UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930

March 29, 2023

Colonel Matthew W. Luzzatto
District Engineer
New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

RE: New York / New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study: Draft Integrated Feasibility Report and Tier 1 Environmental Impact Statement

Dear Col. Luzzatto:

We have reviewed the New York-New Jersey Harbor and Tributaries (NYNJHAT) Coastal Storm Risk Management (CSRM) Feasibility Study Draft Integrated Feasibility Report (DIFR) and Tier I Environmental Impact Statement (EIS) (collectively, DIFR-EIS) and accompanying Essential Fish Habitat (EFH) Assessment and Biological Assessment (BA) developed by the U.S. Army Corps of Engineers (USACE), New York District (District), in partnership with the New York State Department of Environmental Conservation (NYSDEC) and New Jersey Department of Environmental Protection (NJDEP). The report presents preliminary findings of a study to determine the feasibility of constructing CSRM strategies for the network of tidally influenced areas within the New York metropolitan area, including New York City and the six largest cities in New Jersey. According to the document, the objective of the NYNJHAT CSRM Study (Study) is to determine the feasibility of constructing a technically feasible, environmentally acceptable, and economically justified project that will manage coastal storm risk while supporting the study area's economic and community resilience. We are a cooperating agency in the National Environmental Policy Act (NEPA) process.

The DIFR-EIS discusses a Tentatively Selected Plan (TSP) for the study area, which includes more than 2,150 square miles and comprises parts of 25 counties in New Jersey and New York. As described in the DIFR-EIS, the TSP measures include multi-basin Storm Surge Barriers (SSBs), Shore-Based Measures, complementary Induced Flooding-Mitigation Features (IFFs) and Risk Reduction Features (RRFs). Specifically, the TSP includes:

- Storm surge barriers and complementary shore-based measures (i.e., floodwalls, levees, elevated promenades, buried seawalls/dunes, revetments, berms, bulkheads, pedestrian/vehicular gates, and road raisings) across twelve basins (i.e., Jamaica Bay, Arthur Kill, Kill Van Kull, Gowanus Canal, Newtown Creek, Flushing Creek, Sheepshead Bay, Gerritsen Creek, Hackensack River, Head of Bay, Old Howard Beach East, and Old Howard Beach West).
- Risk Reduction Features (RRFs) which are undefined but appear to include land-based or water-based structural features such as tide gates, floodwalls, and revetments to provide

CSRM in areas behind storm surge barriers that may experience high frequency flooding when the barriers are not operated.

- Induced Flooding-Mitigation Features (IFFs) which are undefined but appear to include similar structural features as RRFs to provide CSRM in areas in front of storm surge barriers that may experience induced flooding due to operation of the barriers.

The TSP also includes conceptual options for non-structural measures such as structure elevations and floodproofing as well as some conceptual ideas for natural and nature-based features (NNBF) such as wetlands and living shorelines. Both non-structural and NNBF locations are to be further refined in the Final IFR-EIS.

We recognize that the Council on Environmental Quality (CEQ) (40 CFR 1508.28) and USACE (33 CFR 230.13) regulations allow NEPA studies for large, complex projects such as this one to be carried out in a multi-stage or "tiered" process and that NEPA documents prepared using this approach to describe the project and its impacts at a broader level while taking into account the full range of potential effects to both the human and natural environment. However, significant deficiencies exist in the document and in the coordination process used in its development. As a result, at this time we cannot support carrying forward the TSP, as it is currently described, into a Final Integrated Feasibility Report-Environmental Impacts Statement and subsequent Chief's Report to Congress. We recommend that the District re-evaluate the actions proposed in the TSP and develop a revised plan that evaluates, avoids, and minimizes effects to NOAA trust resources and coastal ecosystems, prioritizes the use of non-structural and other land use management options and natural and nature-based solutions, and is consistent with the NOAA/USACE Infrastructure Systems Rebuilding Principles developed in 2013 which include improving coastal resilience by pursuing a systems approach that incorporates natural, social, and built systems as a whole.

As stated in our letter dated May 19, 2022, we are unable to initiate consultation under Section 7 of the Endangered Species Act (ESA) or under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for essential fish habitat (EFH) based upon the level of information available in a Tier 1 NEPA document. As a result, our comments on DIFR-EIS in the enclosed attachment represent technical assistance to inform your decisions and project planning as the Study moves forward. We caution, however, that based upon the information available, the actions currently included in the TSP (i.e., storm surge barriers across twelve basins) will have significant negative consequences to NOAA trust resources including federally managed species for which EFH has been designated and other commercially, recreationally, and ecologically important species. We recognize that the USACE's SMART (Specific, Measurable, Attainable, Risk Informed, Timely) Planning process and the tiered NEPA approach are intended to allow for an iterative process based upon risk-informed decision points. However, the low level of information available in the DIFR-EIS on the existing conditions and resources within the study area, the lack of details on the proposed structural components of the TSP including the materials and methods of construction, and the high degree of uncertainty regarding the adverse ecological effects of the TSP actions prevent a robust evaluation of the direct, indirect, individual, and cumulative impacts on aquatic resources including EFH and ESA-listed species.

We are also concerned that meaningful early interagency coordination to inform the development of the TSP and DIFR-EIS did not occur as described in the *U.S. Army Corps of Engineering*

SMART Planning Feasibility Studies: A Guide to Coordination and Engagement with the Services (USACE 2015) developed jointly by USACE, NOAA's National Marine Fisheries Service (NMFS) and the US Fish and Wildlife Service (FWS). In this guidance document, the USACE recognizes the importance of substantive, early engagement and the need to ensure NMFS and FWS (collectively called the "Services") are fully informed, engaged, and able to review and shape project proposals. While we have participated in a number of interagency webinars and public meetings and have provided comments during project scoping and throughout the Study, these efforts did not result in any meaningful discussions of project modifications to avoid or minimize adverse effects to our resources, the inclusion of studies, or the collection of data to adequately evaluate the effects of the TSP on aquatic resources. In addition, we were provided with an incomplete DEIS document eleven working days prior to public release as part of the cooperating agency review. We did not provide the District with comments on the draft, as the time provided was not sufficient for us to review the document and to provide meaningful comments, nor was there sufficient time for the District to consider and incorporate our comments into the document prior to its release to the public. We were also not included as members of the Project Delivery Team (PDT) as allowed for in the 2015 guidance and have not been fully engaged during the scoping and alternatives evaluation and analysis phase of the Study. For a study of such a large scope and degree of potential effects to fish and wildlife, our participation on the PDT could have greatly benefited the feasibility study process.

