. The Interior Drainage Plan includes pond excavation, construction of tide gates and gate chambers along the LOP, road raisings, and other minor interior drainage facilities. The Area of Potential Effect (APE) for this undertaking includes all areas impacted by activities required to construct the above listed features as well as construction access and staging areas and, if required, environmental mitigation measures. The locations of some of these features have yet to be determined. Maps and proposed plans are contained in the enclosed Preliminary Case Report and Programmatic Agreement (PA) referenced below.

A Phase I survey was completed for the Corps in 2005. No Native American archaeological sites were identified but deep testing was recommended. The National Register of Historic Places (NRHP) -listed Miller Army Airfield Historic District in the National Park Service (NPS) Gateway National Recreation Area is immediately adjacent to the proposed project. The District is working with NPS regarding impacts to this property. The project alignment ties into high ground just outside the southern boundary of the NRHP-listed Fort Wadsworth Historic District and will have no direct impact on the historic district. It is the Corps' opinion that the project

will not impact the viewshed from the Fort Wadsworth Historic District as the focus of the historic defensive systems were towards the approach channels to New York Harbor and not towards the ocean.

A Preliminary Case Report was prepared which summarizes all cultural resources work conducted to date and outlines future studies (Enclosure 2). The Corps has prepared a Draft PA which stipulates further work the Corps will undertake. The draft PA for your review and comment is included as Enclosure 7 in the Preliminary Case Report. The Corps is coordinating the document with NPS, Delaware Tribe of Indians, Delaware Nation, New York City Landmarks Preservation Commission and other interested parties (Enclosure 3). The draft PA will also be available for public review in the project's Draft Environmental Impact Statement. Please review the enclosed materials. We invite you to consult with us on the South Shore of Staten Island Coastal Storm Damage Reduction Project and participate in the PA as per 36 CFR Part 800.6. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (917) 790-8629

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

5 November 2104

Environmental Assessment Section
Environmental Analysis Branch

Gateway National Recreation Area
ATTN: Marilou Ehrler
Historical Architect
210 New York Avenue
Staten Island, New York 10305

Dear Ms. Ehrler:

The U.S. Army Corps of Engineers, New York District, (Corps), is authorized to undertake construction of the South Shore of Staten Island Coastal Storm Damage Reduction Project, Richmond County, New York under P.L. 113-2, the Disaster Relief Appropriations Act of 2013, following Hurricane Sandy in October 2012. The Corps is presently completing the feasibility study of the Phase I portion of the project which runs along the Atlantic Ocean shoreline from just outside the Fort Wadsworth boundary to Oakwood Beach (Enclosure 1). The recommended Line of Protection Plan (LOP) consists of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the LOP consists of a T-Type Vertical Floodwall, and Levee. The LOP also includes a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures, and demolition of the existing boardwalk. The Interior Drainage Plan includes pond excavation, construction of tide gates and gate chambers along the LOP, road raisings, and other minor interior drainage facilities. The Area of Potential Effect (APE) for this undertaking includes all areas impacted by activities required to construct the above listed features as well as construction access and staging areas and, if required, environmental mitigation measures. The locations of some of these features have yet to be determined. Maps and proposed plans are contained in the enclosed Preliminary Case Report (Enclosure 2). A buried seawall is proposed to cross the beach at Miller Field. The proposed alignment is adjacent to, and crosses into, the National Register of Historic Places (NRHP) listed Miller Army Airfield Historic District. The project as now proposed will remove the 1943 fire tower on the beach at Miller Field. We would like to work with your office to minimize and/or mitigate potential impacts to cultural resources on National Park Service (NPS) property.

Much of the project's APE has been subject to cultural resource surveys by the Corps or by others. A reconnaissance report was prepared for this study in 1995 and a Phase I survey was completed for the Corps in 2005. A CD containing the final Phase I report is enclosed (Enclosure 3). This work included archaeological testing and an historic architectural survey. The resulting report recommended further work in selected locations along the proposed project alignment. The 1995 and 2005 studies were coordinated with the New York State Historic Preservation Office (SHPO). These studies noted the Miller Army Airfield Historic District but did not discuss potential project impacts. The 1995 report recommended that the NRHP eligibility of the fire tower be evaluated. The 2005 Corps report had conflicting recommendations as it indicated that due to the structure's lack of integrity it was neither an

individually eligible resource nor a contributing element to the historic district however recommended further study. The fire tower was not included in the NPS 1976 NRHP Nomination Form and was not addressed in the 2014 Gateway National Recreation Area Final General Management Plan and Environmental Impact Statement (EIS). The Corps will evaluate the NRHP-eligibility of this structure. There has been no study of the former ramp which connected the seaplane hangar to the sea. If your office has any information on the ramp we would appreciate receiving that data.

The project alignment ties into high ground just outside the southern boundary of the NRHP-listed Fort Wadsworth Historic District and will have no direct impact on the historic district. The proposed project will be visible from Fort Wadsworth however the historically significant views from the fort, from the time the initial defenses were constructed through the Endicott Era, face towards the Narrows and the entrance to New York Harbor. Endicott-Era Batteries Ayres and Richmond are the only two historic structures in the historic district that are oriented somewhat towards the project alignment although both face southeast towards the main approach channel and not the beach. It is the Corps' opinion that the project will not impact the viewshed from these historic structures or from the Fort Wadsworth Historic District. While there may have been observations from the fort along the ocean the focus of the defensive systems were towards the approach channels to New York Harbor. The proposed seawall will be built to elevation 20 feet above sea level (ASL), approximately 12 to 14 feet above grade, which is significantly lower than the elevation of 100 feet ASL at Fort Wadsworth and would still allow an observer an unobstructed view to the sea.

The Corps has drafted a PA which is contained as Enclosure 7 in the enclosed Preliminary Case Report for your review and comment. The document will be coordinated with the SHPO, Advisory Council on Historic Preservation, Delaware Nation, Delaware Tribe of Indians, New York City Landmarks Preservation Commission and other potential interested parties (Enclosure 4). The draft PA will also be available for public review in the project's Draft EIS prepared under the National Environmental Policy Act which will serve as part of the Corp' Section 106 public coordination. The final PA will incorporate comments received on the draft document, as appropriate.

We invite you to participate as a Consulting Party to the PA and provide input to its development. To that end we would like to meet with you to discuss working together to meet our Section 106 responsibilities in a way that will facilitate your goals for Gateway and in particular your plans for the Miller Army Airfield Historic District. A meeting was held on 19 March 2014 in Federal Hall to provide the NPS with an overview of the project. A second meeting was held at our office on 7 August 2014 to discuss the LOP and representatives of NPS were in attendance. These meetings did not address cultural resource issues but served to introduce the project to NPS.

Please review the enclosed material. We will coordinate a meeting with NPS and the Corps as soon as practicable. Should you require additional information or have any questions, please contact Ms. Lynn Rakos, Project Archaeologist, at (917) 790-8629 or by email at Lynn.Rakos@usace.army.mil.

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

November 5, 2014

Environmental Assessment Section
Environmental Analysis Branch

Mr. Jason Ross
Delaware Nation
Section 106 Manager
P.O. Box 825
Anadarko, OK 73005

Dear Mr. Ross:

The U.S. Army Corps of Engineers, New York District, (Corps), is authorized to undertake construction of the South Shore of Staten Island Hurricane and Storm Risk Management Project, Richmond County, New York under P.L. 113-2, the Disaster Relief Appropriations Act of 2013, following Hurricane Sandy in October 2012. The Corps is presently completing the feasibility study of the Phase I portion of the project which runs from just south of Fort Wadsworth to Oakwood Beach (Enclosure 1). The recommended Line of Protection Plan (LOP) consists of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the LOP consists of a T-Type Vertical Floodwall and Levee. The LOP also includes a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures, and demolition of the existing boardwalk. The Interior Drainage Plan includes pond excavation, construction of tide gates and gate chambers along the LOP, road raisings, and other minor interior drainage facilities. The Area of Potential Effect (APE) for this undertaking includes all areas impacted by activities required to construct the above listed features as well as construction access and staging areas and, if required, environmental mitigation measures. The locations of some of these features have yet to be determined. Maps and proposed plans are contained in the enclosed Preliminary Case Report and Programmatic Agreement (PA) referenced below.

As a federal agency the USACE has certain responsibilities for the identification, protection and preservation of cultural resources that may be located within the area of potential project effect (APE) associated with the proposed South Shore of Staten Island project. Present statutes and regulations governing the identification, protection and preservation of these resources include the National Historic Preservation Act of 1966 (NHPA), as amended through 2006; the National Environmental Policy Act of 1969; Executive Order 11593; and the regulations implementing Section 106 of the NHPA (36 CFR Part 800, Protection of Historic Properties, August 2004). Significant cultural resources include any material remains of human activity eligible for inclusion on the National Register of Historic Places (NRHP).

Much of the project's APE has been subject cultural resource surveys by the Corps or by others including a Phase I survey completed for the Corps in 2005. A CD containing the final Phase I report is enclosed (Enclosure 2). This work included archaeological testing and an historic architectural survey. The resulting report recommended further work in selected locations along the proposed project alignment. No Native American sites were identified however the Corps will excavate borings along the project alignment where construction by open trenching is proposed to provide an understanding of shoreline development as sea level rose and to determine areas sensitive for deeply buried landforms and Native American resources. No borings will be conducted where construction will entail just pile driving. The locations and number of borings will be determined by a geoarchaeologist or a geomorphologist with archaeological experience. Archaeological testing of high ground adjacent to proposed ponding areas and pump stations is also recommended.

A Preliminary Case Report was prepared which summarizes all cultural resources work conducted to date and outlines future work (Enclosure 3). The Corps has prepared a Draft PA which stipulates further studies the Corps will undertake. The draft PA for your review and comment is included as Enclosure 7 in the Preliminary Case Report. This document is being coordinated with the State Historic Preservation Office, National Park Service, New York City Landmarks Preservation Commission and other interested parties. We invite you to consult with us on this project and the PA. If you have questions please contact the project archaeologist, Ms. Lynn Rakos at (917)790-8629 or by email at Lynn.Rakos@usace.army.mil.

Sincerely,

Peter M. Weppler
Chief, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

November 5, 2014

Environmental Assessment Section
Environmental Analysis Branch

Ms. Blair Fink
Delaware Tribe Historic Preservation Representatives
Department of Anthropology
Gladfelter Hall
Temple University
1115 W. Polett Walk
Philadelphia. PA 19122

Dear Ms. Fink:

The U.S. Army Corps of Engineers, New York District, (Corps), is authorized to undertake construction of the South Shore of Staten Island Hurricane and Storm Risk Management Project, Richmond County, New York under P.L. 113-2, the Disaster Relief Appropriations Act of 2013, following Hurricane Sandy in October 2012. The Corps is presently completing the feasibility study of the Phase I portion of the project which runs from just south of Fort Wadsworth to Oakwood Beach (Enclosure 1). The recommended Line of Protection Plan (LOP) consists of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the LOP consists of a T-Type Vertical Floodwall and Levee. The LOP also includes a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures, and demolition of the existing boardwalk. The Interior Drainage Plan includes pond excavation, construction of tide gates and gate chambers along the LOP, road raisings, and other minor interior drainage facilities. The Area of Potential Effect (APE) for this undertaking includes all areas impacted by activities required to construct the above listed features as well as construction access and staging areas and, if required, environmental mitigation measures. The locations of some of these features have yet to be determined. Maps and proposed plans are contained in the enclosed Preliminary Case Report and Programmatic Agreement (PA) referenced below.

As a federal agency the USACE has certain responsibilities for the identification, protection and preservation of cultural resources that may be located within the area of potential project effect (APE) associated with the proposed South Shore of Staten Island project. Present statutes and regulations governing the identification, protection and preservation of these resources include the National Historic Preservation Act of 1966 (NHPA), as amended through 2006; the National Environmental Policy Act of 1969; Executive Order 11593; and the regulations implementing

Section 106 of the NHPA (36 CFR Part 800, Protection of Historic Properties, August 2004). Significant cultural resources include any material remains of human activity eligible for inclusion on the National Register of Historic Places (NRHP).

Much of the project's APE has been subject cultural resource surveys by the Corps or by others including a Phase I survey completed for the Corps in 2005. A CD containing the final Phase I report is enclosed (Enclosure 2). This work included archaeological testing and an historic architectural survey. The resulting report recommended further work in selected locations along the proposed project alignment. No Native American sites were identified however the Corps will excavate borings along the project alignment where construction by open trenching is proposed to provide an understanding of shoreline development as sea level rose and to determine areas sensitive for deeply buried landforms and Native American resources. No borings will be conducted where construction will entail just pile driving. The locations and number of borings will be determined by a geoarchaeologist or a geomorphologist with archaeological experience. Archaeological testing of high ground adjacent to proposed ponding areas and pump stations is also recommended.

A Preliminary Case Report was prepared which summarizes all cultural resources work conducted to date and outlines future work (Enclosure 3). The Corps has prepared a Draft PA which stipulates further studies the Corps will undertake. The draft PA for your review and comment is included as Enclosure 7 in the Preliminary Case Report. This document is being coordinated with the State Historic Preservation Office, National Park Service, New York City Landmarks Preservation Commission and other interested parties. We invite you to consult with us on this project and the PA. If you have questions please contact the project archaeologist, Ms. Lynn Rakos at (917)790-8629 or by email at Lynn.Rakos@usace.army.mil.

Sincerely,

Peter M. Weppler
Chief, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

5 November 2104

Environmental Assessment Section
Environmental Analysis Branch

Ms. Amanda Sutphin
New York City Landmarks Preservation Commission
Municipal Building
One Center Street, 9th Floor
New York, N.Y. 10007

Dear Ms. Sutphin:

The U.S. Army Corps of Engineers, New York District, (Corps), is authorized to undertake construction of the South Shore of Staten Island Coastal Storm Damage Reduction Project, Richmond County, New York under P.L. 113-2, the Disaster Relief Appropriations Act of 2013, following Hurricane Sandy in October 2012. The Corps is presently completing the feasibility study of the Phase I portion of the project which runs along the Atlantic Ocean shoreline from just outside the Fort Wadsworth boundary to Oakwood Beach (Enclosure 1). The recommended Line of Protection Plan (LOP) consists of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the LOP consists of a T-Type Vertical Floodwall and Levee. The LOP also includes a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures, and demolition of the existing boardwalk. The Interior Drainage Plan includes pond excavation, construction of tide gates and gate chambers along the LOP, road raisings, and other minor interior drainage facilities. The Area of Potential Effect (APE) for this undertaking includes all areas impacted by activities required to construct the above listed features as well as construction access and staging areas and, if required, environmental mitigation measures. The locations of some of these features have yet to be determined. Maps and proposed plans are contained in the enclosed Preliminary Case Report and Programmatic Agreement (PA) referenced below.

A Phase I survey was completed for the Corps in 2005. The New York State Historic Preservation Office (SHPO) reviewed the resulting report and had no comments (OPRHP No 05-4225). The Phase I report was not coordinated with your office at that time. A CD containing the final report is enclosed (Enclosure 2). The Corp proposes several changes, outlined below, to the recommendations that were issued in the Phase I report. A Preliminary Case Report was prepared which summarizes all cultural resources work conducted to date and outlines future studies (Enclosure 3). The Corps has prepared a Draft PA which stipulates further studies the

Corps will undertake. The draft PA for your review and comment is included as Enclosure 7 in the Preliminary Case Report.

The bungalow community at Cedar Grove was determined eligible for the National Register of Historic Places (NRHP) by SHPO in 2011. Because it was to remove these structures before initiation of construction by the Corps, the New York City Department of Parks and Recreation (Parks), our non-federal sponsor on this project, was in the process of addressing mitigation measures associated with their removal when Hurricane Sandy damaged the shoreline. Currently, only two remain extant although severely damaged. The Corps will undertake no further study of the bungalow community. In 2005, the Corps excavated 68 shovel tests on the beach at Cedar Grove and found only modern materials. No additional shovel testing will be conducted at Cedar Grove.

At New Dorp Beach the remains of several concrete structures were encountered. These remains are likely from the St. John's Guild Hospital (also known as the Seaside Hospital) built in 1881, closed in the 1960s, but extant until 1988. The 2005 report recommended Phase II field and documentary investigations to define specific structural features and make direct linkages with the documented structures from the shoreline inland to Cedar Grove Avenue. As discussed in the Preliminary Case Report the lack of structural integrity and lack of documented stratigraphy suggests that further field work will not yield any significant information. It is the Corps' opinion that no further work be undertaken in connection with these structural remains along the beach front. However, the alignment has recently been redesigned and moved landward where buried intact archaeological remains of the hospital may be encountered. This shift may also impact remains associated with the original site of the Britton Cottage which is now located in Historic Richmondtown. Archaeological studies will be conducted along the new proposed alignment.

The project alignment crosses the NRHP-listed Miller Army Air Field Historic District and will sever the connection between the historic seaplane airfield and the sea. The Corps has been working with the National Park Service (NPS), owners of Miller Field, which is part of the Gateway National Recreation Area (GNRA), to develop mitigation measures for impacts to the property. Measures may in part be based on the final PA for the GNRA General Management Plan (GMP) signed this year by NPS and SHPO.

The 1943 World War II Fire Control Tower on the beach at Miller Field was not included as a contributing element to the property in the National Register Nomination Form prepared in 1976. The 2005 Corps report indicates that due to the structure's lack of integrity it was neither an individually eligible resource nor a contributing element to the historic district but recommended further study. The recent GMP /Environmental Impact Statement for the GNRA by the NPS does not mention the fire control tower. The Corps will work with the NPS to determine eligibility of this structure. The proposed alignment will likely destroy the tower.

The project alignment ties into high ground just outside the southern boundary of the NRHP-listed Fort Wadsworth Historic District and will have no direct impact on the historic district. The proposed project will be visible from Fort Wadsworth however the historically significant views from the fort, from the time the initial defenses were constructed through the Endicott Era,

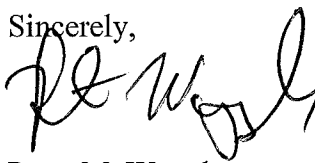
face towards the Narrows and the entrance to New York Harbor. Endicott-Era Batteries Ayres and Richmond are the only two historic structures in the historic district that are oriented somewhat towards the project alignment although both face southeast towards the main approach channel and not the beach. It is the Corps' opinion that the project will not impact the viewshed from these historic structures or from the Fort Wadsworth Historic District. While there may have been observations from the fort along the ocean the focus of the defensive systems were towards the approach channels to New York Harbor. The proposed seawall will be built to elevation 20 feet above sea level (ASL), approximately 12 to 14 feet above grade, which is significantly lower than the elevation of 100 feet ASL at Fort Wadsworth and would still allow an observer an unobstructed view to the sea.

Several locations are proposed to be acquired for interior drainage facilities. Excavation may be required to increase water storage capacity at these sites. The Corps' work will largely be within areas identified by New York City Department of Environmental Protection (NYCDEP) as part of their Staten Island Blue Belt Initiative. A Phase I study was conducted on the Blue Belt for NYCDEP by Historical Perspectives (OPRHP No. 10PR02085). The Corps will follow on with studies recommended by that work where relevant to our project actions. Features not contained within the Blue Belt program will be further investigated by the Corps.