Although we cannot support the TSP as currently proposed, we are available to work collaboratively with the USACE, NYSDEC, NJDEP, and other federal, state, and local agencies and stakeholders on the development of a plan that identifies practicable solutions to reduce damages from coastal flooding that affect population, critical infrastructure, property, and ecosystems while minimizing adverse impacts to NOAA trust resources and coastal ecosystems. We are also available to discuss data gaps, information needs, and the required consultations with you or your staff if you have any questions about our comments. If you would like to discuss this matter further, please contact Jessie Murray at (732) 872-3116 or jessie.murray@noaa.gov with our Habitat and Ecosystem Services Division and/or Edith Carson-Supino at (978) 282-8490 or edith.carson-supino@noaa.gov with our Protected Resources Division.

Sincerely,

Michael Pentony
Regional Administrator

cc: USACE NAN - P. Weppler. C. Alkemeyer, C. Scarpa
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ATTACHMENT– NOAA FISHERIES Comments
U.S. Army Corps of Engineers, New York-New Jersey Harbor and Tributaries
Coastal Storm Risk Management Feasibility Study
Draft Integrated Feasibility Report/Tier 1 Environmental Impact Statement

As discussed in the attached cover letter, we are unable to initiate consultation under Section 7 of the Endangered Species Act (ESA) or under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for essential fish habitat (EFH) based upon the information developed for a Tier 1 NEPA document. As a result, our comments on the DIFR-DEIS represent technical assistance to inform your decisions and project planning as the Study moves forward. Because the effects of the TSP implementation are difficult to find in the document and significant gaps in the information used by the District to develop the TSP appear to exist, the technical assistance comments provided below are grouped into broad general categories and do not generally include specific comments on individual sections of the document.

General Comments

In our scoping comments, dated November 26, 2018, we identified a number of important habitats and a wide variety of species that occur within the study area including federally managed species, diadromous species, shellfish, and other commercially and recreationally valuable species. In this letter, we stated that any analyses of environmental impacts of the proposed project should include impacts of each project component, as well as cumulative impacts to the hydrology and ecology of New York Harbor and its tributaries, estuaries and embayments. We recommended that detailed hydrologic modeling be conducted to provide information on impacts in terms of changes in tidal regime, tidal flushing, flow velocity, scour, sedimentation rates, and current patterns, as well as the effects of the storm surge barriers (SSB) and other proposed features on the ecology and water quality of each impacted system. Further, because many fish species in the New York Harbor estuary and its tributaries migrate between the ocean, bays, and rivers of the study area during various life stages, we recommended that an analysis of current literature be conducted to evaluate ingress and egress of all life stages of certain species over each season, supplemented by field studies to address any gaps in information. We offered to assist the District in determining the NOAA resources that would require detailed evaluation of migration patterns and habitat use, but we were not contacted in response to this offer and the DIFR-DEIS does not appear to have addressed the issues raised in these comments.

In addition, we offer the following general and topic specific comments:

- The broadness of the document does not account for the full range of potential effects and fails to fully consider a number of significant issues including many of the direct, indirect and cumulative effects of the TSP on NOAA trust resources and other natural and ecosystem functions, as well as the synergistic effects of storm surge, precipitation and other coastal storm induced weather conditions.
- The Study should consider the outcomes of similar USACE coastal barrier projects, including lessons learned and more favorable solutions that prioritizes the environment

and overall ecosystem. Such projects include:

  - The City of Boston, which determined "Shore-based solutions would provide flood management more quickly at a lower cost, offer several key advantages over a harbor-wide barrier, and provide more flexibility in adapting and responding to changing conditions, technological innovations, and new information about global sea level rise."
  - The May 2022 Metropolitan Washington District of Columbia CSRM Study screened out storm surge barriers due to both hydraulic and environmental constraints.
  - The TSP for the Nassau County Back Bay Study currently favors non-structural solutions to coastal storm flooding rather than SSBs.

- The document appears to be fundamentally biased towards structural elements. The use of SSBs alone are assumed to cause high frequency flooding and induced flooding so additional structural features (i.e., RRFs and IFFs), which will require increased disturbances and offsets, have also been incorporated into the project. Non-structural and NNBF features are both conceptual in design and location and appear to be an afterthought instead of a first line of defense prior to structural measures. We recommend that the USACE pursue a more consistent national approach in limiting the use of structural solutions to climate and storm resilience and prioritize NNBF, nonstructural solutions and land use management options. The NOAA/USACE Infrastructure Systems Rebuilding Principles developed in 2013 should be used as a guide.
- The document recognizes that the TSP has the potential to affect noise, sediment transport, hydrodynamics, and prey, entrain early life stages, prevent fish passage or spawning, and alter habitats. However, potential impacts are categorized conceptually and not quantified. As a result, the ecological consequences of the implementation of the TSP cannot be fully identified or understood without additional data collection and analysis.
- The document does not clearly explain how adverse impacts have been avoided or minimized or the amount and type of compensatory mitigation that will be necessary to offset all of the direct and indirect impacts of the implementation of the TSP.
- Modeling does not currently include both open and closed gate scenarios and will be unable to compare open gate/closed gate impacts to the estuary and associated habitats until the Final Integrated Feasibility Report and Tier 1 Environmental Impact Statement (FIFR-EIS). This is a significant data gap that prevents any meaningful evaluation of the potential ecological consequence of the construction and operation of these features.
- The Study fails to emphasize the high degree of uncertainty associated with the impacts of the structural components of the TSP. This uncertainty does not appear to have factored into the USACE Plan Formulation Process.
- Construction methods and the Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) are too generalized and do not include specifics on equipment and materials. There is no estimate of the amount of fill that may be required, no schedule provided for the different construction components, total temporary and permanent impacts are not quantified, and there is no discussion on how the barriers will operate (e.g., storm thresholds and duration to deploy) or how the permanent features will block waterways and affect flow. Without this information, the direct, indirect, individual and

synergistic effects of TSP implementation cannot be identified or evaluated.

- As indicated in the DIFR-DEIS, the study area encompasses a number of known contaminated sites, including Superfund designated sites, as well as waste water treatment plant effluents, combined sewer overflows, and other stormwater runoff. However, the Study lacks a full analysis of the potential direct, indirect, and cumulative effects contaminants may have to species and their habitats as result of the proposed project during both construction and once the structures are in operation.
- The impact assessment ratings provided need more explanation and should be supported by a peer-reviewed methodology. It is unclear how potential impacts were scored (i.e., are the scores based on direct, indirect, or cumulative impacts or an average of all impacts). Scores appear to be heavily biased and assume little to no impact from the selected structural elements. Without a complete discussion on the full range of direct, indirect, and cumulative effects of TSP or other alternatives, the scores are currently incomplete and appear to be inaccurate.

Climate

- The primary objective of the Study is to evaluate measures to reduce flooding. While current and future flooding is and will be driven primarily by climate change, little effort is made in the DIFR-EIS to evaluate the effects of climate change on coastal resources or the built infrastructure, or how the various alternatives may be affected by climate change. For example, Section 2.3.6 fails to characterize and discuss the effects of climate change in the study area. Generic excerpts are also provided in this section from an Intergovernmental Panel on Climate Change (IPCC) 2022 report, which includes a discussion about North America as a whole and refers to wildfires in western North America, which has no bearing on this Study. There are many recent peer-reviewed publications for this region on sea level rise, storm effects, increased temperature and precipitation (especially increases in extreme precipitation) that should be incorporated for a more appropriate discussion. Examples include the National Climate Assessment for the Northeast Region and Coastal Effects, the 2020 New Jersey Scientific Report on Climate Change, as well as information available on the New York Climate Science Clearinghouse.
- Precipitation, storm water runoff, increases in storm frequency and intensity, will all affect flooding, yet are not discussed in the report.
- The USACE's "intermediate" SLR scenario may also be a substantial underestimation for end-of-century projections in New Jersey. The USACE's "intermediate" scenario of 2.54 feet (0.8 meters [m]) would assume substantial reduction in greenhouse gas emissions over the next few decades, and this projection is not likely for 2100. This potential significant underestimation of SLR could have a major bearing on the project lifespan and efficacy. In our Guidance for Integrating Climate Change Information in Greater Atlantic Region Habitat Conservation Division Consultation Processes, we recommend that Sweet et al. (2022) global SLR scenarios be used. The intermediate (1.0 m), intermediate-high (1.5 m), and high (2.0 m) are recommended. For the New York (Battery) area, the downscaled SLR projections would be 1.17 m, 1.54 m, and 1.98 m higher sea levels for the intermediate, intermediate-high, and high projections, respectively, in 2100.
- While we agree with the upper range of 2 meters for SLR by 2100, we do not agree with

the 0.2-meter lower range. Several studies have projected the lower range of SLR by 2050 at 0.2 to 0.3 meters above 2015 levels (Park et al. 2023; Sweet et al. 2022). The lower SLR bound for 2100 by these studies is around 0.53 m, more than two times what is projected in this Study. Furthermore, a number of recent studies have documented higher melt rate from the Antarctic and Arctic ice sheets than previously recorded, resulting in higher SLR projections. Because the probability for the 0.2 m SLR projection for 2100 is so low, its application for selecting alternatives for this Study may result in flawed assumptions that could increase flooding impacts. For example, Sweet et al. (2022) reported that the probability of exceeding the low SLR scenario (0.3 m) under a 1.5 degree C and 2.0 degree global warming scenario in 2100 is 92% and 98%, respectively.

- Regarding the use of the USACE SLR projection of 0.5 m for this Study, several sections of the report cite other studies that project much higher SLR without explaining how this might affect their evaluation or conclusions. The low scenario in the USACE projections is also a foot lower than the NOAA projections.
- The document mentions in several sections that the frequency and intensity of coastal storms will increase, or precipitation intensity will increase, yet they fail to quantify these changes and include them into their analysis. The National Climate Assessment reports and other publications provide projections for these climatic changes, and should be used to update the information in the DIFR-EIS. Otherwise, the assumptions and proposed alternatives will be flawed and can result in greater flood impacts than anticipated.
- It is clear gate closures will occur more frequently as sea levels and storms increase, and this will have cumulative, additive, and synergistic effects on coastal resources. However, it does not appear that this was considered in the Study. This is very concerning because the impacts of gate closures will presumably increase over time and could eliminate all or most of the tidal resources inside the gates. As a result, the long-term consequences of the increasing frequency of SSB and tide gate closures should be fully evaluated and incorporated into the Study.