All other work recommended in the 2005 report will be undertaken. The Corps will excavate borings along the project alignment where construction by open trenching is proposed to provide an understanding of shoreline development as sea level rose and to determine areas sensitive for deeply buried landforms and Native American resources. No borings will be conducted where construction will entail just pile driving. The locations and number of borings will be determined by a geoarchaeologist or a geomorphologist with archaeological experience. Please note that the shoreline south of Oakwood Beach, which includes Crescent Beach (Study Area C in the 2005 report), will be studied at a later time as Phase II of the Project.

Please let us know if there are deficiencies in the Phase I study or additional historic properties that should be included in the APE so that we might consider them in the PA. The direction of studies to be undertaken, including in those locations where the proposed alignment has shifted or where locations of features such as staging areas have yet to be defined, are stipulated in the Draft PA. The Corps is coordinating the document with NPS, Delaware Tribe of Indians, Delaware Nation and other interested parties (Enclosure 4). If you know of other organizations who we should reach out to please let us know. The draft PA will also be available for public review in the project's Draft Environmental Impact Statement. Please review the enclosed materials and provide comments. We invite you to consult with us on this project and the PA. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (917) 790-8629.

Sincerely,



Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

November 5, 2014

Environmental Assessment Section
Environmental Analysis Branch

Dear Interested Party:

The U.S. Army Corps of Engineers, New York District, (Corps), is authorized to undertake construction of the South Shore of Staten Island Coastal Storm Damage Reduction Project, Richmond County, New York under P.L. 113-2, the Disaster Relief Appropriations Act of 2013, following Hurricane Sandy in October 2012. The Corps is presently completing the feasibility study of the Phase I portion of the project which runs from just south of Fort Wadsworth to Oakwood Beach (Enclosure 1). The recommended Line of Protection Plan (LOP) consists of a buried seawall/armored levee along a majority of the reach (approximately 80%) serving as the first line of defense against severe coastal surge flooding and wave forces. The remainder of the LOP consists of a T- Type Vertical Floodwall, and Levee. The LOP also includes a stoplog closure structure at Hylan Boulevard, drainage control structures for existing storm water outfalls, tide gate structures, vehicle and pedestrian access structures, and demolition of the existing boardwalk. The Interior Drainage Plan includes pond excavation, construction of tide gates and gate chambers along the LOP, road raisings, and other minor interior drainage facilities. The Area of Potential Effect (APE) for this undertaking includes all areas impacted by activities required to construct the above listed features as well as construction access and staging areas and, if required, environmental mitigation measures. The locations of some of these measures have yet to be determined.

As a federal agency the Corps has certain responsibilities for the identification, protection and preservation of cultural resources that may be located within the area of potential project effect (APE) associated with the proposed South Shore of Staten Island project. Present statutes and regulations governing the identification, protection and preservation of these resources include the National Historic Preservation Act of 1966 (NHPA), as amended; the National Environmental Policy Act of 1969; Executive Order 11593; and the regulations implementing Section 106 of the NHPA (36 CFR Part 800, Protection of Historic Properties, August 2004). Significant cultural resources include any material remains of human activity eligible for inclusion on the National Register of Historic Places (NRHP).

Much of the project's APE has been subject a cultural resource survey by the Corps or by others. A reconnaissance report was prepared for this study in 1995 which was a summary of cultural resources work conducted to date in the project vicinity, a brief overview of historic map research and recommendations for further work. This work summarized and updated a previous study undertaken for the project in 1978. A Phase I survey was completed for the Corps in 2005. This work included archaeological testing and an historic architectural survey. The resulting report recommended further work in selected locations along the proposed project alignment. The 1995 and 2005 studies were coordinated with the New York State Historic Preservation Office (SHPO).

Recommendations included the excavation of deep borings in selected locations to test for the presence of buried early landforms under the historic period marsh or organic soils. Archaeological testing of high ground adjacent to proposed ponding areas and pump stations is also recommended.

The Corps is working with the National Park Service (NPS) Gateway National Recreation Area regarding impacts to the Miller Army Airfield Historic District. This NRHP-listed resource is immediately adjacent to the proposed project. The historic district consists of the Hangar No. 38, a seaplane hangar constructed by the army in 1920 and its concrete apron. Additions to the building were added in the 1930s by the Works Progress Administration. The Elm Tree Light is also included in the district. Adjacent to, but not included in, the Historic District is a 1943 concrete fire control tower. This structure was not included in the NRHP Nomination Form as a contributing element to the Miller Air Field Historic District. The Corps will evaluate the NRHP-eligibility of this structure.

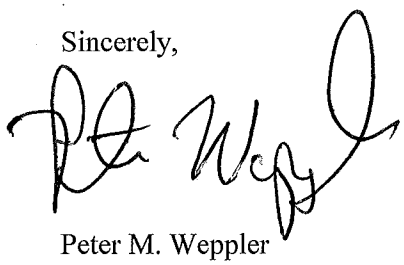
A Draft Programmatic Agreement (PA) is being prepared in consultation with the SHPO, NPS, Delaware Tribe of Indians, Delaware Nation and New York City Landmarks Preservation Commission. This document will stipulate the actions the Corps will take as the project proceeds with regard to cultural resources. The PA will be used to ensure that the Corps satisfies its responsibilities under Section 106 and other applicable laws and regulations. This document will also be available for review in the Environmental Impact Statement for the project or on request.

We invite you to participate in this project as an interested party. If you would like to receive information on this study please contact the project archaeologist:

Ms. Lynn Rakos
Project Archaeologist
US Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278

Should you require additional information or have any questions, please contact Ms. Rakos at (917) 790-8629 or by email at Lynn.Rakos@usace.army.mil.

Sincerely,



Peter M. Weppler
Chief, Environmental Branch

Enclosures

CC:
Ed Wiseman, Executive Director, Staten Island Historical Society
Elizabeth Egbert, President and CEO, Staten Island Museum
Dr. Thomas Matteo, Staten Island Historian
Barnett Shepherd, Executive Director, Preservation League of Staten Island
Mr. Paul Morando, Director, Harbor Defense Museum of Fort Hamilton

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF
Environmental Branch

April 21, 2014

Mr. David A. Stilwell
Field Supervisor NY field Office
U.S. Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Subject: South Shore of Staten Island Coastal Storm Damage Reduction Project

Dear Mr. Stilwell:

With the passage of the Hurricane Sandy Disaster Relief Appropriations Act of 2013 (Public Law 113-2), the U.S. Army Corps of Engineers has been given the authority and funding to complete ongoing coastal storm damage risk reduction projects and studies in the Northeast. As part of the planning and implementation process for the South Shore of Staten Island Coastal Storm Damage Reduction Project, Phase 1 - Ft Wadsworth to Oakwood Beach, the New York District will be completing the Feasibility Study and Environmental Impact Statement.

This letter is to request your office to provide an update to the above referenced project's Draft Fish and Wildlife Coordination Act Report (FWCAR) dated January 2006 and re-initiate informal consultation. The project includes a line of protection and five areas for interior drainage. The plan is being finalized as information such as real estate acquisition and non-federal sponsor requests evolve. The line of protection varies in elevation and structure type (buried sea wall, sheet pile wall, rock revetment, earthen levee etc) based on location along the shoreline. The real estate to be acquired will impact the final plan for the areas currently designated as interior drainage. It is possible that we will move the line of protection landward and create tidal wetland in the Oakwood Beach area (per the feasibility study conducted by NYSDEC and related to The Nature Conservancy recommendations).

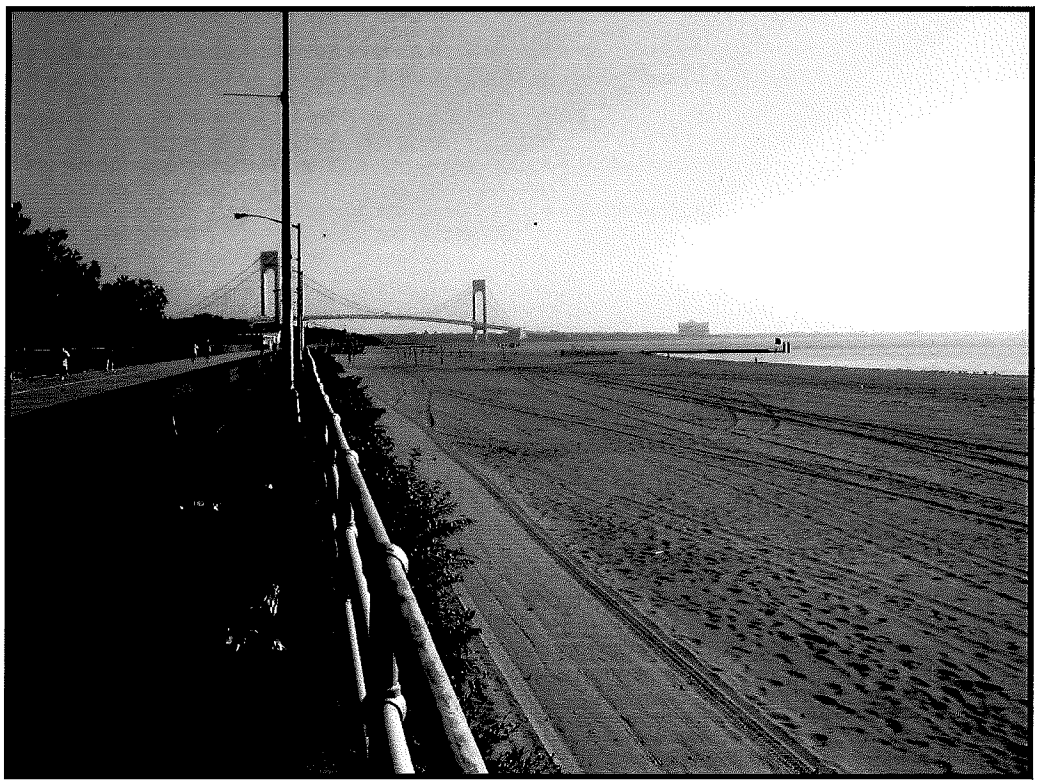
The District looks forward to working with you and your staff on this effort. If you should have any questions, please contact Ms. Catherine J. Alcoba of my staff at 917-790-8216.

Sincerely,

Nancy Brighton
for Acting Chief, Environmental Analysis Branch

cc: USFWS, LI Field Office

DRAFT
Fish and Wildlife Coordination Act 2(b) Report
Beach Erosion Control and Storm Damage Reduction Project
South Shore of Staten Island, Richmond County, New York



Prepared for:
U.S. Army Corps of Engineers
New York District
New York, New York

Prepared by:
Department of the Interior
U.S. Fish and Wildlife Service
Ecological Services
Long Island Field Office
Islip, New York

Preparer: Jill A. Olin

Long Island Field Office Supervisor: Rosemarie Gnam

January 2006

EXECUTIVE SUMMARY

This is the U.S. Fish and Wildlife Service's (Service) Draft Fish and Wildlife Coordination Act Report for the U.S. Army Corps of Engineers' (Corps) proposed project entitled, "South Shore of Staten Island, New York Beach Erosion Control and Storm Damage Reduction Project." Pursuant to the Fish and Wildlife Coordination Act (FWCA) of 1958, as amended (87 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*), the Corps is consulting with the Service to ensure equal consideration for fish and wildlife resources during the planning of the proposed storm damage reduction project.

The Service identifies major ecological communities and significant habitats in the Corps' study area, the species using those habitats, and the potential impacts to those species and habitats resulting from implementation of the proposed project (also referred to as preferred alternative). The study area includes Fort Wadsworth to Oakwood Beach and Great Kills Harbor to Crescent Beach. The preferred alternative includes the placement of buried sea walls, sloped sea walls, double sheet pile seawalls, dune reinforcement, levees, flood walls, and pond creation.

The proposed project area supports many locally, regionally, and nationally important avifauna, fish, and invertebrate species, including several species considered in various local, State, and Federal conservation plans. Therefore, the Service recommends a number of measures the Corps should incorporate in their project design, local cost-sharing agreement, plans and specifications, as well as the operations and maintenance agreements to avoid, minimize, or compensate for potential impacts to Service trust resources including migratory birds and wetland habitats. The

Service recommends that the Corps undertakes a number of measures to avoid, minimize, or compensate for the potential impact on fish and wildlife resources from the construction of this project. Accordingly, the Service believes that, with the incorporation of the recommended mitigation measures, the proposed action will not significantly impact fish and wildlife resources in the project area.

FIGURES

INTRODUCTION

This is the U.S. Fish and Wildlife Service's (Service) Draft Fish and Wildlife Coordination Act (FWCA) Section 2 (b) Report describing the potential impacts on fish and wildlife resources resulting from the U.S. Army Corps of Engineers' (Corps) "South Shore of Staten Island Beach Erosion Control and Storm Damage Reduction Project, Staten Island, Richmond County, New York." This document constitutes the report of the Secretary of the Interior as required by Section 2(b) of the FWCA (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*).

This report describes the project's potential impacts upon fish and wildlife resources and recommends measures to conserve and protect fish and wildlife resources. This analysis incorporates existing information about significant fish and wildlife resources for the project area and discusses related resource concerns; evaluates direct, indirect, and cumulative impacts on significant fish and wildlife resources; provides mitigation recommendations to avoid, minimize, or compensate for impacts resulting from the proposed alternatives; and identifies fish and wildlife enhancement opportunities.

PROJECT PURPOSE, HISTORY, AND AUTHORITY

Purpose

The primary objective of this project is to address the issues of severe beach erosion and storm

events associated with the southern shoreline of Staten Island, as identified by Federal, State, and local interests. The proposed work is intended to alleviate damages caused by erosion and storm events, through the development of sound engineering solutions. These solutions include land acquisition and the following structural components: levees and floodwalls, dune reinforcement through seawalls and sheet-pile, and road raising. Without the implementation of these new storm protection measures, the Corps determined that flooding resulting from storm events is expected to continue to cause damage to homes, businesses, and property along the southern shoreline of Staten Island.

History

Despite the previous beach erosion control and storm damage protection projects implemented along the south shore of Staten Island, properties along the southeastern Staten Island shoreline and inland areas continue to be susceptible to damages as a result of periodic, severe tropical storms, hurricanes, and nor-easters. In the years between 1932 and 1993, at least ninety hurricanes, tropical storms, or nor-easters have significantly impacted the New York City area, often causing storm surges more than four feet in elevation (U.S. Army Corps of Engineers 2002). These storms that wielded the most damage along the south shore of Staten Island include:

- Hurricane of November 25, 1950;
- Tropical storm of November 6-7, 1953;

- Hurricane Donna, September 12, 1960;
- Nor-easter of March 6-8, 1962;
- Storm of January 23, 1966;
- Storm of November 11, 1977;
- Nor-easter of December 11-12, 1992; and
- Storm of March 1993.

Consequently, Federal, State, and local governments have been involved in developing actions to minimize or inhibit these erosion problems, as described in the table below.

Location	Year	Agency	Protection
South Beach	1936-1937	Federal	Shore
South Beach	1937	Federal	Shore
Great Kills Park	1935-1948	Federal	Shore
Oakwood Beach	1952	City	Shore
Midland Beach	1955	State and City	Shore
Midland Beach	1955-present	Private	Shore
Prince's Bay	1960	Private	Shore
Oakwood Beach	1999	Federal	Tidal flooding
Cedar grove Beach	1992	City	Shore
Cedar grove Beach	~1992	City	Shore
Oakwood Beach	~1992	City	Shore
Oakwood Beach	~1992	City	Shore
Oakwood Beach	~1992	Federal	Shore
Crescent Beach	~1992	City	Tidal flooding

Storm data supplied by the Corps (2002) references storms only until 1993. In order to properly address the need for the proposed beach erosion control and storm damage reduction project, the Service recommends that the Corps provide an updated list of storms between 1993 and 2005 that have caused damage to the south shore of Staten Island in their Environmental Impact

Statement (EIS).

Authority

The Federal government authorized the study of the problem and potential solutions along the thirteen-mile long south shoreline of Staten Island via a United States House of Representatives Committee on Public Works and Transportation resolution dated May 13, 1993. This resolution states:

> *"The Secretary of the Army, acting through the Chief of Engineers, is requested to review the report of the Chief of Engineers on the Staten Island coast from Fort Wadsworth to Arthur Kill, New York, published as House Document 181, eighty-ninth congress, First Session, and other pertinent reports, to determine whether modifications of the recommendations contained therein are advisable at the present time, in the interest of beach erosion control, storm damage reduction and related purposes on the South Shore of Staten Island, New York, particularly in and adjacent to the communities of New Dorp Beach, Oakwood Beach, and Annadale Beach, New York."*

FISH AND WILDLIFE RESOURCE CONCERNS AND PLANNING OBJECTIVES

The purpose of consultation under the FWCA is to ensure equal consideration of fish and wildlife resources in the planning of water resource development projects. The Service's emphasis in this regard is to identify means and measures to mitigate for the adverse impacts of the proposed project, as well as to make positive contributions to the fish and wildlife resources in the project area.

This report is intended to be released along with the Corps' Draft EIS to the public, as it will serve as the basis for the Service's public meeting statement and the comments on the Corps' Feasibility Report.

From the Service's perspective, a desired output of the feasibility study is to ensure the safety and protection of the human population, while simultaneously protecting the health of marine, estuarine, and terrestrial ecological communities. Specifically, the Service recommends that conservation of fish and wildlife resources be accomplished by: (1) ensuring that the feasibility study evaluates alternatives which achieve and maintain high biological diversity; (2) ensuring that natural areas are protected and monitored throughout the life of the project; (3) ensuring that construction designs promote high value habitats for Service trust species; (4) establishing conservation easements over the life of the project; and (5) incorporating education and outreach activities into the project to inform the public about the uniqueness and fragility of the coastal ecosystem.

Ultimately, the Service's Mitigation Policy (January 23, 1981, Federal Register v. 46 n. 15 pp. 7644-7663) establishes a number of criteria which, if met, would allow the Service to support a water resource development project. These criteria are:

1) The projects are ecologically sound.

2) The least environmentally damaging alternative is selected.

3) Every reasonable effort has been made to avoid or minimize damage or loss of fish and wildlife resources and uses.

4) All mitigation recommendations have been adopted with guaranteed implementation to satisfactorily compensate for unavoidable damage or loss consistent with the appropriate mitigation goal.

5) For wetlands and shallow water habitats, the proposed activity is clearly water dependent and there is a demonstrated public need.