Habitats and Aquatic Resource Issues

- A thorough baseline of existing habitat conditions, aquatic resources, and listed species present is paramount to understanding the direct, indirect, individual, cumulative, and synergistic effects of the construction and implementation of the TSP. It is essential that this information and analysis be completed to inform the development of the FIFR-EIS, and not during the PED phase as there is a high risk that potential and expected impacts of the TSP are greater than what can be rectified by design modification of the current TSP and viability of being able to offset adverse effects through compensatory mitigation is highly uncertain.
- Baseline data should be collected over multiple years and seasons to gain a full understanding of the aquatic resources and their interannual dynamics within the Study area, as well as, how any of the USACE's proposed actions will affect their long-term productivity and persistence, changes in habitat quantity and quality, as well as local and regional fisheries production.
- Additional hydrodynamic modeling and fish census studies are necessary to better understand residence times within the study area and how recruitment through egg and larval transport may be impacted by the TSP before proceeding with implementation.

- Impacts and mitigative measures to larval transport should be clearly described and quantified.
- Uninhibited aquatic connectivity is essential for the completion of the complex life histories exhibited by diadromous Atlantic coast species of fish such as alewife and blueback herring (collectively known as river herring), American shad, striped bass, and American eel. Because most of these populations are currently at historical lows, reductions in connectivity between freshwater and marine habitats could lead to the further irreversible diminishment of their population size and genetic diversity. Hydrodynamic modeling with gates closed and open is needed to understand how changing velocities and reduced cross sections of the inlets caused by the SSBs will change migratory pathways in and out of their natal streams and estuaries, the energetic demand to complete these migrations, juvenile overwintering ground connectivity, spawning success, quality for the nursery habitat, and ultimately the persistence of these species.

Special Aquatic Site Identification and Mapping

- The preliminary plans in the report do not show how the structural components of the TSP overlap with the existing habitats due to a lack of site specific surveys of wetlands, SAV, and geotechnical and hazardous, toxic, and radioactive wastes (HTRW), which makes it impossible to understand and evaluate the temporary and permanent impacts to these habitats by the construction of these features.
- Site specific plans should include up to date and delineated surveys of all special aquatic sites as defined by the CWA Section 404(b)(1) Guidelines (Guidelines) with the inclusion of bathymetry and mean high water (MHW) and mean low water (MLW) lines.
    - We recommend that the aquatic habitat areas be classified using Cowardin (1979) and fully break out the habitats by system, subsystem and class.
    - Aquatic habitat classifications should be grouped appropriately and separated by resource use (e.g. separating low marsh and high marsh areas) to portray properly what aquatic resources and ecosystem services may be impacted by the proposed TSP actions.
- Mapped aquatic habitats should be overlaid on site plans to more accurately quantify the direct impacts from the TSP.

Winter Flounder

- Changes in water velocities, increased turbidity, and the subsequent deposition of suspended sediments near the structural CSRM measures including the SSB could smother the winter flounder eggs and would adversely affect their EFH. Specific data on the current velocities and hydrodynamic modeling with gates closed and open is necessary to evaluate the suitability of CSRM feature locations as spawning habitat.

Prey Resources

- The indirect effects of this project are concerning as they are not well defined in the DIFR-EIS. In particular, we have concerns with changes in benthic habitat and the potential effects on prey species. These effects could lead to a more limited use of the area by federally managed species, listed sea turtles, and Atlantic sturgeon, and should be analyzed.

- Impacts to the various prey items may adversely affect EFH and our managed species. Any EFH assessment developed for the proposed action should include a thorough discussion of the different prey items available within the study area and include how prey species would be impacted directly, indirectly or cumulatively by the implementation of the TSP.
- For an appropriate analysis, additional studies including multi-year, multi-season benthic and fisheries surveys are needed to better define the prey resources within the study area.

Water Quality

- The DIFR-EIS does not fully evaluate the direct, indirect, individual, cumulative, and synergistic effects of the TSP on water quality. Water velocities through reduced channel dimensions have the potential to increase near the SSBs and decrease in other parts of the estuary, thus altering flow patterns, water circulation, and residence times. Poorly flushed regions within the study area are likely to increase with the construction of the SSBs and tide gates. For example, the EFH assessment specifically states, "extreme storm and high tide events would trigger the gate closures, causing shifts in water quality and flow rates. During these closures, tidal fluxes in water would cease for a period of time, potentially reducing water quality and dissolved oxygen (DO), while increasing the number of harmful nutrients in the water." Additional data and further analysis is needed to determine how restrictions in tidal flows and increases in residence times could affect salinity levels, nutrients, chlorophyll a and DO concentrations, especially when the gates are closed and increased freshwater inputs, nutrients, bacteria and other pollutants discharged from tributaries and point and nonpoint sources are held for a longer period.
- Changes in hydrodynamics stemming from structures proposed as part of the TSP that would further reduce tidal flushing and stress the system could inherently trigger additional losses to habitats and resources. In addition to high nutrient loads, flooding due to extreme precipitation events could exacerbate tidal flooding, particularly when the barriers are fully or partially closed. The DIFR-EIS does not appear to contain an assessment of the effects of the proposed SSBs from flooding due to increased extreme precipitation. While additional hydrodynamic and water quality modeling that considers different design configurations and sea level rise projections is said to be ongoing, additional modeling for closed gate conditions which incorporates both precipitation and sea level rise is of the utmost concern and necessary in capturing the magnitude of effects prior to finalizing a recommended plan.
- There are numerous assumptions in the EFH assessment that state proposed restoration efforts will cumulatively improve water quality and that a net benefit to EFH is anticipated from the construction of the TSP. There is currently no information or studies provided that support these claims, especially as it is currently unclear what habitats will be impacted, how much will be impacted, and what mitigation is intended.

Sediment Transport

- The EFH assessment recognizes a number of direct, indirect, and cumulative impacts that may occur from the construction of the TSP. However, there is little to no information on the potential for the cumulative impacts of sedimentation in navigation channels, and marinas and private moorings maintained by dredging. Potential increased dredging has the ability to alter benthic habitats by limiting the time needed to recover.