DESCRIPTION OF EVALUATION METHODS

The Corps' planning schedule and funding limitations precluded the Service from having sufficient time and staff resources to propose, design, and/or conduct extensive field surveys and investigations to establish or verify the presence of important trust wildlife resources, such as migratory birds, in the study and FWCA analysis areas. As a result, descriptions of natural resources are based on previous studies for similar projects; relevant grey and peer-reviewed literature; local, State, and Federal fish and wildlife reports and plans; and personal communications with knowledgeable biologists, planners, coastal geologists, and engineers. As

expressed in earlier correspondence, it is critical for the Service to be given the opportunity to participate early in the planning process, particularly via participation on the Project Delivery Team, in order to be able to provide input into the needed scope of fish and wildlife surveys and investigations that are required under the FWCA. Such surveys are critical, for example, to meet the objectives of Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, the intent and requirements of the FWCA and Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*). In addition, up-to-date surveys would reduce the risks of uncertainty in projecting the future without project conditions, which the Corps believes is critical to making predictions about impacts attributable to project alternatives. Finally, early coordination will prevent delays in project planning, and would provide an opportunity to ensure that appropriate studies can and will be conducted so that they are available for synthesis, analysis, and incorporation into planning documents in a timely manner.

In this report, the Service provides a discussion of Federal trust resources, including migratory birds, wetlands, endangered species, finfish, and shellfish, which use the three major ecological systems (marine, estuarine, and terrestrial) found in the most ecologically significant land and water complexes of the proposed project area. Ecosystem classifications follow Cowardin *et al.* (1979). However, our analysis focuses on maritime beach and wetland habitats because the Corps will likely have to complete an Essential Fish Habitat Assessment for a number of marine shellfish and finfish species during consultation with National Oceanic and Atmospheric Administration / Fisheries (NOAA/F). In addition, consultation under the Endangered Species Act (ESA) will be required for marine Federally-listed species in the proposed project area. A

description of coastal habitats of the south shore of Staten Island area is provided, and the ecosystem classification follows Cowardin *et al.* (1979). Digital data for wetland habitats was obtained from the Service's National Wetlands Mapper found on the Service's National Wetlands Inventory (NWI) website, www.nwi.fws.gov.

In developing mitigation recommendations, the Service relied on staff's expertise, literature searches, and local, State, and Federal conservation plans (e.g. bird conservation plans, and local, State, and Federal land and water conservation plans) and special designations (e.g. State- and Federally-identified Significant Fish and Wildlife Habitat Complexes) to develop appropriate recommendations for mitigation and fish and wildlife enhancement opportunities.

Finally, fish and wildlife enhancement opportunities which would benefit trust resources and the habitats in the study area are recommended.

SITE DESCRIPTION

The project area consists of an approximately 6.5-mile long area along the southern shoreline of Staten Island, entirely within the Borough of Staten Island, City of New York, Richmond County, NY. The project area is adjacent to the Lower New York Bay and the Raritan Bay, and extends southwesterly from Fort Wadsworth near the Verrazano Narrows Bridge to Crescent Beach, located just southwest of Great Kills Harbor. On the landward side, the project area generally is bounded by Fort Wadsworth on the northeast, Hylan Boulevard on the north, and Richmond Avenue in the community of Great Kills/Annadale on the southwest. Hylan Boulevard is aligned

parallel to the shoreline, and is located approximately 0.9-miles inland. The project area encompasses several neighborhood communities including South Beach, Midland Beach, New Dorp Beach, Oakwood Beach, Great Kills, and Crescent Beach (Figure 1).

An approximately 1.7-mile section of essentially undeveloped land along the 6.5-mile long project area consists of Great Kills Park, which is a component of the Gateway National Recreation Area (NRA). Although this segment of shoreline is eroded like the rest of the project area, it has been excluded from the area of planned shoreline protection and storm damage reduction measures at the request of the National Park Service (NPS) (U.S. Army Corps of Engineers 2002). Therefore, in order to more effectively focus planning and analysis efforts, the project are was divided into two project areas: 1) Fort Wadsworth to Oakwood Beach and 2) Crescent Beach.

The project area lies within the Atlantic Coastal Plain Province. This region is characterized by low topographic relief. The topography of the Staten Island project area is nearly level with elevations ranging from sea level to almost 100 feet above sea level (U.S. Army Corps of Engineers 1995).

Fort Wadsworth to Oakwood Beach

Terrain in the Fort Wadsworth to Oakwood Beach portion of the project area generally consists of a relatively wide, low beach intersected by a number of drainage system structures contained

in groins (Figures 2 and 3). The shoreline is uneven or jagged as a result of localized sand erosion and accretion on either side of the groins. The shoreline in this area consists entirely of city-owned beaches and lands of the Gateway NRA, owned by the Federal government and administered by the NPS. A long boardwalk and hard-surface promenade walkway extends approximately 2.75 miles along the beach from South Beach to Midland Beach, ending at Miller Field. In addition to these public parks and recreation areas, landward of the beaches are low-lying, densely developed, primary residential properties, as well as a number of commercial properties located along Hylan Boulevard. Furthermore, the project area contains several large, undeveloped tidal and freshwater wetlands. A sewage treatment plant is located approximately 0.25 miles from the shore in Oakwood Beach, along Oakwood Creek.

Crescent Beach

Terrain in the Crescent Beach portion of the project area (south of the Great Kills Harbor) consists of a narrow beach adjacent to an approximately ten-foot high bluff (Figure 3). Behind the bluff, there are several residential properties, in addition to undeveloped forest, scrub-shrub, and freshwater wetland areas. A seawall exists between the beach and the developed residential properties. A clam flat and sand bar is located along Crescent Beach near the mouth of Great Kills Harbor. A boat marina is located in the Great Kills Harbor at the northwest end of the Crescent Beach area.

ENVIRONMENTAL SETTING

Upland Vegetation

Vegetated uplands are located in the Fort Wadsworth to Oakwood Beach reach of the project area, and can be characterized as isolated islands of habitat, scattered residential and commercial developments, and areas developed for recreational use. The majority of upland vegetation in these areas consists of non-native species that are commonly found in highly disturbed areas. Herbaceous species inhabiting these areas include goldenrod (*Solidago* spp.), common reed (*Phragmites australis*), common ragweed (*Ambrosia artemisiifolia*), common mugwort (*Artemisia vulgaris*), and poison ivy (*Toxicodendron radicans*). The upland scrub-shrub areas are dominated by honeysuckle (*Lonicera* spp.), multifora rose (*Rosa multiflora*), Japanese knotweed (*Polygonum cuspidatum*), common pokeweed (*Phytolacca americana*), winged sumac (*Rhus copallina*), and black locust (*Robinia pseudoacacia*). Finally, upland forests areas are dominated by oaks (*Quercus* spp.), sassafras (*Sassafras albidum*), and black cherry (*Prunus serotina*). In the disturbed areas that have reverted back to forest habitat, black locust and tree of heaven (*Ailanthus altissima*) dominate (U.S. Fish and Wildlife Service 1997; U.S. Army Corps of Engineers 2005).

The majority of upland vegetation in the Crescent Beach area is herbaceous and generally occurs on disturbed land. These areas are dominated by goldenrod, various grasses, legumes, and forbes, as well as common reed. The upland scrub-shrub areas are dominated by bayberry (*Myrica pennsylvanica*), beach plum (*Prunus maritime*), sumac (*Rhus* spp.), hackberry (*Celtis*

occidentalis), and black cherry. Finally, the upland forests are dominated by black cherry, oak, and hickory (*Carya* spp.), in addition to red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), and pitch pine (*Pinus rigida*) (U.S. Fish and Wildlife Service 1997; U.S. Army Corps of Engineers 2005).

Tidal and Freshwater Wetlands

A number of freshwater wetland complexes were identified and delineated (U.S. Army Corps of Engineers 2005) within the interior drainage portion of the project area. These include: five estuarine, intertidal, narrow-leaved persistent emergent, irregularly-flooded wetlands (E2EM5P) in drainage area A; four palustrine narrow-leaved emergent, seasonally-flooded/saturated (PEM5E) wetland, one palustrine unconsolidated bottom, semi-permanently-flooded (PUBF) wetland, and five E2EM5P wetlands in drainage area C; one palustrine emergent, persistent seasonally-flooded (PEM1C) wetland in drainage area D; and one palustrine narrow-leaved emergent, semi-permanently-flooded wetland (PEM5F) in drainage area E (Cowardin *et al.* 1979).

Wetlands along the line of protection from Fort Wadsworth to Oakwood Beach include six E2EM5P wetlands located in drainage A; one PEM5F wetland located in drainage E along the road raising alternative on Father Cappodano Boulevard; and one PEM5E wetland located southeast of drainage area C along the road raising alternative on Father Cappodano Boulevard. The herbaceous layer in emergent portions of the estuarine and palustrine wetlands is dominated by dense strands of common reed, with lesser amounts of goldenrod, purple loosestrife (*Lythrum*

salicaria), and soft rush (*Juncus effusus*). Black willow (*Salix nigra*) and silver maple (*Acer saccharinum*) are the dominant tree species in the forested components of the wetlands.

NWI (Figure 4) maps indicated that estuarine, intertidal persistent emergent, regularly-flooded (E2EM1N), estuarine, intertidal, unconsolidated shore, irregularly-flooded (E2US2P), and palustrine, narrow-leaved persistent emergent, semi-permanently-flooded (PEM1F) wetland types occur along the shoreline of the Crescent Beach project area. Typical vegetation in the E2EM1N marsh includes a predominance of saltmarsh cordgrass (*Spartina alterniflora*), salt meadow grass (*Spartina patens*), and common reed. The E2US2P habitats are the upper portions of the beach with little or no vegetation. The PEM1F wetland vegetation is dominated by common reed, and hedge bindweed (*Calystegia sepium*), and slippery elm (*Ulmus rubra*). The habitat at Great Kills Harbor and Park, part of the Gateway NRA, includes large areas of disturbed marsh, dominated by common reed, with grassland and shrub thicket habitat at Crookes Point dominated by bayberry (*Myrica pennsylvanica*), beach plum (*Prunus maritima*), sumac (*Rhus* spp.), hackberry (*Celtis occidentalis*), and black cherry. The outer shoreline follows a narrow, sandy, groined beach (U.S. Army Corps of Engineers 2005; U.S. Fish and Wildlife Service 1997).

Maritime Beach

The majority of the maritime beach within the two project reaches is heavily used for recreation. As a result of this, the beach is subject to vegetation removal techniques (including beach raking) and is generally devoid of all vegetation. Some vegetation occurs along the dunes from Fort

Wadsworth to Oakwood Beach. The dune vegetation includes American beachgrass (*Ammophila breviligulata*), seaside goldenrod (*Solidago sempervirens*), sandbur (*Cenchrus* spp.), and beachheather (*Hudsonia* spp.). In addition, sparse patches of vegetation in the beach/upland transition zones of Crescent Beach area consist mostly of American beachgrass.

Beginning in 1966, there have been at least seventeen major sediment-benthic macrofauna sampling efforts in the Raritan Bay area (Reid *et al.* 1991). A study conducted by Cerrato *et al.* (1989) found amphipods (*Ampelisca abdita*, *Corophium tuberculatum*, and *Elasmopus levis*), blue mussel (*Mytilus edulis*), polychaete worms (*Asabellides oculata* and *Heteromastus filiformis*), slipper shell (*Crepidula fornicata*), razor clam (*Ensis directus*), barnacle (*Balanus* spp.), sea lettuce (*Ulva lactuca*), and shore shrimp (*Palaemontes* spp.).

Fish and Wildlife Resources

Avian Fauna

The *Atlas of Breeding Birds in New York State* (Andrle and Carroll 1988; New York State Department of Environmental Conservation 2004) lists sixty-seven waterfowl and shorebird species, and eighty-four upland bird species as either observed or expected to occur along the south shore of Staten Island.

The configurations of the shorelines of Raritan Bay, both the south shore in Monmouth County, New Jersey, and the Staten Island, New York, result in a concentration of migratory shorebirds

and neo-tropical migrant land birds. Shorebird surveys done in the early 1980s have documented the importance of the greater Raritan Bay for spring and fall shorebird migration with seasonal totals of over 20,000 birds, based on weekly surveys. The peak months are June and August, and the primary concentration areas are Great Kills on Staten Island, the flats inside Sandy Hook, and the south shore between Chingora Creek and Conaskonk Point. Three species, sanderling (*Calidris alba*), ruddy turnstone (*Arenaria interpres*), and semi-palmated sandpiper (*Calidris pusilla*), make up about 85 percent of the total of migratory shorebirds using this area. The nearshore open waters provide habitat for species such as Canada goose (*Branta canadensis*), American black duck (*Anas rubripes*), mallard (*Anas platyrhynchos*), green-winged teal (*Anas crecca*), blue-winged teal (*Anas discors*), and gadwall (*Anas strepera*). Several species of wading birds may also occur in the area, including glossy ibis (*Plegadis falcinellus*), great blue heron (*Ardea herodias*), snowy egret (*Egretta thula*), and black-crowned night heron (*Nycticorax nycticorax*) (Andrle and Carroll 1988; New York State Department of Environmental Conservation 2004; U.S. Fish and Wildlife Service 1997).

Finfish and Shellfish

Lower Bay and Raritan Bay support a diverse assemblage of fish and shellfish. Historically an important area for commercial and recreational fisheries, the site has now has seen a decline in the fishery abundance, as a result of heavy fishing, diminished water quality, decreased food supply, and reduction in suitable spawning and nursery areas (Berg and Levinton 1985). Common species observed using the area include bluefish (*Pomatomus saltatrix*), weakfish (*Cynoscion regalis*), winter flounder (*Pseudopleuronectes americanus*), summer flounder

(*Paralichthys dentatus*), stiped bass (*Morone saxatilis*), and scup (*Stenotomus chrysops*) (Figley and McCloy 1988; U.S. Army Corps of Engineers 1995). Additionally, anadromous species such as American shad (*Alosa sapidissima*), alewife (*Alosa pseudoharengus*), Atlantic herring (*Clupea harengus*), Atlantic menhaden (*Brevoortia tyrannus*), and blueback herring (*Alosa aestivalis*), as well as the common forage species Atlantic silverside (*Menidia menidia*), bay anchovy (*Anchoa mitchilli*), and mummichug (*Fundulus heteroclitus*) are found in nearshore waters.

Raritan Bay supports several shellfish species that are commercially- and recreationally-fished. These species include the American lobster (*Homerus americanus*), American oyster (*Crassostrea virginica*), bay scallop (*Argopecten irradiens*), hard-shelled clam (*Mercenaria mercenaria*), horseshoe crab (*Limulus polyphemus*), soft-shelled clam (*Mya arenaria*), and blue crab (*Callinectes sapidus*).

Herpto-Fauna

Species of frog and toad such as the green frog (*Rana clamitans melanota*), spring peeper (*Acris crucifer*), bull frog (*Rana catesbeiana*), and Fowler's toad (*Bufo fowleri*) are common to the area and can be found inhabiting fresh and low salinity wetlands (U.S. Army Corps of Engineers 1976; New York State Department of Environmental Conservation 2003b). Diamondback terrapins (*Malaclemys terrapin*) are common to the Great Kills Harbor (U.S. Army Corps of Engineers 1976), in addition to the common snapping turtle (*Chelydra s. serpentine*), painted turtle (*Chrysemys picta*), and eastern box turtle (*Terrapene c. carolina*) occurring in the Fort

Wadsworth to Oakwood Beach project area. Common snakes such as the eastern garter snake (*Thamnophis sirtalis sirtalis*), northern ringneck snake (*Diadophis punctatus edwardsii*), and the northern brown snake (*Storeria d. dekayi*) are found inhabiting vegetated upland and wetlands in the Fort Wadsworth to Oakwood Beach project area (New York State Department of Environmental Conservation 2003b; U.S. Army Corps of Engineers 1976). Finally, northern redback (*Plethodon c. cinereus*), northern red (*Pseudotriton r. ruber*), and northern two-lined (*Eurycea bislineata*) salamanders have been observed in the vicinity of the project area (New York State Department of Environmental Conservation 2003b).

Mammals

Site-specific mammalian species have not been confirmed in the project area. Species that are most likely to occur are those that are tolerant of urban development, including eastern gray squirrel (*Sciurus carolinsnsis*), eastern cottontail (*Sylvilagus floridanus*), eastern chipmunk (*Tamias striatus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), muskrat (*Ondatra zibethica*), white-footed mouse (*Peromyscus leucopus*), and the Norway rat (*Rattus norvegicus*) (U.S. Army Corps of Engineers 1995; U.S. Fish and Wildlife Service 1997).

Threatened and Endangered Species

The south shore of Staten Island including the adjacent waters of Raritan Bay and Lower Bay is utilized by bald eagles (*Haliaaetus leucocephalus*), a State- and Federally-listed (threatened) species, as a migratory route (New York State Department of Environmental Conservation

2003a). Although bald eagles have been observed in the project area, these individuals are considered to be occasional transients. No habitat in the project area is currently designated or proposed "critical habitat" in accordance with provisions of the ESA. The Service notes that the project area contains suitable habitat for the Federally-listed piping plover (*Charadrius melodus*) and that new piping plover breeding sites have been recorded over the last decade on Long Island in areas where they were not previously observed. Therefore, we recommend that the Corps conduct a maritime beach survey in coordination with the Service during the months of March/April/May to determine the presence of Federally-listed species, in particular, piping plover and seabeach amaranth (*Amaranthus pumilus*). Further ESA coordination is needed to update the presence/absence information currently, which dates back to 1997, contained in the preliminary Draft EIS. ESA consultation is pending until this further coordination and data request is completed.

Federally-listed threatened and endangered marine species under the jurisdiction of NOAA/F may also be found near the project area. These species include the threatened loggerhead turtle (*Caretta caretta*), as well as the endangered Kemp's ridley turtle (*Lepidochelys kempi*), leatherback turtle (*Dermochelys coriacea*), and green turtle (*Chelonia mydas*). In addition, species which are protected under the Marine Mammal Protection Act of 1972 (as amended 1994) include harbor seal (*Phoca vitulina*) and the grey seal (*Halichoerus grypus*). For additional information, contact Mr. Stanley Gorski, Habitat Conservation Division, Field Office Supervisor, National Oceanic and Atmospheric Administration/Fisheries, James J. Howard Sciences Laboratory, 74 Magruder Road, Highlands, NJ 07732 (telephone: 732-872-3037).

State-listed species are also present in the project area; the northern harrier (*Circus cyaneus*), a State-listed threatened species, and the peregrine falcon (*Falco peregrinus*), a State-listed endangered species. The northern harrier possibly breeds, and is a common winter resident, in tidal wetlands on Staten Island (U.S. Fish and Wildlife Service 1992). In addition, the peregrine falcon is a confirmed breeder on Staten Island (New York State Department of Environmental Conservation 2003c; New York State Department of Environmental Conservation 2004).

If the Corps has not already done so, we recommend that they contact the New York State Department of Environmental Conservation (NYSDEC) for additional information. The NYSDEC contact is Mr. Peter Nye, Endangered Species Unit, New York State Department of Environmental Conservation, 625 Broadway, Albany, NY 12233-4753 (telephone: 518-402-8859) and Mr. James Gilmore, New York State Department of Environmental Conservation - Region 2, 1 Hunter's Point Plaza, 47-40 21st Street, Long Island City, NY 11101-5407 (telephone: 718-482-6464).

FUTURE WITHOUT PROJECT CONDITIONS

According to the Corps, under this scenario, also known as the "No Action Alternative," all natural forces and manmade conditions currently in effect would continue.

Periodic storm-related flooding would continue to affect low-lying interior areas of the Fort Wadsworth to Oakwood Beach project area. No interior flood control improvements would be

implemented through Federal actions to reduce flooding problems. It is possible that locally funded flood control improvements would be implemented in certain areas within the project area. However these would likely be piecemeal and would not provide as comprehensive a solution as would be needed for the southern shore of Staten Island. Certain areas of beach (Oakwood Beach and Great Kills Park) would continue to experience accelerated beach erosion.

Future storms would continue to cause damage to property in the Crescent Beach area. Beach and bluff erosion would continue and the level of protection afforded by the existing beach and seawall would continue to decline, increasing the risk of damage to adjacent residences from wave action. Based on its poor condition, the seawall is expected to fail completely within six to ten years. As a result, flood damage would continue to occur to homes and properties in the Crescent Beach area (U.S. Army Corps of Engineers 2002).

PROJECT ALTERNATIVES

The study area was initially divided into three reaches in order to aid in problem identification and analysis. The three project reaches were Fort Wadsworth to Oakwood Beach, Great Kills Harbor to Crescent Beach, and Annadale to Tottenville. The Corps (2004a) determined that there was no Federal interest for storm damage reduction for the Annadale to Tottenville reach. Thus further analysis of the potential storm damage reduction alternatives (i.e., beach fill, flood proofing, and land acquisition) for this reach would not be necessary. Consequently, only alternatives addressing the remaining two reaches will be reviewed in this document.

Reach 1: Fort Wadsworth to Oakwood Beach

Several alternatives have been withdrawn from further consideration. These alternatives include: a beach fill plan, a flood proofing plan, an acquisition plan, and various permutations of road raising, buried sea wall dune reinforcement, levees and flood walls (Alternative No's 1, 2, 2a, and 3). The chosen line of protection for Fort Wadsworth to Oakwood Beach is summarized below. Refer to Figures 5 through 11 provided in this report, as well as the Corps' (2005) Preliminary Draft EIS for further details on the project alternatives.

Line of Protection (Alternative No. 4)

- Buried sea wall and sheet pile sea wall at the existing boardwalk and the raising of existing promenade;
- Raised promenade from Miller Field to Oakwood Beach; and
- Dune reinforcement, levees, and flood wall at Oakwood Beach.

Reach 2: Great Kills Harbor to Crescent Beach

Several alternatives for protection and interior drainage have been discontinued from further consideration for this reach of the project area. These include: a beach fill with levee plan, a flood-proofing plan, an acquisition plan, a vertical sheet pile sea wall with levees plan, and the use of ponds with pressure lines (Alternative No's 2, 3, and 4). The chosen line of protection for

Great Kills Harbor to Crescent Beach is summarized below. Refer to Figures 12 through 14 provided in this report, as well as the Corps' (2005) Preliminary Draft EIS for further details on the project alternatives.

Line of Protection (Alternative # 1)

- Sloped Stone Seawall
- Levees

PROJECT IMPACTS

The Corps' recommended plan, specifically Alternative No. 4 for Fort Wadsworth to Oakwood Beach and Alternative No. 1 for Crescent Beach, would have direct adverse impacts on fish and wildlife resources. An area approximately 6.5 miles long with varying widths of intertidal estuarine and palustrine wetlands, and maritime beach habitats is expected to be directly impacted from dune reinforcement; construction of levees, floodwalls, buried seawalls, and tide gates; pond excavation; and the use of heavy machinery. In particular, project construction and long-term maintenance would result in both short-term and long-term impacts. Short-term impacts include burial of benthic organisms on the maritime beach habitat due to construction activities and increased turbidity. Long-term impacts include precluding formation of maritime beach and wetland habitat, and habitat modification/loss, both affecting fish and wildlife resources.

As per the Scope of Work (SOW), this section only provides a description of the preferred proposed alternative; no other alternatives were evaluated as part of this analysis.

Direct and Indirect Impacts

Habitat Modification

Maritime Beach

Changes in the beach morphology and sedimentologic characteristics (slope, height, grain size, sorting coefficient, etc.) may affect colonization of marine invertebrates, a major forage resource for shorebirds in the intertidal and dune zone. A shift to finer or coarser sediments can affect the abundance of macrofauna prey resources (Peterson and Manning 2001) in the proposed project area, which can have consequences for higher trophic levels (Peterson and Manning 2001). Morphological and sedimentologic changes to the maritime beach and dunes can also impact wildlife breeding habitat, either adversely or beneficially. For example, the Corps' Long Island Intracoastal Waterway Channel Maintenance Dredging Project resulted inadvertently in the deposition of highly fine sand and mud dredge spoils on East Inlet, Moriches Bay, Brookhaven, NY. This material was not suitable substrate for colonial waterbirds (U.S. Fish and Wildlife Service – Long Island Field Office project file). A corrective plan of action was initiated by the Corps to mitigate for this condition; however, the short- and long-term effects of placing unsuitable material, and later, re-depositing suitable material, have not been evaluated as of this

time. Potentially beneficial impacts of sand placement have been observed at other Corps sites existing on Long Island; however, these are not well studied and remain anecdotal as to their long-term contribution to resource conservation. The proposed action would, therefore, result in the conversion of maritime beach habitat into vegetated dune habitat, and a potential loss of intertidal habitat, during the life of the project.

The proposed project will also result in changes to the existing dune structure, burial of dune vegetation, and acceleration of plant succession, as early successional, sparsely vegetated sand is replaced by vegetation. The proposed project will create a monotypic stand of American beach grass through artificial planting at densities which may or may not be beneficial to avifauna. If plant succession is encouraged, shorebirds, which require early successional beach strand habitat to forage and breed, will most likely be discouraged from occupying these habitats. In addition, grooming of the beaches to remove detritus and litter can remove vital foraging resources (e.g. wrack) for shorebirds and adversely impact the trophic transfer of energy in the coastal setting (Dugan *et al.* 2003).

Tidal and Freshwater Wetlands

Many of the remaining wetlands plant communities have been altered as a result of historic alterations to tidal creeks which now limit or prevent natural tidal influxes of salt water. Nearly 63 percent of Staten Island's tidal wetlands have been filled or altered (Tiner 2000); thus, the amount and quality of wetland habitat remaining on the south shore of Staten Island is low. The

amount and quality of wetland habitat remaining on the south shore of Staten Island is low. The wetlands within the project area are dominated by common reed, often observed as a monoculture. Although the existing wetlands could be characterized as degraded or low quality, they still perform needed ecological functions, and will always provide opportunities where wetland restoration or enhancement could result in significant benefits to native fish and wildlife. The project alternatives propose excavation of approximately 85 acres of vegetated wetland and replacement of shallow-water wetland habitat with shallow open-water areas. The Service is concerned with the loss of vegetated wetlands as a result of the conversion of these wetlands, albeit degraded, to open water habitat.

Vegetated wetlands provide important ecological functions. They improve water quality by removing pollutants from surface waters through the processes of sediment trapping, nutrient removal, and chemical detoxification. The value of natural wetlands, however, extends beyond their flood storage and water quality functions to include food chain support, erosion control, groundwater recharge/discharge, and habitat functions. Wetlands provide valuable sources of wildlife food and habitat, and wetlands often become a focal point for varied wildlife populations within a particular region. Wetland vegetation also provides nesting material and sites for numerous birds and mammals. Wetlands are important habitats for a disproportionately high number of endangered and threatened plant, mammal, bird, reptile, amphibian, and fish species. Some aquatic organisms may use wetlands seasonally as a spawning ground and nursery for their young, spending most of their adult lives in deeper waters. Amphibians, reptiles, and invertebrates usually undergo an aquatic phase that requires water for breeding, egg development,

and larval growth. Some reptiles and amphibians are able to adapt to fluctuating water levels (Mitsch and Gosselink 1986), whereas others may experience changes in breeding patterns and forage species composition due to water level fluctuations (Azous 1991). Wetlands are also used daily by birds and terrestrial animals during diurnal and nocturnal food foraging. Many birds that utilize both terrestrial and wetland habitats are frequently found in the highest numbers in the diverse, productive habitats of wetlands (NWTC 1979).

The Service recognizes that the creation of open water aquatic habitats may be beneficial to many species of migratory birds and over-wintering waterfowl. However, the loss of vegetated wetland may affect other species already using the habitat (i.e. invertebrates and avifauna), and may decrease the quality of water flowing from the wetland. As described in this report, the area surrounding the remaining wetland habitat on Staten Island is highly developed with pavement and infrastructure. Therefore, the wetland functions of water quality control and flood storage/flood attenuation become highly important benefits in an area of high and rapid storm-water discharges. Open water aquatic habitats typically do not provide all of these functions.

Burial of Benthic Resources

Benthic macro-invertebrate mortality is likely along the 6.5-mile project area, due to the construction of seawalls, levees, dunes, and the raising of the promenade. As a result, re-colonization of benthic macro-invertebrates in the project area would potentially be slowed or prevented because of the lack of available source populations and suitable habitat. Moreover, the

increase in suspended sediments may cause displacement of food sources for the motile benthic organisms and may smother the openings of benthic organisms' (i.e. polychaete worms, crabs, clams) burrows. Other impacts from the proposed construction activities include the potential destruction of benthic resources by smothering the benthic habitats with massive amounts of sand (U.S. Army Corps of Engineers 1998). These impacts to benthic resources have the potential to adversely affect shorebird species using the area, by removing a native food source.

Recent studies provide somewhat conflicting evidence as to the potential for both short- and long-term impacts of beach nourishment on wildlife along the western coast of the Atlantic Coast. These studies focus principally on beach and benthic/pelagic invertebrate and finfish communities of the western Atlantic Coast (e.g., Minerals Management Service 2001; Peterson and Manning 2001; Lindquist and Manning 2001; U.S. Army Corps of Engineers 2004b.; Burlas *et al.* 2001; and Byrnes *et al.* 2004). To illustrate the findings of these research studies, the Service briefly reviews the impacts of maritime beach nourishment on the infaunal community, which is composed of meiofauna (animals whose shortest dimensions are less than 0.5 millimeters [mm] or 0.02 inches [in.] but greater than or equal to 0.1 mm [0.004 in.]), macrofauna (those animals 0.5 mm or larger in size), and mobile organisms.

Infaunal populations naturally decline dramatically between November and January. Reilly and Bellis (1978) and Parr *et al.* (1978) noted that when beach nourishment ceases, the recovery of the community is rapid and complete recovery may occur within one or two seasons. Recovery will depend on the season of the year of the nourishment operations and on the recruitment of

larval fauna, once the operation is completed. Gorzelany and Nelson (1987) found no significant long-term negative effects of beach nourishment on nearshore benthic fauna during monitoring of a beach replenishment project on a central Florida east coast sand beach community. Yet Hurme and Pullen (1988) found that meiofauna recover very slowly from a major disturbance, perhaps due to their slow rates of reproduction, their limited ability to migrate either our of harms way or into new suitable habitat, and their highly specialized adaptations to specific environmental conditions. However, meiofaunal recovery can be rapid following minor disturbances (Naqvi and Pullen 1982).

The recovery of benthic macrofauna after beach nourishment varies from one site to another. Studies completed in the 1970s indicate that when nourishment ceases, the recovery of benthic macrofauna is rapid, and complete recovery might occur within one or two seasons (Reilly and Bellis 1978; Parr *et al.* 1978). The ability of macrofauna to recover is due to: (a) their short life cycles, (b) their fast reproductive potential, and (c) the recruitment of plankton larvae and motile macrofauna from nearby unaffected areas (Naqvi and Pullen 1982).

More recently, the Corps presented data describing recovery of intertidal infauna depending upon time of year of beach nourishment. When beach nourishment is completed between early August and early October, the infaunal community may recover within 2 months, prior to the natural winter population decline. Recovery time following nourishment in mid- to late-October is expected to occur within the range of 2 to 6 months. If nourishment occurs between the months of late October and January, the compounding effects of nourishment and seasonal population

decline will result in a minimum of 6 months recovery time for the community (U.S. Army Corps of Engineers 2001). Also, the Corps' Draft EIS (2005) addresses mobile organisms, such as crabs and fishes. The Corps' Draft EIS (2005) suggests that mobile organisms appear to be the least affected by construction activities, as they are able to move to avoid disturbances (Hurme and Pullen 1988). Such motile species are able to return to the area when conditions are suitable again.

In view of these data findings, the Service believes that if beach sand placement occurs between the months of late August and January along the south shore of Staten Island, the infaunal community, including meiofauna, macrofauna, and mobile organisms, will be able to recover prior to the arrival of shorebird species (terns, sanderlings, and ruddy turnstones), which depend on the infaunal community as food source.

Preclusion of Habitat Formation

Any activity that artificially stabilizes naturally dynamic beach strand habitats has the potential to be detrimental to fish and wildlife resources. Many species using the beaches of the south shore of Staten Island prefer or require early successional habitat for breeding, foraging, and/or resting. These include terns, sanderlings, ruddy turnstones, and semi-palmated sandpipers. The most highly productive habitat for these species is found in areas of overwash or recent inlet formation. The proposed project perpetuates a system of shoreline stabilization structures that will limit the natural process of shoreline retreat and, consequently, prevent the natural formation

of optimal habitats. Due to erosion, establishment of predators and competitors, and lower prey densities, stabilized beach strands are generally less productive habitats for these species than more dynamic, ever-changing beaches, particularly inlets and overwash areas (U.S. Fish and Wildlife Service 2002). However, the great amount of infrastructure (roads, residential, and commercial structures) adjacent to the maritime beach and wetlands of the south shore of Staten Island, make it unlikely that the Staten Island communities would accept the creation and long-term management and maintenance of these species' preferred habitat. Therefore the Service believes that indirect effects attributable to long-term stabilization of the maritime shoreline are unlikely to occur.

In contrast, tidal wetlands were once a vast resource on Staten Island, comprising approximately 5600 acres in the late 1800s. Today only approximately 1800 acres of these original wetlands remain tidal. Approximately 300 acres of former tidal wetlands have become non-tidal freshwater marshes and swamps due to flow restrictions (Midland Beach and South Beach areas) (Tiner 2000). The majority of the south shore of Staten Island is developed, whether as residential areas or as boardwalks along the beachfront. This project's intent will be to further prevent the natural tidal influx of salt water and/or any natural tidal flooding cycles along the south shore of Staten Island. Preventing natural processes for the long-term will have a major impact on the hydrology, sedimentology, vegetative community structure, and consequently on fish and wildlife species use of the area.

Construction Activities

The timing of sand placement and pond construction and maintenance activities will be a major factor resulting in potential short- and long-term impacts for non-endangered shorebird and waterbird species. The potential direct effects include disruption of breeding, foraging, and roosting activities. Beach construction and pond creation activities are usually very intensive and environmentally disruptive operations, which involve the mobilization and use of heavy equipment and other construction vehicles in wildlife habitat. The operation of machinery to grade the modified beach and to excavate the ponds immediately adjacent to habitat that is used by wildlife as a roosting, over-wintering, courtship, nesting, and brood-rearing area has the potential to disturb avifauna to the point where they may not successfully nest and/or fledge young. Moreover, this disturbance may preclude avifauna from using the habitat entirely, forcing them to seek appropriate habitat elsewhere (U.S. Fish and Wildlife Service 1995). Human activities may adversely affect the productivity of shorebirds (Ruhlen *et al.* 2002) and influence the foraging activity of some shorebird species (Burger and Gochfeld 1991). Even low levels of human activity have been shown to result in disturbance and displacement of shorebirds at migrational staging and roosting areas (Pfister *et al.* 1992).

In addition, the use of heavy machinery within the project area for initial construction and maintenance of the proposed project would directly impact wildlife use of the area by increasing noise levels. The Corps (Alvarez, pers. comm. 2005) has indicated that it intends to construct the

project according to the design specifications using earth moving equipment. Noise associated with project-related activities has the potential to disturb fish and wildlife foraging and breeding behavior, both at the project site and within the adjacent habitat. The Corps predicts that construction will take approximately one year to complete.

Turbidity

Turbidity, while comparatively unimportant to benthic organisms in the ocean intertidal community, may be a relatively more important environmental factor in determining fish community structure. Suspended solids in water can affect fish populations by delaying the hatching time of fish eggs (Schubel and Wang 1973); by killing fish by coating and/or smothering the surfaces of fish eggs, and the gills of juvenile, or adult fish; and by creating anoxic conditions (O'Conner *et al.* 1976; Naqvi and Pullen 1982). Sherk *et al.* (1974) found that demersal fish are more tolerant of suspended solids than filter-feeding fish, resulting in a competitive advantage to demersal fish and a disadvantage to filter feeders. Temporary decreased water quality and increased turbidity in the marine nearshore subtidal zone could result from the actual beach creation activity (Minerals Management Service 2001). Sand particles suspended in the water column during the beach fill placement process are dense and fall quickly back to the benthic zone whereas the fine sediments stay in suspension longer than sand, only sinking slowly (Woodhead 1992). Less mobile invertebrate species would therefore be exposed to increased turbidity associated with the suspended sediment; nevertheless they are generally adapted to a highly turbid nearshore environment.

Localized turbidity plumes can have lethal and sublethal effects on benthic invertebrates and fish, including hematological compensation for reduced gas exchange across gill surfaces, and abrasion of epithelial tissue. A fish's gut can become packed with large quantities of solids ingested along with forage; it may have little nutritive value. Disruption of gill tissues (abrasion, clogging, and/or increased activity of mucosa), and increased activity with a reduction of stored metabolic reserves (Profiles and Research Consulting Groups, Inc. 1980) are other potential adverse impacts from high levels of suspended solids. As previously stated, the project area serves as a nursery and feeding area (from April to November) for scup, bluefish, Atlantic silverside, menhaden, winter flounder, striped bass, and blackfish. Winter flounder are known to occur in the project area throughout the year, spawning during the winter months (January to March). While adult fishes are unlikely to be affected by project construction, planktonic life stages of species that may undergo a dormant phase in the near shore area would be unable to escape burial. The Service does not expect significant impacts to finfish due to their ability leave the area being affected by disturbance (Van Dolah *et al.* 1992).

Other effects of increases in turbidity include a decrease in light penetration, hampering fish which use sight as their primary means to detect prey; possible re-suspension of contaminants and nutrients; burial of non-motile eggs, larvae, and adults; and absorption of essential nutrients from the water column (Stern and Stickle 1978). Although, these impacts are detrimental to the fish and wildlife resources inhabiting the project area, they are unlikely to result in significant adverse impacts since the majority of sand will be placed and re-distributed in the upper portions

(dune areas) of the beach. In addition, the Corps reported that the increased turbidity resulting from beachfill activities on the New Jersey shore of the Atlantic Ocean was negligible due to the natural dynamic nature of the shoreline, wave action, and currents (U.S. Army Corps of Engineers 2001).

Cumulative Impacts

As described in the Service's Mitigation Policy (40 CFR 1508.20), the Service must consider project impacts, including: (1) the total long-term biological impact of the project, including any secondary or indirect impacts regardless of location; and (2) any cumulative effects, when viewed in the context of existing or anticipated projects. The Council on Environmental Quality defined cumulative impacts (40 CFR 1508.7) as "the impacts on the environment which results from the incremental impacts of the action when added to other past, present and reasonably foreseeable future actions...."