- There is no discussion on how the TSP may alter sediment scour and deposition, which could lead to changes in the dimensions of the existing habitats such as wetlands. Of particular concern is that reductions in tidal magnitude due to constrictions caused by the SSBs may result in less sediment delivery to the marsh platform and less resilience to SLR. In addition, changes in the sediment dynamics within the study area may also adversely affect the health of SAV and shellfish beds as these changes may affect water clarity.

Cost Benefit Analysis and the Value of Ecological Services

- The DIFR-EIS should consider the potential environmental and economic savings (e.g., flood and storm-surge protection, primary production of the aquatic environment, habitats for trust resources) that non-structural elements and NNBFs could provide.

Mitigation

- The report does not quantify the direct or indirect impacts to wetlands, mudflats, SAV, and open waters of the study area that may be filled or impacted as a result of the implementation of the TSP. The document also does not clearly explain how adverse impacts have been avoided or minimized or the amount and type of compensatory mitigation that will be necessary to offset all of the direct and indirect impacts of the implementation of the TSP. Before compensatory mitigation options can be fully developed, all potential impacts must be fully disclosed and evaluated.
- The Final Rule on Compensatory Mitigation for the Losses of Aquatic Resources (33 CFR 325 and 332 and 40 CFR 230) published in the Federal Register on April 10, 2008, does not limit compensatory mitigation only to impacts to wetlands and special aquatic sites. The rule refers to "waters of the United States." The principles of the final rule should be incorporated into any compensatory mitigation plan that is ultimately developed.
- The fundamental objective of compensatory mitigation is to offset environmental losses resulting from unavoidable adverse impacts to waters of the United States after all appropriate and practicable avoidance and minimization has been achieved. NOAA has developed a Mitigation Policy for Trust Resources that outlines the principles that we use when considering mitigation for the adverse effects of an action on our resources. This includes avoidance and minimization of adverse effects prior to the consideration of any compensation or offset for the unavoidable adverse effects. Given the potential magnitude of impacts, a FIFR-EIS should include all alternatives considered and why a plan that is less environmentally damaging than the TSP is not practical.
- Two separate models, the NY Bight Ecological Model (NYBEM) and Adaptive Hydraulics (AdH) Model both still under development and not yet peer reviewed. However, the District appears to be using them to determine direct effects on saltmarsh, intertidal, and subtidal habitats without complete baseline information and full disclosures on how the models work (e.g. inputs, assumptions). We question the appropriateness using these incomplete and unreviewed models. We are particularly concerned about their validity and suitability in their current form. For example, the introduction of the AdH results specifically states it "will be deficient in predicting the absolute salinity values and extents of salinity intrusion" and "may not be appropriate for evaluating tidal exchange associated with a structure on the Hackensack River." Salinity

values and intrusion is necessary to understand the full range of potential impacts. We are also concerned that the NYBEM is too broad to capture fully all resource usage and potential impacts, as there is no way to discern impacts between habitats such as shellfish, submerged aquatic vegetation, low marsh and high marsh.

- NNBF may also impact aquatic resources, particularly when the placement of fill in aquatic habitats is involved, and will require further analysis. As indicated in the list of potential mitigation opportunities, NNBF are assumed to require significant amounts of fill material. Besides the nature and location of these features, the sources of fill material and justification for the potential conversion of one aquatic habitat type to another or the loss of aquatic habitat will need to be included in the analysis of impacts. This includes potential borrow areas that may be used, sources of beneficial use of fill material from dredging, or existing confined disposal facilities. If NNBF features are to be considered for the final plan, these concepts, selection/prioritization criteria, and adaptive management strategies should be discussed through rigorous coordination with us and the details should be included in the FIFR-EIS and any Chief's Report submitted to Congress for approval.
- It should also be noted that we have not generally accepted filling one aquatic habitat, such as intertidal or subtidal shallows to create another such as wetlands, as compensatory mitigation for aquatic habitat loss somewhere else. Further, compensatory mitigation may be necessary for NNBFs that involve the conversion of aquatic habitat to uplands, and if the conversion of one type or aquatic habitat to another results in a loss of ecological functions for NOAA trust resources.

Data Gaps, Further Analyses and Information Needs

As mentioned in the DIFR-EIS, a number of studies and analyses are needed to fully identify and understand the impacts of the TSP. While some studies are specifically mentioned as being in progress or needed, there are a number of additional analyses necessary before the FIFR-EIS is completed. This section captures general topics, data gaps, survey and modeling needs to provide a robust effects analysis of TSP implementation and to develop a complete EFH assessment and BA.

The following presents the additional baseline ecological surveys and analyses needed that cover the entire study area:

- Wetland delineations.
- SAV, benthic invertebrate (including shellfish beds and oyster reefs), and fish census surveys. Surveys should be multi-year and multi-seasonal, highlighting spatial and temporal frequency/occurrence. Environmental DNA (eDNA) studies could be helpful in assessing the seasonal presence of species within the study area and should be considered as a component of the baseline surveys and future monitoring.
- Sediment sampling, which includes grain size and chemical analyses.

In addition to baseline ecological information, impacts of the alternatives on habitats and our resources should be clearly defined, including:

- Direct impact during construction (temporary and permanent impacts)

- Direct impacts of structure footprints (permanent impacts)
- Direct, indirect, and cumulative impacts during operations
- Direct and indirect impacts during maintenance, commensurate with frequency and duration.

Additional modeling of the different alternatives should also be conducted, which includes gate open and gate closed scenarios, to determine direct, indirect, and cumulative impacts. Modeling should include:

- The anticipated effects of climate change.
- Turbidity effects and other water quality impacts on fish respiration, filter feeders, sight feeders, and photosynthesis of SAV beds expected during construction.
- High frequency/magnitude precipitation events and their interaction with tidal abnormalities.
- Scour and sedimentation effects to baseline habitats (i.e., wetlands, SAV, shellfish, mudflats, intertidal and subtidal areas), resources (i.e., prey, larval transport, fish migration, resident species), and navigation (i.e., potential to increase maintenance dredging, infilling rates of existing inlet ebb shoal sand borrow areas).