The Service is not aware of any other proposed Federal or State projects within or adjacent to the south shore of Staten Island erosion control and storm damage reduction project area. Nevertheless, the Service has been made aware of a private development adjacent to the project area consisting of the development of approximately 2.19 acres of freshwater wetland habitat that should be included in the Corps' cumulative impacts analysis. As previously described, the area adjacent to the project area is heavily developed with commercial and residential infrastructure. This development has caused, and will continue to cause, numerous impacts to the natural

resources of the south shore of Staten Island, some of which include the loss of wetland habitat, habitat fragmentation, degradation of habitats, and preclusion of habitat formation. The swell in residential and commercial development in the surrounding area has lead to a significant increase in storm-water run-off and shoreline hardening, both of which degrade wetland and maritime habitats. As discussed in the report's section on wetlands, the cumulative effects from historical losses of wetlands are significant. More information on the status and trends in wetlands of Staten Island can be found in Tiner (2000).

The Service recommends that the Corps provide total amounts by acreage of habitat likely to be affected by this project in the Draft EIS. In addition, the Corps should evaluate the cumulative impacts of its coastal erosion and shoreline protection program on migratory birds and wetlands, particularly those species and habitats of priority concern as established in various conservation plans that have been developed by local, State, and Federal agencies.

The Service believes that these cumulative impacts could be ameliorated with the inclusion of the mitigation recommendations (compensatory mitigation, habitat restoration, treatment of storm-water run-off, and habitat enhancement) provided in the following section of this report.

MITIGATION

As established in the preceding sections of this report, the proposed project is likely to result in adverse impacts to Federal trust wildlife species. This report has focused on the migratory birds

and their habitats, primarily maritime beach and dune communities; and marine intertidal habitat. We also provide information on effects to tidal and freshwater wetlands which support species that are of conservation concern. We believe that the use of the proposed project area and adjacent habitats by these species and the potential impacts resulting from the proposed project are clear justifications for the Corps to include conservation measures in these overall project plans and to further evaluate fish and wildlife enhancement opportunities in the study area. Further, habitats in the proposed project area have also received special protection and status as critical conservation areas through the New York State Department of State designation as Significant Fish and Wildlife Habitats and inclusion in the South Shore Estuary Reserve, warranting careful consideration of potential impacts, mitigation measures, and fish and wildlife enhancement opportunities.

The views and recommendations of the Service on this project are guided by its Mitigation Policy (U.S. Fish and Wildlife Service 1981). This policy seeks to mitigate losses of fish, wildlife, and their habitats, and uses thereof, from land and water developments. The Service's mitigation policy does not apply to the ESA and listed species that will be affected by the project. The term "mitigation" is defined as: (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating impacts over time; and, (e) compensating for impacts by replacing or providing substitute resources or habitats.

The FWCA Report provides information on the proposed project's potential impacts on fish and wildlife resources, to assist the Corps in giving equal consideration of fish and wildlife in the planning of water resource development projects. In addition, the Corps now has an Environmental Program Authorities for environmental restoration within the Continuing Authorities Program, under Section 204 of the Water Resources Development Act (WRDA) of 1992 (P.L. 102-580) (WRDA) (Beneficial Use of Dredged Material); Section 1135 of WRDA of 1992 (PL), (Restoration of Environmental Quality); and Section 206 of WRDA of 1996 (P.L. 104-303) (Aquatic Ecosystem Restoration).

The proposed project may have direct adverse effects on waterbird and shorebird species of regional concern in the short-term and over the life of the project as identified in the report. The following provides strategies for avoiding, minimizing, or compensating impacts to fish and wildlife resources and their habitats in the proposed project area.

Maritime Beach

a) Access to the project beaches should be provided to the Service, the Corps, or their mutually agreed upon designated representatives, to survey and monitor waterbird and shorebird use areas. Access should be given during daylight hours on any day(s) of any given year at the required frequency to accomplishthe purposes stated above.

b) The Service recommends that construction occurs during the autumn months to

ensure that there is sufficient time for re-establishment of the essential infaunal prey base and breeding and loafing habitat for the spring time arrival of shorebirds.

c) The Corps should conduct annual maritime beach surveys in coordination with the Service during the months of March/April/May to determine the presence of State- and Federally-listed species, in particular, piping plover (*Charadrius melodus*), least tern (*Sterna antillarum*), common tern (*Sterna hirundo*), black skimmer (*Rynchops niger*), and seabeach amaranth (*Amaranthus pumilis*). These species may re-colonize an area where newly created beaches appear, and now potentially provide previously unavailable early successional habitat. If any of these species are observed loafing, roosting, foraging, courting, nesting, or growing in the project area, the Corps will need to coordinate with the Service to ascertain whether further technical assistance or ESA section 7 consultation is warranted. At this time, we can assist the Corps and landowners in incorporating species recovery guidelines into the project.

d) The Corps should ensure that the beach sand is compatible with the sand that is now on the beach with respect to grain size, clay content, and organic matter.

e) If the dunes are to be planted with American beach grass, they should be planted 18 in. on center from the southern toe of the dune to the dune crest and to the northern toe of the dune. The Corps should also consult with the Service on a planting scheme with the potential for open areas in the dune. Such breaks in the vegetation are attractive for some shorebirds. The Corps should also consider

incorporating other plant species into the planting scheme for the purposes of increasing plant diversity and heterogeneity in the proposed project area. Beach pea and seabeach knotweed are examples of native plants which might be considered.

Tidal and Freshwater Wetlands

The Service recognizes that part of the Corps' proposed project is the acquisition and preservation of approximately 260 acres of tidal and freshwater wetland habitat. Although the Service is encouraged with this portion of the project plan, there still remain some concerns regarding the quality of those wetland habitats for fish and wildlife resources and, over the long-term, whether sufficient invasive plant monitoring and management has been factored into the project for a period of time commensurate with the life of the project. The following recommendations provide additional strategies for avoiding, minimizing, or compensating impacts to fish and wildlife resources and their habitats in the proposed project area.

a) The Service recommends the monitoring and maintenance of the preserved wetland habitats for the life of the project to ensure that the wetland habitats continue to provide the targeted functions and values. Once areas are re-stored to a predominance of native vegetation (see "c" below), the Corps should set performance criteria to be met and monitor to ensure that invasive species have not re-colonized the restored wetland areas. If performance criteria are not met,

provisions need to be in place to ensure continued invasive species treatment.

b) The Service recommends an overall compensatory mitigation plan that provides a ratio of 1:1 to compensate for the conversion of vegetated wetlands to open water (pond) areas. Even though the existing wetlands areas may be considered degraded, the removal of approximately 85 acres of functioning habitat will result in adverse impacts to the species which use the habitat. We will support a proposal to perform 85 acres of compensatory mitigation in the form of acquisition of natural wetlands or restoration or enhancement of degraded wetlands, to offset the adverse impacts of the habitat conversion.

c) The Service recommends restoration of vegetation in the areas that will be excavated. The Service would like to see the invasive-dominated common reed ponds re-planted with native emergent and submerged/floating vegetative species, such as freshwater eelgrass (*Vallisneria americana*), redhead grass (*Potamogenton perfoliatus*), rushes (*Juncus* spp.), skunk cabbage (*Symplocarpus foetidus*), cordgrass (*Spartina* spp.), bulrush (*Scirpus* spp.), sedges (*Carex* spp.), and spike rush (*Eleocharis* spp.). In addition, in less frequently flooded and/or upland areas, shrub species such as buttonbush (*Cephalanthus occidentalis*) should be planted. In total, all these species will provide food sources for waterfowl, migratory birds, and invertebrates.

d) The Service recommends that the Corps' analyze the potential for stocking native fish species (Families: Cyprinidae, Atherinidae, Gasterosteidae, Cyprinodontidae, and Centrarchidae) in the excavated pond areas in order to increase biodiversity

and forage sources for waterfowl and mammalian species. Fish may also assist the mosquito control as in Open Water Marsh Management (OWMM). The Service can provide additional information on desirable fish species and OWMM.

e) The Service recommends the creation of public outreach material about maritime beach and the wetland habitats. We recommend development of signage reflecting species use, habitat importance, and potential public involvement in conservation. The Service would be willing to assist the Corps in this endeavor.

f) The Service recommends that the Corps explore methods to address the quality of water (storm-water) input into the wetlands that are adjacent to roads, in the project area.

SUMMARY OF FINDINGS AND SERVICE POSITION

The proposed project will impact marine and terrestrial communities, as well as wetland areas, resulting in the elimination and disturbance of invertebrate, vertebrate, and vegetative inhabitants of the maritime beach, dune communities, and freshwater wetlands, which, in some cases, support species or habitats which have been identified in Service's (1997) Significant Habitat Complexes document as highly imperiled or a high priority concern in the region. However, implementation of the mitigation measures provided in this report could assist the Corps in offsetting the proposed project's potential adverse impacts. We recommend that the Corps use resource information to guide appropriate design and construction approaches. Overall, we believe that project implementation, coupled with adoption of our recommendations, has the

potential to result in positive effects to the aquatic ecosystem.

FISH AND WILDLIFE ENHANCEMENT OPPORTUNITIES

The Service recommends that the Corps develop construction techniques and approaches which will assist in creating optimal habitats for the avifauna species discussed in this report. This should not be considered single species management, as the health of these species depends in large measure on ecosystems which are functioning as closely to a natural condition as possible. As one example, the Corps can collect information on the physical and environmental characteristics of existing shorebird and waterbird breeding habitat in the proposed project area, and look to replicate those conditions elsewhere in the project area in order to make the constructed beaches, dunes, and wetlands more attractive to those species.

The Service recommends that the Corps participate throughout this project in the protection, enhancement, and restoration of adjacent wetland habitats which support breeding and non-breeding birds, as well as fish and invertebrates. The Service is interested in pursuing these and other fish and wildlife enhancement opportunities in the proposed study area, and is willing to extend the FWCA consultation under a separate SOW to address these ideas in more detail.

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New York, NY. 81+ pp.

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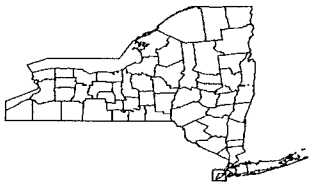
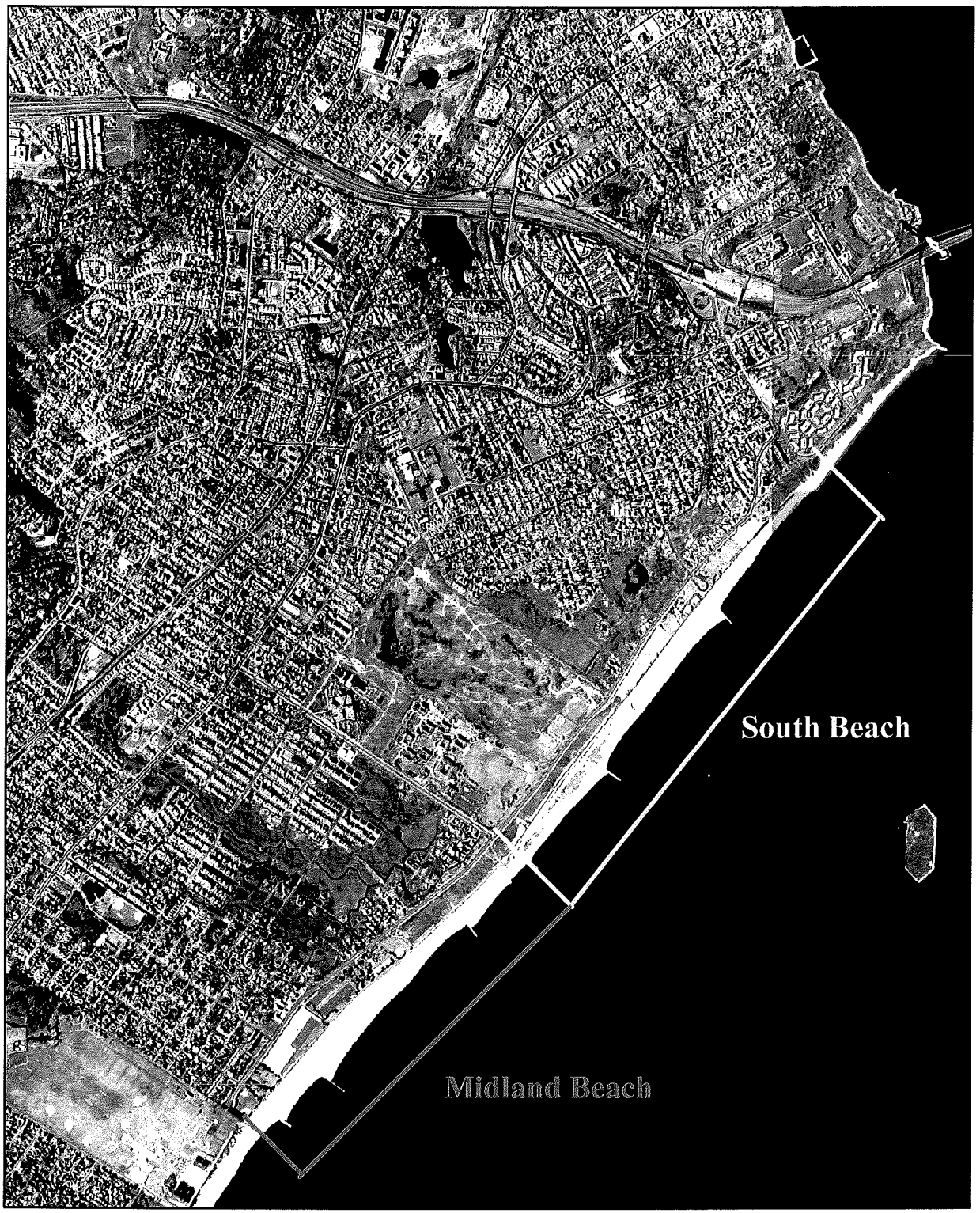
Figure 1: Location of Project Area South Shore of Staten Island