Comprehensive hydrologic and hydraulic modeling is also needed to understand fully how the project alternatives may affect:

- Salinity (i.e., freshwater inputs vs. marine inputs and impacts on flora, fauna distributions);
- Connectivity (i.e., how often and long is the gate anticipated to be closed in a given year and/or a range of given events);
- Current patterns on both sides of barriers;
- Tidal prism throughout lower and upper wetland tidal regimes;
- Water velocity, flow path and volume through inlets and bays;
- Water levels on both side of the barriers;
- Dissolved oxygen levels during closure;
- Nutrient distributions;
- Bottom substrate around the barriers; and
- Scour and sedimentation expected in the direct vicinity of barriers and throughout the back bays.
- Sedimentation rates on marshes, marsh edge erosion, and marsh elevation.

In addition to the models discussed in the DIFR-EIS, other models that may be helpful include:

- Finite Volume Community Ocean Model (FVCOM), a multi-scale resolving global-regional-coastal-estuarine integrated model from the University of Massachusetts Dartmouth and Woods Hole Oceanographic Institution:
- Simulating Wave Nearshore Model (SWAN), a numerical wave model used to obtain realistic estimates of wave parameters in coastal areas, lakes, and estuaries from given wind, bottom, and current conditions.
- Durability models on features such as NNBF

Endangered Species Act

The Protected Resources Division has specific requirements and standards that allow us to adequately assess the impacts to ESA-listed species under Section 7 of the ESA including regulatory requirements to determine the adequacy of Biological Assessments at 50 CFR 402.14(c)(1). Basic biology and distribution of listed species is readily available through our website; however, your DIFR-EIS and BA does not provide a proper and thorough analysis of ESA-listed species distribution and presence of life stages within the entire action area, study region, and associated project sites. This information is necessary and required for a complete assessment of impacts.

At a minimum, you should use our Section 7 Mapper on our website[1] to evaluate distribution and presence of ESA-listed species and their various life stages. Based on our review, it is not evident that the mapper has been used to obtain this information. Instead, the BA provides a short, generalized description of species distribution and biology within their overall range.

Understanding the presence and distribution of listed species and their habitat is the first and most essential step in order to understand the potential for exposure of ESA listed species to effects of your project. Although we recognize that the SMART planning and tiered NEPA processes allows for decisions to be made based upon available data in the early stages of a feasibility study, we suggest that you gather further details and site specific information to help define the species baseline conditions within the study area. As such, we suggest that you use habitat information to identify areas where habitat would support listed species including data from interviews or surveys or other means to collect observations of listed species.

Atlantic sturgeon aggregate in near shore areas in the vicinity of inlets (including off the Rockaway area), and that these aggregations may be a response to the flow of nutrient-rich water. We suggest that you consider analyzing the effects of SSBs on the ocean side of the inlets, because the BA does not consider SSB offshore effects on nutrient loading or forage for listed species.

In summary, knowing the potential routes of exposure to stressors caused by the action is necessary to understand the effects of proposed activities and of any operation of associated facilities. Given the lack of analysis of species presence and distribution within the action area as well as in near shore coastal areas, the effects and impact analyses provided does not sufficiently provide a basis for reviewing impacts to listed species.

Consultation Guidance

At this time, the NYNJHAT CSRM study is conceptual and will require substantial additional information such as rigorous site identification and planning (including timelines and construction schedules), detailed information on construction methods, description of listed

[1] https://www.fisheries.noaa.gov/resource/map/greater-atlantic-region-esa-section-7-mapper

species that occur in the project area and their uses of the area, impact assessments to listed species, and any required compensatory mitigation plans for loss of habitat before we can initiate ESA consultation on the project. As the materials provided for our review do not include the information necessary to initiate consultation as described in the implementing regulations of the Endangered Species Act (50 CFR 402.14(c)), we are providing technical assistance and consultation guidance for your consideration as you further develop the FIFR-EIS and BA as it relates to considering impacts to ESA- listed species.

Given that sea turtles and Atlantic sturgeon may be exposed to stressors associated with construction, maintenance, operation and habitat impacts, we expect the proposed project may affect these species. However, we believe construction activities will result in few to no injuries or deaths of listed species if the proposed avoidance and minimization measures are refined and implemented. Your preliminary analysis of impacts to water quality, hydrology, SAV, and forage resources indicates that the TSP and perimeter plan, if implemented, would affect the distribution and numbers of listed species within the study area. However, based on the information available about the species' distribution within the study area, their use of the bays and near-shore coastal waters, and existing information on forage resources within the study area, we do not expect the study area to provide novel or essential habitat, support large numbers of any of the listed species, or be an area of special significance for species viability or recovery. We will provide further technical assistance to identify measures to avoid and, minimize, and restrict effects to listed species as well as the project's effects on ESA-listed species once additional project details and environmental impacts are available.

A key part of the analysis at the Tier 1 stage is to consider how the conservation measures built into the TSP will function to offset otherwise adverse effects. By considering individual actions at the Tier 1 level, you can propose project design criteria[2], best management practices (BMP)[3], and/or standard operating procedures[4] that avoid or minimize impacts to ESA listed resources. In the FIFR-EIS and BA, you propose several BMPs for construction activities to avoid or minimize effects to listed species. These include measures to minimize noise from pile driving such as use of a vibratory hammer on piles, measures to reduce the risk of vessel strike such as reduced speed and having a dedicated person looking for whales, and implementation of BMPs for sediment and soil erosion control to minimize earth disturbance impacts.

However, minimization measures may have limited utility in setting thresholds on the extent and/or intensity of stressors because their effectiveness commonly depends on the equipment used as part of the defined action, the time of year the equipment is used and the environmental conditions at the project site and the action itself may need to incorporate particular thresholds. Consequently, there is no limit on the maximum level of the intensity and extent of stressors that

[2] Project design criteria - the specific methods, including the technical and engineering specifications or construction limitations, indicating how a project implemented under the programmatic consultation must be cited, constructed, or otherwise carried out to ensure project consistency and to minimize or avoid adverse effects to ESA listed resources.