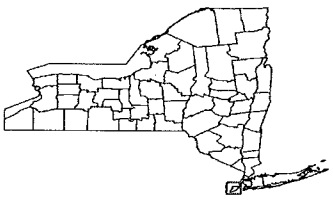


N

0 500 1,000 2,000 3,000 4,000
Meters

Figure 2: Fort Wadsworth to Midland Beach Project Area

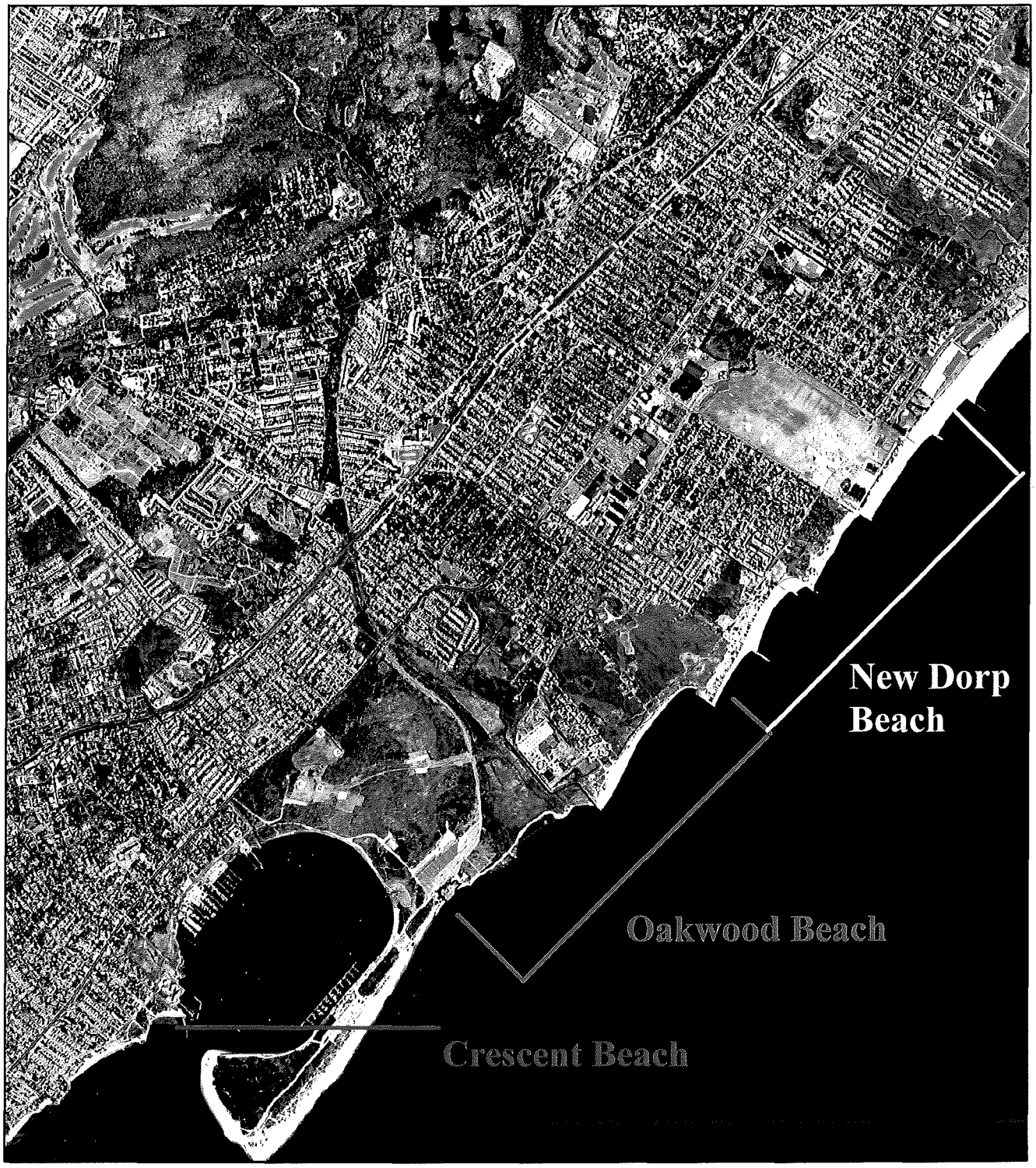


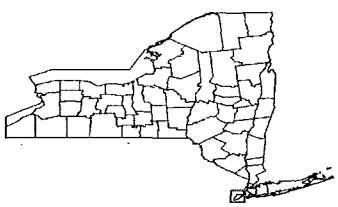


N

0 312.5 625 1,250 1,875 2,500 Meters

Figure 3: New Dorp Beach to Crescent Beach Project Area

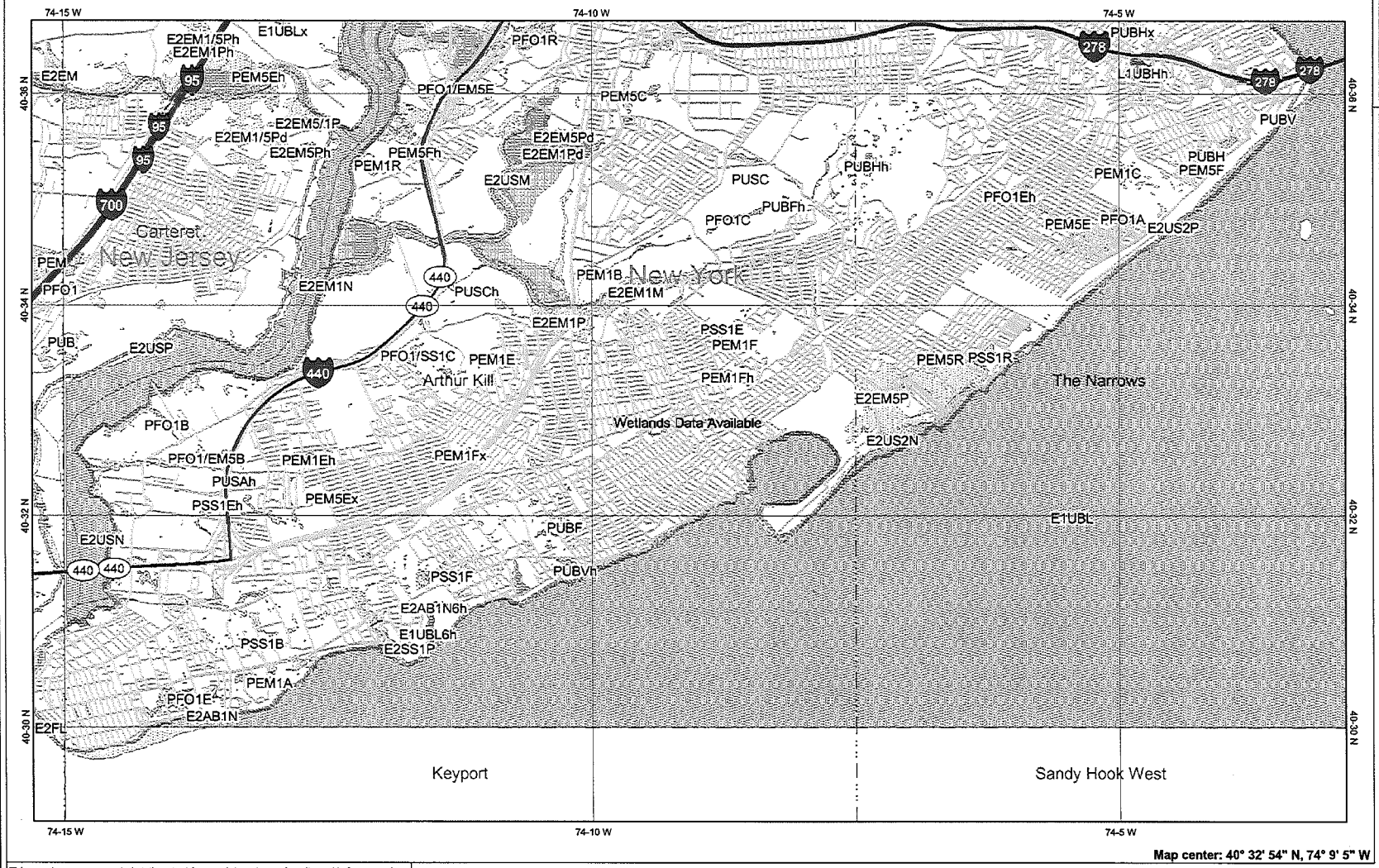




N

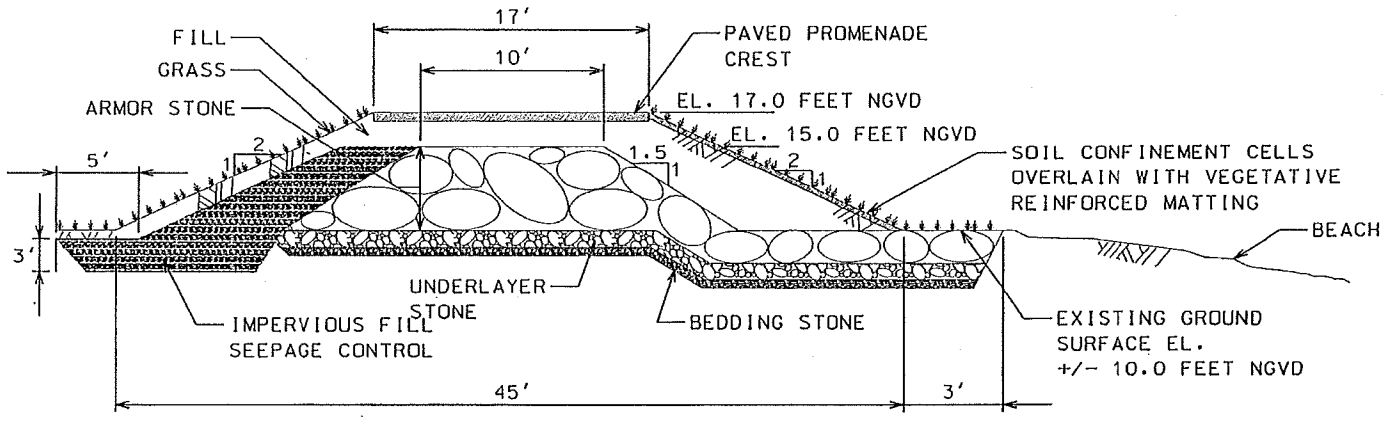
0 400 800 1,600 2,400 3,200 Meters

Figure 4: South Shore of Staten Island National Wetland Inventory Map



This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Figure 5: Typical Buried Seawall and Raised Promenade



BURIED SEAWALL/RAISED PROMENADE

NTS

REVISION	DESCRIPTION	DATE	APPROVED

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK

DESIGNED BY: SC	SOUTH SHORE OF STATEN ISLAND FEASIBILITY STUDY NEW YORK
DRAWN BY: DI	TYPICAL BURIED SEAWALL & TYPICAL RAISED PROMENADE
CHECKED BY:	
REVIEWED BY: (SECTION CHIEF)	APPROVAL RECOMMENDED: (CHIEF, ENGINEERING DIVISION)
CONCURRED BY: (CHIEF, DESIGN BRANCH)	APPROVED BY: (COL., C.E., DISTRICT ENGINEER)
SHEET REFERENCE NUMBER:	DATE: 5-9-2002
	SCALE: NTS
	FIGURE F

Figure 6: Typical Floodwall/ Seawall

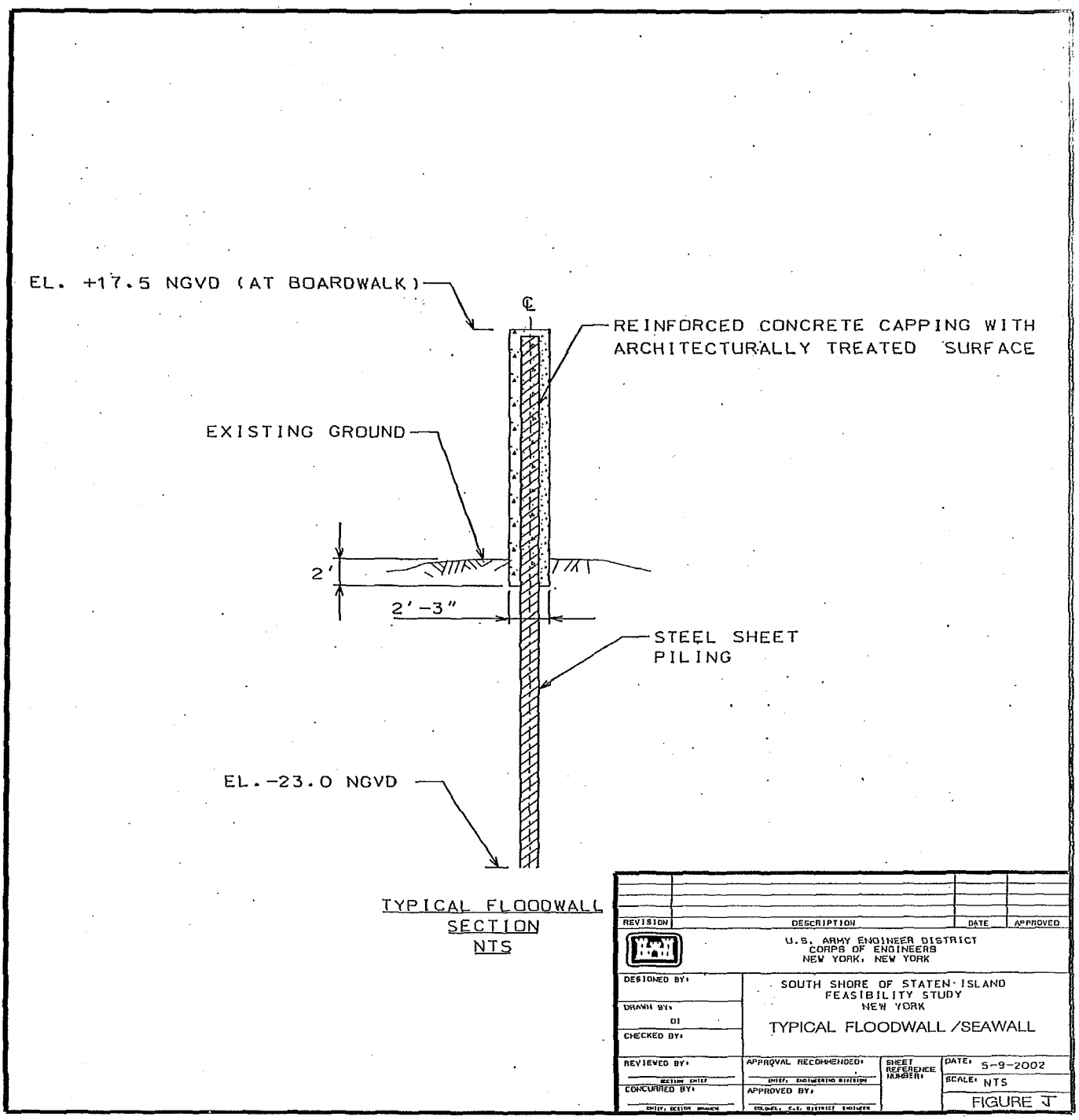


Figure 7: Typical Floodwall/ Seawall

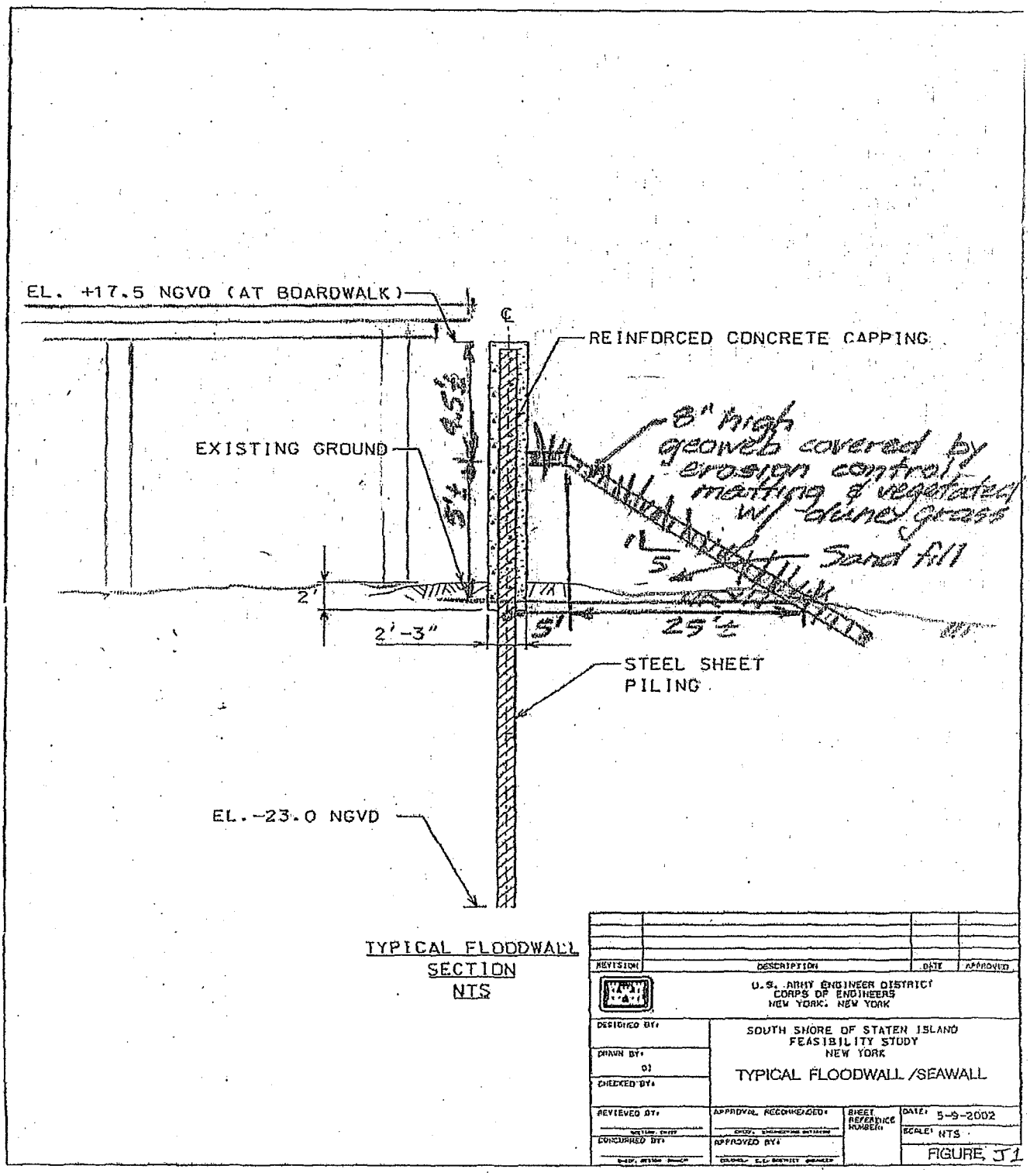


Figure 8: Typical Double Sheet Pile Wall

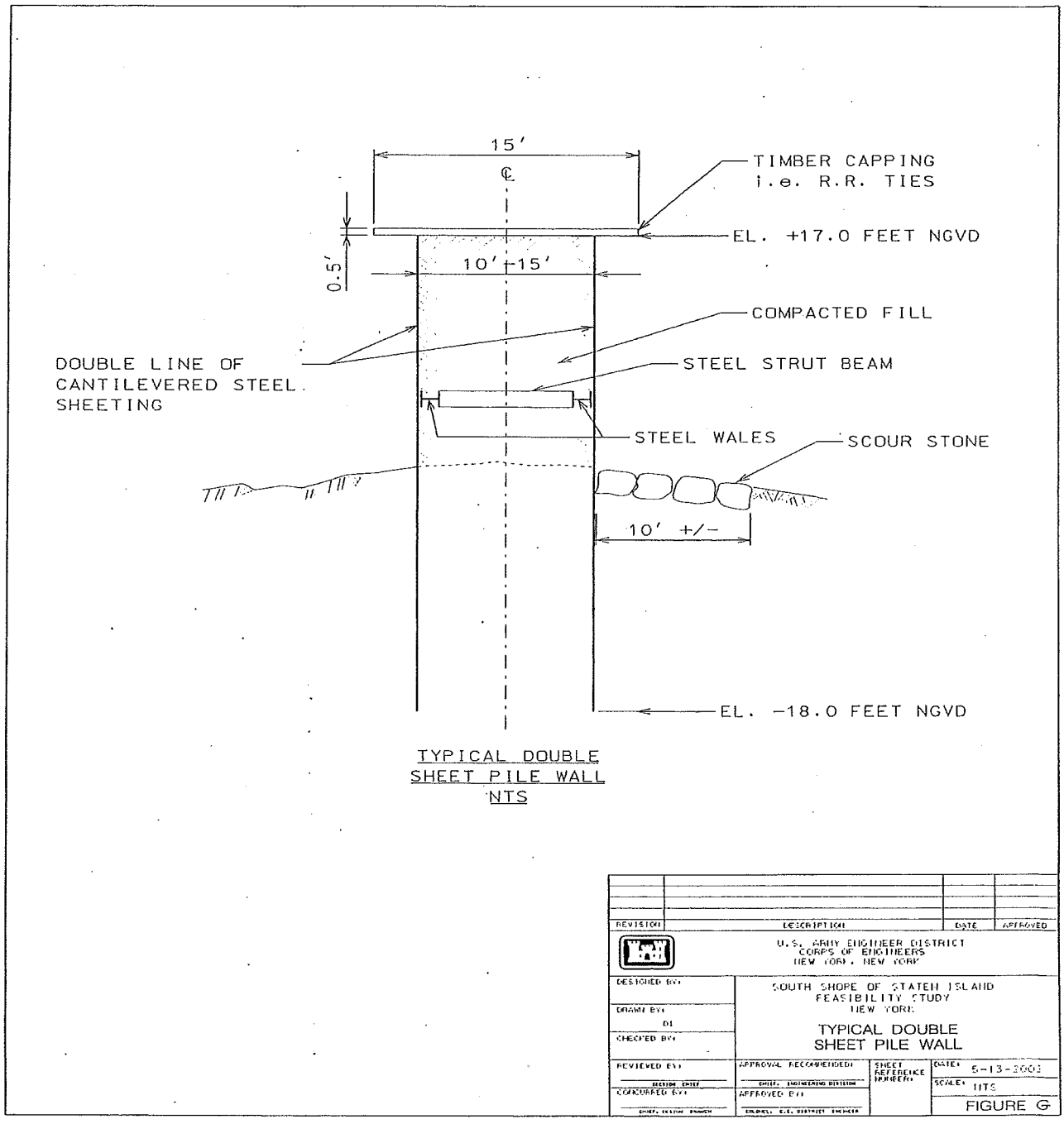


Figure 9: Proposed Line of Protection and Interior Drainage Facilities at Oakwood Beach

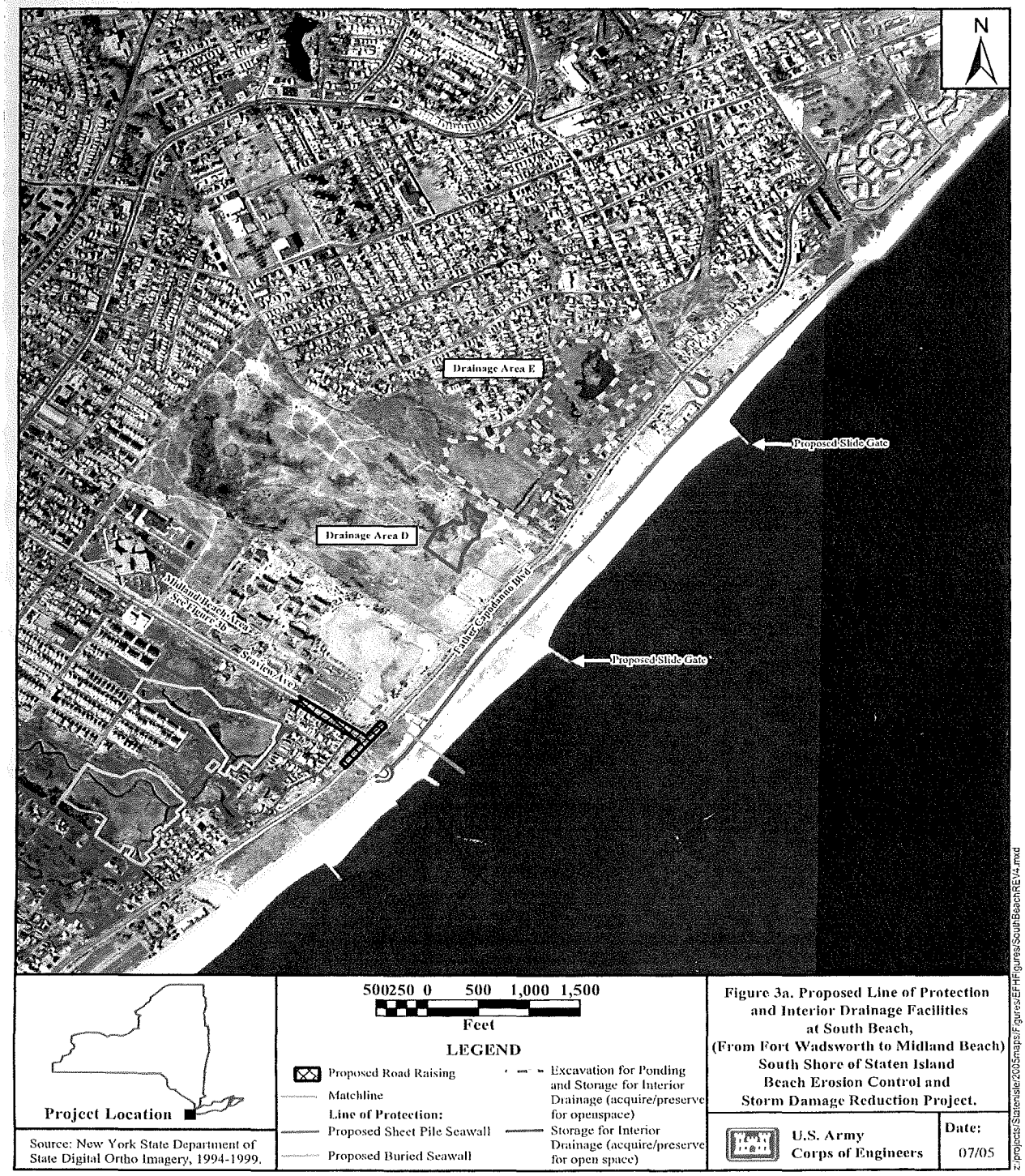


Figure 10: Proposed Line of Protection and Interior Drainage Facilities at Midland Beach

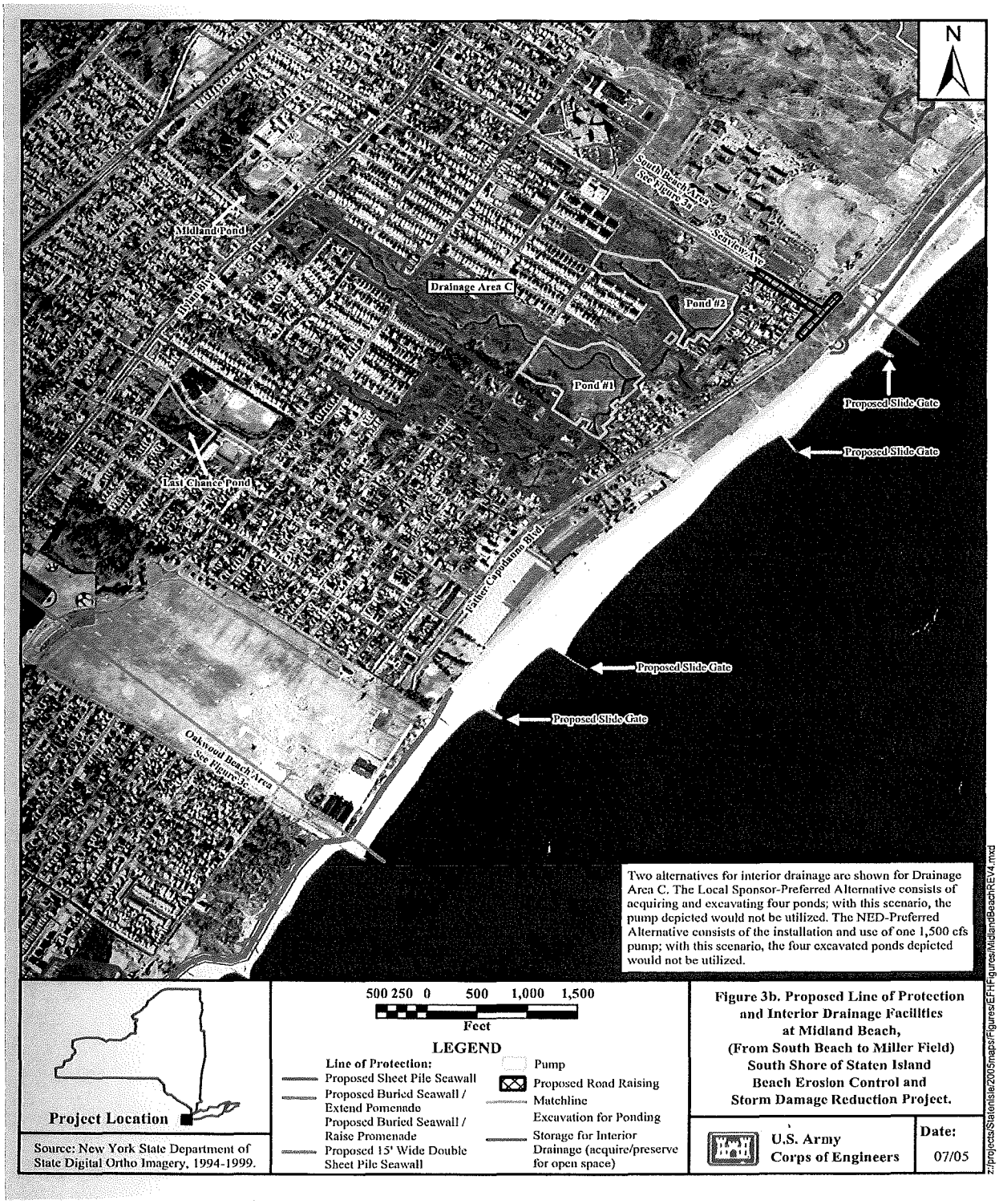


Figure 11: Proposed Line of Protection and Interior Drainage Facilities at South Beach

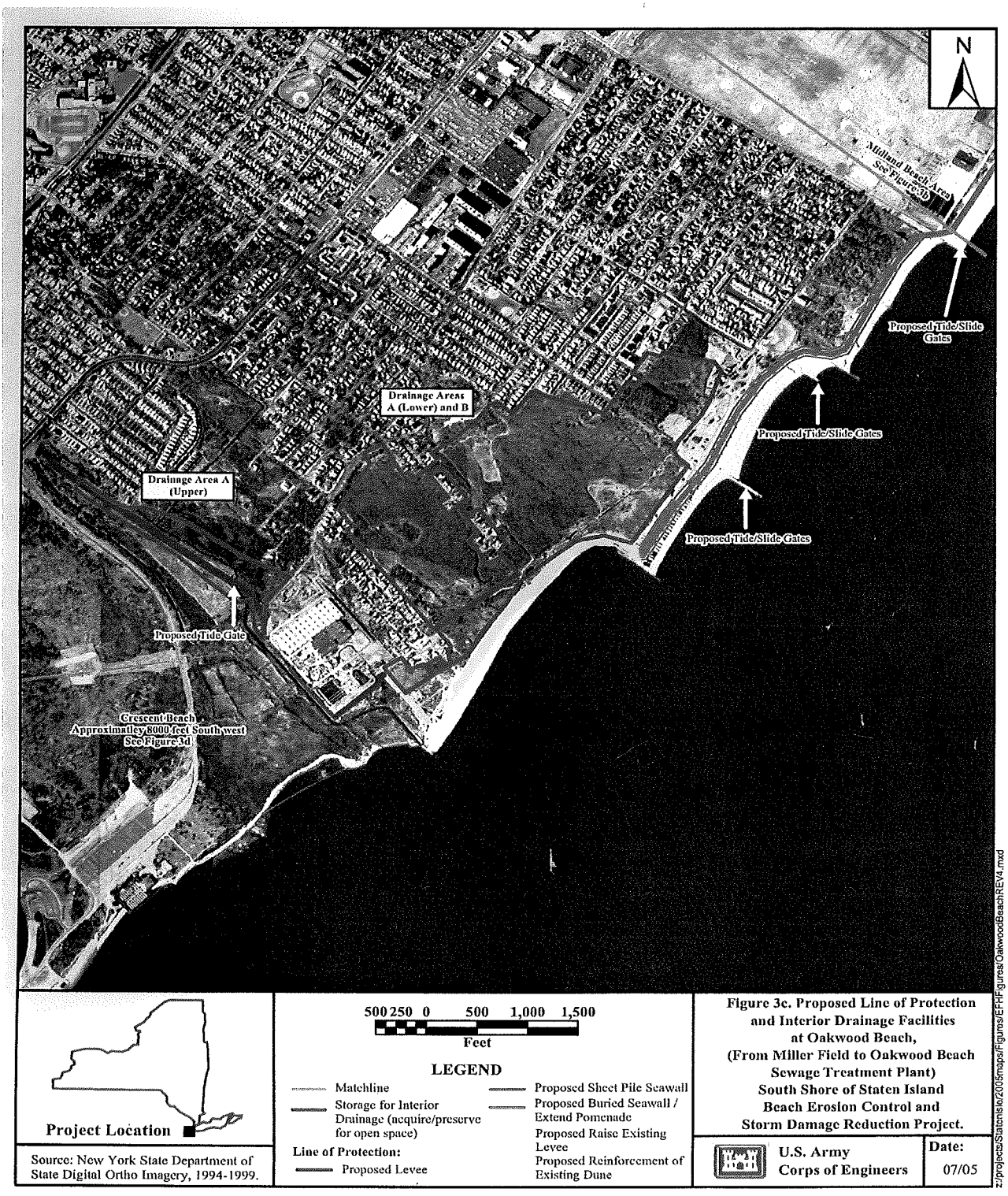
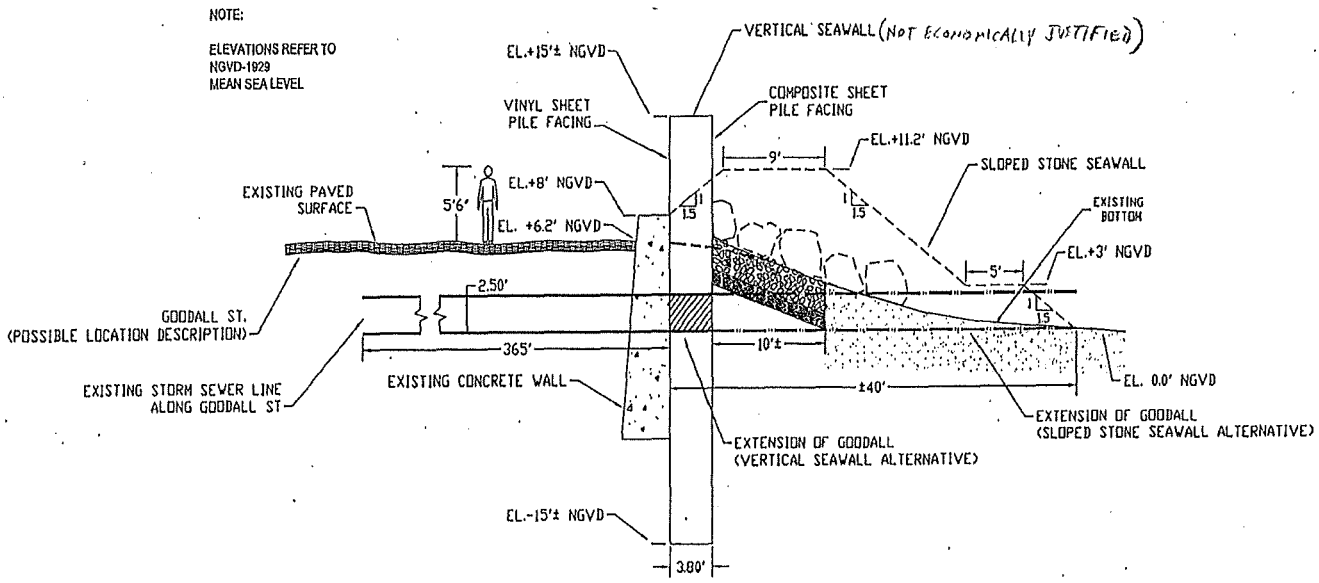
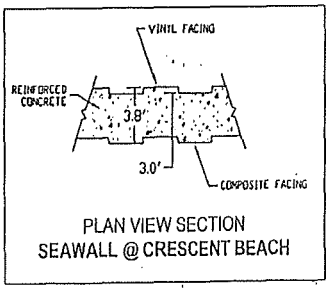


Figure 12: Typical Cross-Section of Seawall at Crescent Beach and Extension of Goodall Outfall



TYPICAL CROSS-SECTION
SEAWALL @ CRESCENT BEACH
AND
EXTENSION OF GOODALL OUTFALL



PLAN VIEW SECTION
SEAWALL @ CRESCENT BEACH

Figure K

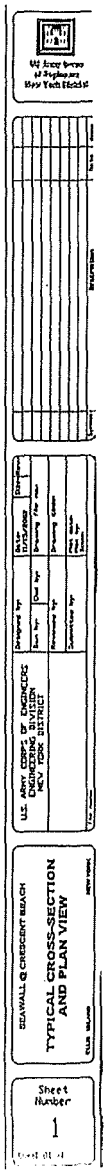


Figure 13: Typical Levee

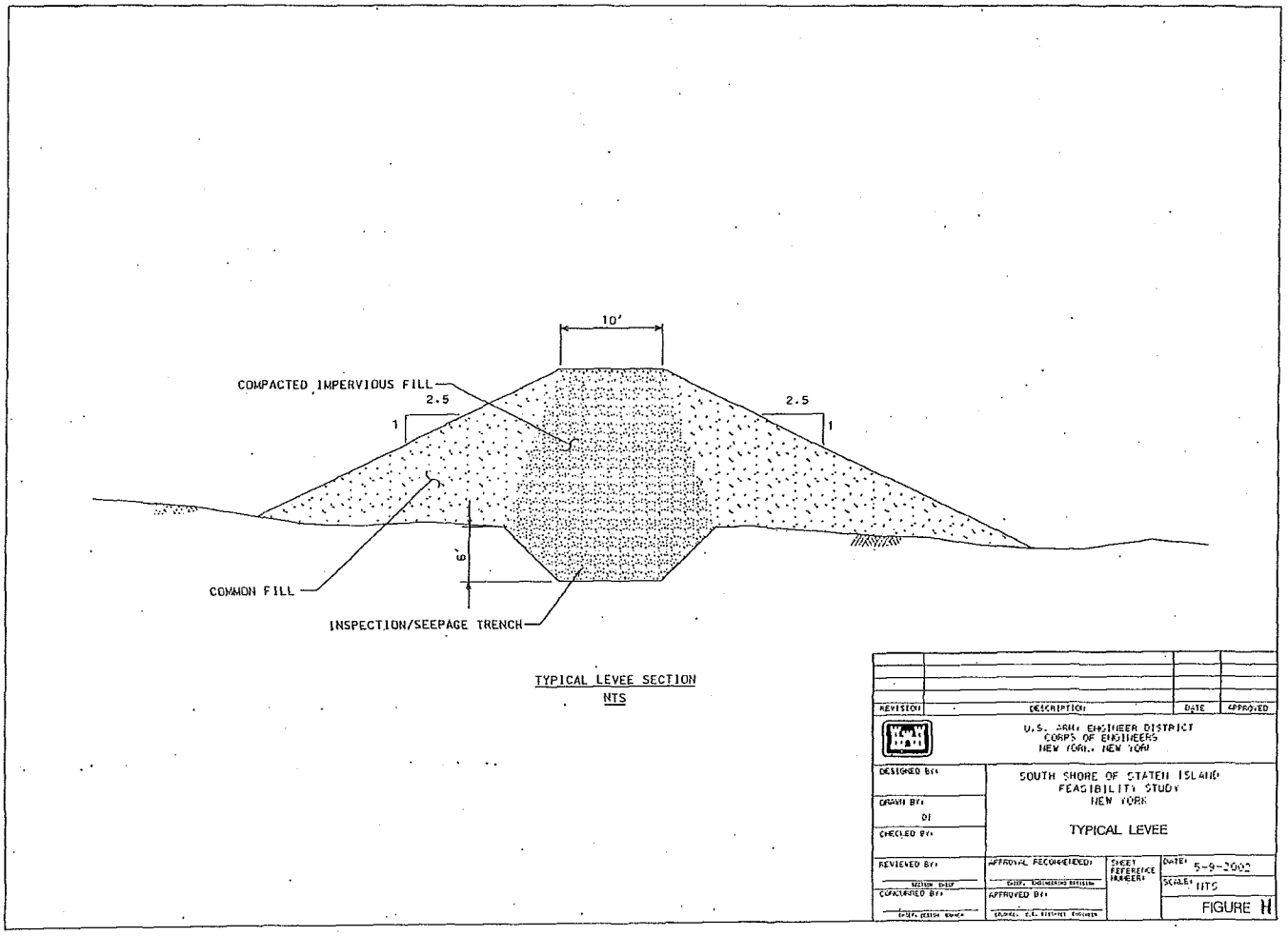
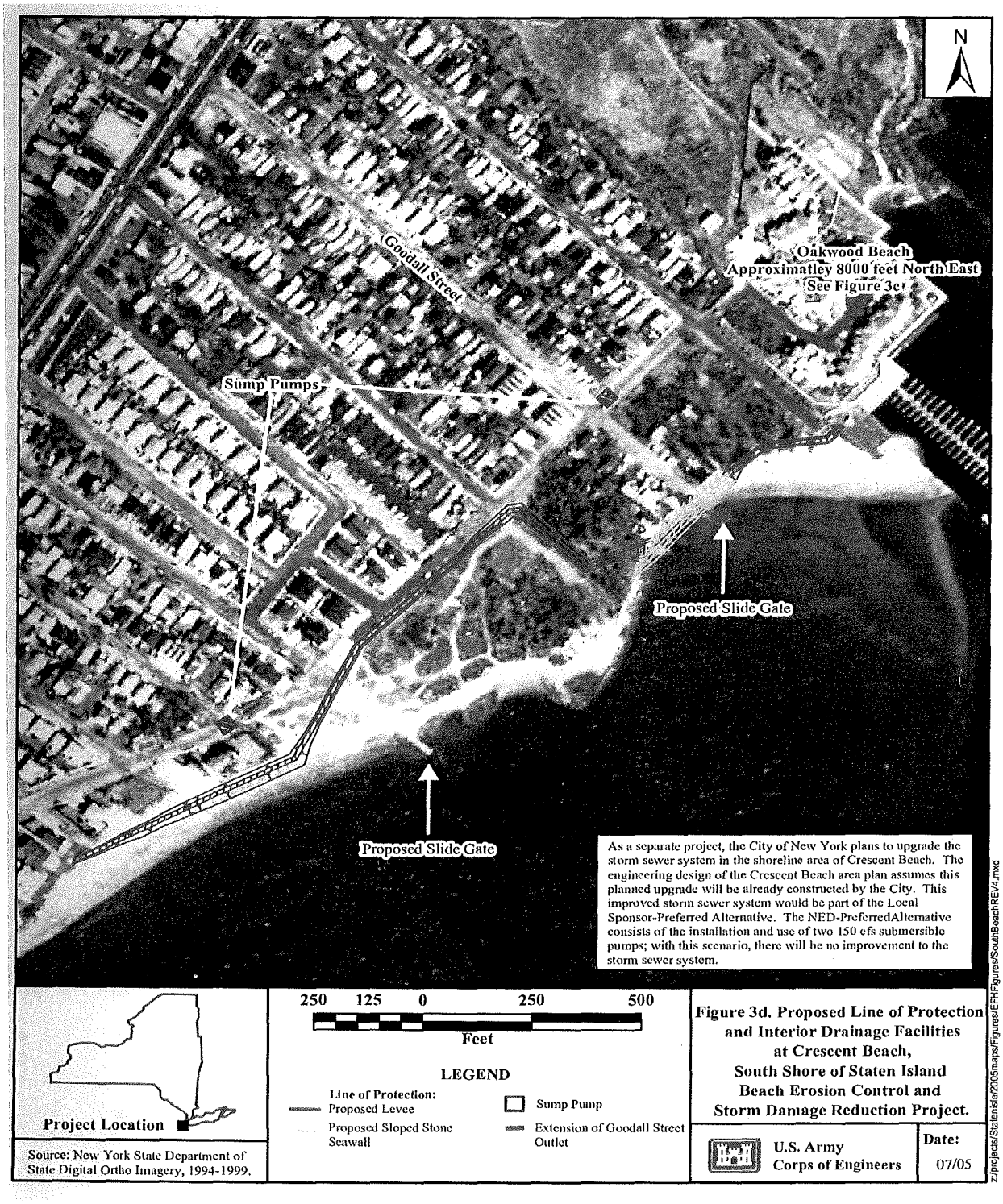


Figure 14: Proposed Line of Protection and Interior Drainage Facilities at Crescent Beach



DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

November 22, 1994

Environmental Assessment Section
Environmental Analysis Branch

Mr. J. Winthrop Aldrich
New York State Office of Parks,
Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, P.O. Box 189
Waterford, NY 12188-0189

Dear Mr. Aldrich,

The U.S. Army Corps of Engineers, New York District (Corps) is conducting a reconnaissance level study for a Section 14 flood control project at Oakwood Beach, Staten Island, Richmond County, New York.