[3] Best management practice(s)- a practice, or combination of practices determined to be an effective and practicable (including technological, economic, and agency considerations) means to minimize or avoid adverse effects to ESA-listed resources.

[4] Standard operating procedure(s) - a procedure, or combination of procedures, that describe the expected practices and activities necessary to complete a program or project in accordance with relevant agency regulations, policies, and guidance.

can be used to analyze the effects of construction activities or operation of facilities. Therefore, the development of standards and guidelines that limit and set sideboards for the intensity and/or extent of stressors are better suited at the tier 1 level as they define the effects that would be expected by a conceptual plan. An example of a sideboard that can be used to determine the effects of the proposed project is a BMP that says, "pile driving should be carried out in a way that avoids exceeding noise thresholds identified for the protected marine species that occur in the action area." In addition, limits on the intensity and/or extent of stressors should be firm and enforceable.

It would benefit the analysis if the TSP included criteria that limit stressors from exceeding intensities and extents that will cause adverse effects. Choice of materials and measures to meet these criteria would then be determined at the Tier 2 level or during the PED phase. Thus, as a cooperating agency and under our ESA authority, we propose the development of an approach that facilitates further interagency cooperation and collaboration to refine those criteria to avoid/minimize impacts to and conserve ESA-listed resources in a manner that supports recovery. We support a tiered approach to your planning if we are able to work together to create a framework for analysis at the early stages that could include identification of thresholds and possible management measures to minimize and avoid effects if construction analysis shows otherwise thresholds might be exceeded. Then, at later stages of the process, when project details are further defined and effects understood, we would be able to efficiently conduct an ESA consultation.

Technical Assistance

In our review of the material provided to us, we have considered how the proposed TSP will influence the activities it governs and their potential effects, analyzing to the extent we can, given the plan-level context - the nature and scale of the overall impacts to listed species. Because the Tier 1 Study lacks details about project activities and the overall impacts needed to estimate the level of effects associated with a more clearly defined project, coupled with the fact that the information needed to estimate any potential incidental take (if any) will not be available until the PED Phase, we will address the level of effects and any associated take in a subsequent project-specific consultation(s). While project details are lacking and further analysis of how the overall project plan will impact habitat within the NYNJHAT and nearshore coastal areas are needed, here we provide a preliminary broad-scale examination of the potential effects of implementing the TSP but we cannot analyze the site-specific effects of future individual projects as those project details are not available.

The following ESA-listed species may occur within the NYNJHAT or in New York/New Jersey coastal waters:

<u>Whales</u>
The endangered fin whale (*Balaenoptera physalus*) and the endangered North Atlantic right whale (*Eubalaena glacialis*) occur along the New York and New Jersey coasts.

<u>Sea Turtles</u>
Four sea turtles may be found within or near the study area. These are the threatened Northwest

Atlantic Ocean Distinct Population Segment (DPS) of loggerhead turtles *(Caretta caretta)*, the threatened North Atlantic DPS of green sea turtles *(Chelonia mydas),* the endangered Kemp's ridley *(Lepidochelys kempii)*, and the endangered leatherback turtle *(Dermochelys coriacea)*.

Fish

Five Atlantic sturgeon *(Acipenser oxyrinchus oxyrinchus)* DPSs may be found within the study area. These are the ESA listed endangered New York Bight, Chesapeake Bay, South Atlantic, and Carolina DPSs, and the ESA listed threatened Gulf of Maine DPS. Sub-adult and adult individuals from any of these DPSs could occur within the study area.

Shortnose sturgeon (*Acipenser brevirostrum*) can be found in Upper NY Bay, Newark Bay, Hudson River, East River and the northern regions of Long Island Sound. Sub-adult and adult individuals could occur within the study area.

Critical Habitat

The study area does not include critical habitat designated for any federally listed species.

Construction of proposed structures could result in several stressors that may affect listed species. These include noise during pile driving, turbidity, entrainment in dredge, vessel strike, and re-suspension of contaminants. Further, there is a possibility that turtles could be impinged when the barriers are closed as they can rest along the bottom.

In addition to effects from construction activities and operation of the tide gates, the TSP and perimeter plan will indirectly impact the aquatic environment and habitats within the NYNJHAT. These impacts and changes to habitat may affect the distribution of and use by listed species within the action area. However, at this time the BA only provides general information on environmental conditions within NYNJHAT and does not have enough detail to estimate impacts to habitat and forage organisms at a scale necessary to determine effects on species. In addition, increased retention of water within the bays may affect nutrient loading on the ocean side of the inlets, which may be important for Atlantic sturgeon foraging. Last, sea level rise and changes to climate may exacerbate effects from operation of the gates and the presence of the perimeter structures over time. Future modeling and analysis may provide more information on potential effects to habitat and forage resources. Without the specific information, we assume that the TSP will significantly reduce forage for sea turtles within all or some of the study regions.

Little is known about the presence and use of the NYNJHAT by protected resources. It is reasonable to assume that listed whales do not enter the inlets to the bays because of their size and preference for open offshore waters. Therefore, they are not expected to be exposed to stressors caused by construction activities or be affected by the presence of the proposed structures. However, important forage resources for whales are produced in the NYNJHAT, such as, for instance, sand lance and copepods, and a reduction in the production of these organisms within the NYNJHAT may affect whales. Both sea turtles and Atlantic sturgeon can move through the inlets and use the bays for foraging and, therefore, may be exposed to stressors during construction and operation of the gates or affected by changes to habitat.