A cultural resource assessment of the study area was undertaken by the Corps. The report is enclosed for your review. Please provide us with any comments you may have on our proposed strategy for archaeological investigations. As project planning proceeds, further cultural resource evaluation and consultation with your office will be undertaken.

If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, (212)264-4663. Thank you for your assistance.

Sincerely,

Enclosure

Stuart Piken, P.E.
Chief, Planning Division

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

Joan K. Davidson
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

December 6, 1994

Stuart Piken, P.E.
Chief, Planning Division
Environmental Analysis Branch
U.S. Army Corps of Engineers
New York District
Jacob K. Javits Federal Building
New York, New York 10278-0090

Attn: Lynn Rakos

Re: CORPS
Oakwood Beach Flood Control
Staten Island, Richmond Co.
94PR2506

Dear Mr. Piken:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO) with regard to the proposed strategy for archeological investigations associated with the above project. We have reviewed the proposal in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Based upon our review of *A Cultural Resources Reconnaissance Study, Oakwood Beach, Staten Island, Richmond County, New York*, prepared by Lynn Rakos and dated November 1994, the SHPO concurs with the conclusions and recommendation for subsurface testing at the location of the northern proposed levee only.

If you have any questions or comments on this matter, please contact me at **518/237-8643, ext. 280.**

Sincerely,

James Warren

James Warren
Program Analyst
Field Services Bureau

JPW:cm

Attachment 3

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

~~Jean K. Davidson~~
~~Commissioner~~
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

May 25, 1995

Stuart Piken
Chief, Planning Division
Department of The Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Piken:

Re: CORPS
Oakwood Beach Flood Control
Staten Island
94PR2506

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Based upon this review, the SHPO concurs with the recommendations of the Cultural Resource Reconnaissance Study. We look forward to receiving the results of the additional investigations when that work is completed.

When responding, please be sure to refer to the SHPO project review (PR) number noted above. If you have any questions, please feel free to call me at (518) 237-8643 ext. 255.

Sincerely,

Robert D. Kuhn, Ph.D.
Historic Preservation Coordinator
Field Services Bureau

RDK:cm

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

October 11, 1996

Stuart Piken, P.E.
Dept. of The Army
New York District - Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Piken:

RE: CORPS
Oakwood Beach Flood Control Project
Staten Island, Richmond County
94PR2506

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966.

Based upon this review, it is the SHPO's opinion that your project will have No Effect upon cultural resources eligible for inclusion in the National Register of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director, Historic Preservation
Field Services Bureau

RLP:cm

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

September 30, 1996

REPLY TO ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

Mr. J. Winthrop Aldrich
New York State Office of Parks,
Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, P.O. Box 189
Waterford, NY 12188-0189

Dear Mr. Aldrich,

The U.S. Army Corps of Engineers, New York District (Corps), is conducting studies at Oakwood Beach, Staten Island, Richmond County, New York in connection with the Oakwood Beach Section 103 Storm Damage Reduction Project, originally initiated under Section 14 authority. Our previous cultural resources study of this area, conducted in 1994, recommended subsurface testing along the northernmost of two proposed levee alignments. The cultural resources report resulting from the 1994 study was forwarded to you by letter dated November 22, 1994 (Attachment 1). The 1994 study was reviewed by your office as project number 94PR2506 (Attachments 2 and 3).

A limited program of subsurface testing was undertaken in August 1995 and prehistoric artifacts were recovered from several of the tests. Further investigations were anticipated, however, the project schedule was delayed due to extensive coordination with New York City planning agencies. During the delay, a private developer constructed several dwellings in the location of the proposed northern levee alignment and on the prehistoric site. As a result, project plans for the proposed northern levee were changed to reflect the presence of the new dwellings in the project area. The new plans, as proposed, call for segments of project area roads to be raised instead of the levee construction. Testing adjacent to the roads indicates that the area is disturbed by road construction. A recently installed sewer

line also impacted the preservation of intact soils in the project area. The attached document (Attachment 4) describes the fieldwork under-taken in 1995 and subsequent cultural resources activities conducted in August 1996.

The southern levee, as proposed, runs through the wetlands fringing the beach. This alignment has not changed. The 1994 study determined that subsurface testing for archaeological deposits was not necessary in this area and your office concurred with this assessment.

It is in the opinion of the Corps that the Oakwood Beach Section 103 Storm Damage Reduction Project will have no effect on any National Register of Historic Places properties or on any properties eligible for the Register if project plans remain as proposed and work is limited to the road rights-of-way. Please provide us with Section 106 comments, pursuant to 36 CFR 800.5.

If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (212)264-4663.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

Attachments

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

October 11, 1996

Stuart Piken, P.E.
Dept. of The Army
New York District - Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Piken:

RE: CORPS
Oakwood Beach Flood Control Project
Staten Island, Richmond County
94PR2506

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966.

Based upon this review, it is the SHPO's opinion that your project will have No Effect upon cultural resources eligible for inclusion in the National Register of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director, Historic Preservation
Field Services Bureau

RLP:cm

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
100 Old Slip, New York, NY 10005 (212) 487-6800

ENVIRONMENTAL REVIEW

USACE/106-R — PROJECT NUMBER

10/02/96 — DATE RECEIVED

PROJECT

OAKWOOD BEACH SECTION 103: OAKWOOD BEACH STORM DAMAGE RED

[X] No architectural significance

[ ] No archaeological significance

[ ] Designated New York City Landmark or Within Designated Historic District

[ ] Listed on National Register of Historic Places

[ ] Appears to be eligible for National Register Listing and/or New York City Landmark Designation

[X] May be archaeologically significant; ~~requesting additional materials~~ see below

COMMENTS

Results from the summary of archaeological investigations (Rakos 1996) are accepted. The Commission concurs with the Corps finding that the project will have no effect on any National Register of Historic Places properties or on any properties eligible for the Register if the proposed project plans remain as proposed and work is limited to the road rights-of-way.

Daniel Pagano — SIGNATURE

10/31/96 — DATE

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
100 Old Slip, New York, NY 10005 (212) 487-6800

ENVIRONMENTAL REVIEW

USACE/106-R — PROJECT NUMBER

10/02/96 — DATE RECEIVED

PROJECT

OAKWOOD BEACH SECTION 103: OAKWOOD BEACH STORM DAMAGE REDU

[X] No architectural significance

[ ] No archaeological significance

[ ] Designated New York City Landmark or Within Designated Historic District

[ ] Listed on National Register of Historic Places

[ ] Appears to be eligible for National Register Listing and/or New York City Landmark Designation

[X] May be archaeologically significant; requesting additional materials

COMMENTS

The archaeological field report and supplemental research (Rakos 1994) is accepted.

Daniel Pagano — SIGNATURE

10/31/96 — DATE

Attachment 3

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

~~Jean K. Davidson~~
~~Commissioner~~
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

May 25, 1995

Stuart Piken
Chief, Planning Division
Department of The Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Piken:

Re: CORPS
Oakwood Beach Flood Control
Staten Island
94PR2506

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Based upon this review, the SHPO concurs with the recommendations of the Cultural Resource Reconnaissance Study. We look forward to receiving the results of the additional investigations when that work is completed.

When responding, please be sure to refer to the SHPO project review (PR) number noted above. If you have any questions, please feel free to call me at (518) 237-8643 ext. 255.

Sincerely,

Robert D. Kuhn, Ph.D.
Historic Preservation Coordinator
Field Services Bureau

RDK:cm

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

19 July 2005

Environmental Analysis Branch

Ruth Pierpont, Director
New York State Office of Parks, Recreation & Historic Preservation
Historic Preservation Field Service Bureau
Peebles Island, P.O. Box 189
Waterford, New York 12188-0189

Re: CORPS
South Shore of Staten Island-Phase I Combined Erosion Control and Storm Damage Protection Feasibility Study
Richmond County, New York

Dear Ms. Pierpont:

The U.S. Army Corps of Engineers, New York District (Corps), is pleased to furnish you with a copy of *South Shore of Staten Island-Phase I Combined Erosion Control and Storm Damage Protection Feasibility Study.* This document will be included in the Feasibility Study that is being prepared for the South Shore of Staten Island Storm Damage Protection Feasibility Report.

In keeping with Section 106 compliance of the Historic Preservation Act of 1966, as amended, please provide any comments and/or concurrence with this report within 30 days of receipt of this letter.

Thank you for your participation in the Section 106 process for this project. If you have any questions, please contact the Project Archaeologist, Kirsten Davis, (212) 264-0248.

Sincerely,

Leonard Houston
Chief, Environmental Analysis Branch

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

July 9, 1997

Stuart Piken
Chief, Planning Division
Environmental Analysis Branch
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Piken:

Re: CORPS
South Shore Shoreline Protection
Project
Richmond County, NY
97PR1475

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the "Cultural Resources Reconnaisance Study of the South Shore of Staten Island," in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Based upon this review, the SHPO concurs with the recommendations of the study and we look forward to receiving the results of the additional investigations when that work is completed.

Please note that this letter replaces our letter of May 25, 1995, which incorrectly identified the project number and name.

When responding, please be sure to refer to the SHPO project review (PR) number noted above. If you have any questions, please feel free to call me at (518) 237-8643, ext. 264.

Sincerely,

Peter D. Shaver
Historic Preservation
Program Analyst

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

May 15, 1995

REPLY TO
ATTENTION OF

Environmental Analysis Branch
Environmental Assessment Section

Mr. J. Winthrop Aldrich
New York State Office of Parks,
Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, P.O. Box 189
Waterford, NY 12188-0189

Dear Mr. Aldrich,

The U.S. Army Corps of Engineers, New York District (Corps), is studying the feasibility of implementing a shoreline protection project along the south shore of Staten Island, from Fort Wadsworth to Annadale, Richmond County, New York. This work is being undertaken to examine current field conditions and study criteria to determine whether the recommendations of an earlier study remain valid or if other alternatives are necessary. Proposed project plans include levees, beach fill, flood walls and ponding areas.

The cultural resource appendix associated with this study, "A Cultural Resource Reconnaissance Study of the South Shore of Staten Island, Richmond County, New York," has been enclosed for your review. A substantial amount of information for this study was obtained from an earlier Corps survey entitled "Phase I: Cultural Resources Reconnaissance. Beach Erosion Control and Hurricane Protection Project at Staten Island" by Clara Lipson, John Piet, Michael Alterman and Kris Egelhof of the Museum of Archaeology at Staten Island. This earlier work was reviewed by your office in 1978 (letters attached).

Numerous prehistoric sites have been documented along Staten Island's New York Bay shoreline. The New York State Museum has assessed the project area as sensitive with regard to Native American cultural resources. Of particular concern are areas of higher ground above what were once marshes such as in the vicinity of Fort Wadsworth and Oakwood Beach. Subsurface testing is proposed for a portion of high ground at Oakwood Beach for an on-going Corps project that ties into this current study. The cultural resources reconnaissance report for Oakwood Beach was supplied to your office for review in November 1994 (letters attached).

Historically, stretches of the south shore experienced substantial development. Two areas, Oude Dorp and Oakwood Beach, were the sites of 17th and 18th century settlements. South Beach and Midland Beach were lined with seaside amusements and amenities in the late 19th and early 20th centuries. A portion the Miller Airfield at New Dorp Beach is listed on the National Register of Historic Places. A group of turn-of-the-century wooden bungalows in Cedar Grove may form an historic district.

On the basis of current project plans, and pending review by your office, the Corps is of the opinion that the project feasibility phase should include additional historical research coupled with selected subsurface testing to identify archaeological sites and determine their eligibility. Standing historic structures should also be evaluated for significance. Please provide us with any comments you may have on the findings and recommendations of this study.

If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, (212)264-4663. Thank you for your assistance.

Sincerely,

Stuart Piken

Attachments

Stuart Piken, P.E.
Chief, Planning Division

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

November 22, 1994

Environmental Assessment Section
Environmental Analysis Branch

Mr. J. Winthrop Aldrich
New York State Office of Parks,
Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, P.O. Box 189
Waterford, NY 12188-0189

Dear Mr. Aldrich,

The U.S. Army Corps of Engineers, New York District (Corps) is conducting a reconnaissance level study for a Section 14 flood control project at Oakwood Beach, Staten Island, Richmond County, New York.

A cultural resource assessment of the study area was undertaken by the Corps. The report is enclosed for your review. Please provide us with any comments you may have on our proposed strategy for archaeological investigations. As project planning proceeds, further cultural resource evaluation and consultation with your office will be undertaken.

If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, (212)264-4663. Thank you for your assistance.

Sincerely,

Enclosure

Stuart Piken, P.E.
Chief, Planning Division

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE
Joan K. Davidson
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

December 6, 1994

Stuart Piken, P.E.
Chief, Planning Division
Environmental Analysis Branch
U.S. Army Corps of Engineers
New York District
Jacob K. Javits Federal Building
New York, New York 10278-0090

Attn: Lynn Rakos

Re: CORPS
Oakwood Beach Flood Control
Staten Island, Richmond Co.
94PR2506

Dear Mr. Piken:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO) with regard to the proposed strategy for archeological investigations associated with the above project. We have reviewed the proposal in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Based upon our review of *A Cultural Resources Reconnaissance Study, Oakwood Beach, Staten Island, Richmond County, New York*, prepared by Lynn Rakos and dated November 1994, the SHPO concurs with the conclusions and recommendation for subsurface testing at the location of the northern proposed levee only.

If you have any questions or comments on this matter, please contact me at **518/237-8643, ext. 280.**

Sincerely,

James Warren

James Warren
Program Analyst
Field Services Bureau

JPW:cm

NEW YORK STATE PARKS & RECREATION Agency Building 1 Empire State Plaza, Albany New York 12238 Information 518 474-XXXX
Orin Lehman Commissioner

3176

May 10, 1978

Mr. J.A. Weiss
Chief, Engineering Division
Department of the Army
N.Y. District Corps of Engineers
26 Federal Plaza
New York, N.Y. 10007

Dear Mr. Weiss:

Re: Staten Island Beach Erosion
and Hurricane Protection

The State Historic Preservation Officer has reviewed the Cultural Resource Reconnaissance Report for the above referenced project. As outlined in the report, Section I contains three(3) areas of concern. It is recommended that a Stage II investigation be carried out on the Britton Cottage Site if this site is to be impacted. The Lake Tide Mill Site within the Great Kill Park Area and the Oude Dorp Area should be tested to determine extent of disturbance and to locate any buried cultural remains. Within Section 2, it is recommended that the shipwreck and area around the Wolfe's Pond and Farmhouse should have a Stage I investigation. Section 3 contains two areas where a Stage I investigation is recommended. These are The Tottenville Beach Area and the Barron Area.

Should you have any questions regarding these recommendations, please contact Bruce Fullem at 518-474-3176.

Sincerely,

Stephen J. Raiche
Director
Historic Preservation Field
Services

SJR:mr

NEW YORK STATE PARKS & RECREATION Agency Building 1 Empire State Plaza, Albany New York 12238 Information 518 474-XXXX
Orin Lehman, Commissioner

3176

May 26, 1978

Mr. J.A. Weiss
Chief, Engineering Division
Dept. of the Army
New York District, Corps of Engineers
26 Federal Plaza
New York, N.Y. 10007

Dear Mr. Weiss:

Re: Beach Erosion and Hurricane Protection Facilities
Fort Wadsworth to Arthur Kill
Staten Island South Shore
Richmond County
Cultural Resource Reconnaissance Report

The State Historic Preservation Officer's staff has reviewed the cultural resources report for the above project which was submitted by you on March 30.

No cultural resources were identified through testing in the Oakwood Beach area. Therefore, the project will have no effect in this location.

The Great Kill Park area contains the site of a Lake Tide Mill. It is not clear whether or not the project will have an effect upon this site.

With regard to the New Dorp Beach area - Britton Cottage; will the project have a direct effect upon this site? If so, the need for further investigation should be discussed.

We recommend that the Corps determine the extent of prior disturbance in the Oude Dorp area. The test borings could probably be used for this purpose.

The effect of the project in the Wolfe's Pond area is not clear. It is recommended that the shipwreck and the area containing Wolfe's Pond and farmhouse be investigated if there will be any effect.

The presence or absence of cultural resources has not been determined in the Tottenville Beach or borrow areas.

Should you have any questions, please contact the project review staff at 518-474-3176.

Sincerely,

F.L. Rath, Jr.
Deputy Commissioner for
Historic Preservation

LRK:mr