Atlantic sturgeon aggregations may occur on the coastal side of inlets in waters such as off Rockaway. We have no specific information about Atlantic sturgeon presence and use of the bays but assume that their presence is limited to sporadic movement through the inlets to opportunistically forage in the bays. None of the rivers emptying into the bays provide for Atlantic sturgeon spawning except for the Hudson River. All four sea turtle species can be present along the New York/New Jersey coast from May through November during seasonal migration and foraging. None of the four turtle species has established nesting on the New York/New Jersey beaches and under current climate conditions, the proposed project will not affect nesting or hatchlings.

Magnuson Stevens Fishery Conservation and Management Act

Consultation Guidance

As stated above and in our letter dated May 19, 2022, the Tier 1 level information contained with the DIFR-EIS and accompanying EFH assessment does not include sufficient information necessary to initiate consultation under the MSA. We recognize that the SMART planning and tiered NEPA processes allow for a level of review that is general in nature and scope, and that documents prepared using this approach describe the project and its impacts at a broader level. However, the full range of potential effects to both the human and natural environment should still be considered in the document. Regardless of the level of detail with the DIFR-EIS, in order for consultation under the MSA to be initiated, the EFH assessment must clearly describe all of the elements of the proposed action and evaluate all of the direct, indirect, individual, and synergistic effects of each element on EFH. As discussed above, we understand that additional information and analysis is planned to be undertaken during the PED phase of the Study, but a significant amount of data, analysis, and information on project impacts, alternatives, construction methods, implementation schedules/plans, NNBFs and compensatory mitigation is necessary before we can consult on the project and provide meaningful EFH conservation recommendations beyond merely recommending that the structural elements of the TSP not be constructed.

Technical Assistance

The required components of an EFH assessment include:

- A description of the action.
- An analysis of the potential adverse effects of the action on EFH and the managed species.
- The Federal agency's conclusions regarding the effects of the action on EFH.
- Proposed mitigation, if applicable.

Additional information. If appropriate, the assessment should also include:

- The results of an on-site inspection to evaluate the habitat and the site-specific effects of the project.
- The views of recognized experts on the habitat or species that may be affected.

- A review of pertinent literature and related information.
- An analysis of alternatives to the action. Such analysis should include alternatives that could avoid or minimize adverse effects on EFH.
- Other relevant information.

The level of detail in an EFH assessment should be commensurate with the complexity and magnitude of the potential adverse effects of the action. Actions such as those described in the DIFR-EIS, that may pose a more serious threat to EFH warrant a correspondingly detailed EFH assessment. The level of detail currently available on the NYNJHAT Study and the effects of the actions proposed in the TSP are not sufficient to evaluate the adverse effects TSP implementation would have on EFH. A revised EFH assessment should be developed and submitted to us once the information discussed above and data gaps identified are filled.

The analysis of effects should focus on impacts that reduce the quality and/or quantity of the habitat or result in conversion to a different habitat type for all life stages of species with designated EFH within the action area. Simply stating that fish will move away or that the project will only affect a small percentage of the overall population is not a sufficient analysis of the effects of an action on EFH. Also, since the intent of the EFH consultation is to evaluate the direct, indirect, individual and synergistic effects of a particular federal action on EFH and to identify options to avoid, minimize or offset the adverse effects of that action, it is not appropriate to conclude that an impact is minimal just because the area affected is a small percentage of the total area of EFH designated. The focus of the consultation is to reduce impacts resulting from the activities evaluated in the assessment. Similarly, a large area of distribution or range of the fish species is also not an appropriate rationale for concluding the impacts of a particular project are minimal.

Use the information on our EFH consultation website and NOAA's EFH Mapper to complete the EFH assessment. The mapper is a useful tool for viewing the spatial distribution of designated EFH and HAPCs. Because summer flounder HAPC (defined as: " all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH") does not have region-wide mapping, local sources and on-site surveys may be needed to identify submerged aquatic vegetation beds within the project area. The full designations for each species may be viewed as PDF links provided for each species within the Mapper, or via our website links to the New England Fishery Management Councils Omnibus Habitat Amendment 2 (Omnibus EFH Amendment), the Mid-Atlantic Fishery Management Councils FMPs (MAMFC -Fish Habitat) https://www.mafmc.org/habitat, or the Highly Migratory Species website. Additional information on species-specific life histories can be found in the EFH source documents accessible through the Habitat and Ecosystem Services Division website. This information can be useful in evaluating the effects of a proposed action. Habitat and Ecosystem Services Division (HESD) staff have also developed a technical memorandum Impacts to Marine Fisheries Habitat from Non-fishing Activities in the Northeastern United States, NOAA Technical Memorandum NMFS-NE-209 to assist in evaluating the effects of non-fishing activities on EFH. Other resources include The Effects of Tide Gates on New England Wetlands and Other Tidal Resources and the Guidance for Integrating Climate Change Information in Greater Atlantic Region Habitat Conservation Division Consultation Processes.

For your planning purposes, you should be aware that many in-water construction activities require seasonal work restrictions to avoid and minimize adverse impacts to EFH, federally managed species and other commercially, recreationally or ecologically valuable species under our jurisdiction through either the MSA or the FWCA. This includes seasonal protections for winter flounder early life stages and their EFH and anadromous fish migration. If the structural elements of the TSP remain in the FIFR-EIS and are submitted to Congress for approval in a Chief's Report, the impact these restrictions may have on the construction and operation schedule of the structural elements should be factored into project costs and construction schedules.

Marine Mammal Protection Act (MMPA)

The MMPA prohibits the take of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 et seq.) direct the Secretary of Commerce (as delegated to NOAA Fisheries) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if the taking will be of small numbers, have a negligible impact on the affected species or stock, and will not have an unmitigable adverse impacts on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Some of the activities proposed by the USACE (e.g., floodgate construction) may harass marine mammals. The USACE should engage early with our Headquarters' Office of Protected Resource to identify measures that could avoid and minimize potential take. Information related to the potential need for an MMPA incidental take authorization can be found at: https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.