



November 5, 2018

Via electronic and certified mail

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Re: Public Comments on the Scope of the U.S. Army Corps of Engineers' New York and New Jersey Harbors and Tributaries Coastal Storm Risk Management Integrated Feasibility Study/Tiered Environmental Impact Statement

Dear Ms. Brighton and Mr. Wisemiller:

On behalf of Riverkeeper, Inc. ("Riverkeeper"), please accept these comments¹ on the scoping process under the National Environmental Policy Act ("NEPA") for the U.S. Army Corps of Engineers' ("Corps") New York and New Jersey Harbors and Tributaries Coastal Storm Risk Management Feasibility Study ("NY/NJ HAT Feasibility Study").² We thank you for providing Riverkeeper and members of the public with the opportunity to submit comments that

¹ These comments were prepared with the assistance of the Environmental Litigation Clinic at Pace University's Elisabeth Haub School of Law.

² See Notice of Intent To Prepare a Tiered Environmental Impact Statement for the New York New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study, 83 Fed. Reg. 6,169 (Feb. 13, 2018) available at <https://www.gpo.gov/fdsys/pkg/FR-2018-02-13/pdf/2018-02874.pdf>.

will inform the scope of the Interim Draft Report and integrated Feasibility Report/Tier 1 Environmental Impact Statement (“EIS”).

Riverkeeper is a member-supported watchdog organization dedicated to defending the Hudson River and its tributaries, and protecting the commercial, recreational, ecological and aesthetic qualities of the Hudson River Estuary, its fishery, and the entire Hudson River ecosystem. We also safeguard the drinking water supply of nine million New York City and Hudson Valley residents. For more than 50 years, Riverkeeper has stopped polluters, championed public access to the river, influenced land use decisions, worked with and advocated for communities, and restored habitat, benefiting the natural and human communities of the Hudson River and its watershed. Moreover, our individual members use, enjoy, and have significant aesthetic, recreational, cultural, and scientific interests in maintaining the environmental integrity of the Hudson River Estuary, its ecosystem, and the various waterways that make up its watershed.

Riverkeeper’s mission revolves around protecting the Hudson River, its ecosystems and wildlife, and the local communities that view, use, and enjoy the river. We maintain an enforcement presence on the Hudson River through our Boat Program, which patrols the length and breadth of the estuary from south of the New York Harbor to north of the Federal Dam at Troy. Our patrol boat serves as a watchdog vessel, a platform for scientific research, and an ambassador for the river. It allows us to conduct regular pollution patrols, provide support for scientific studies that advance our collective understanding of the Hudson River ecosystem, carry out our water quality testing program, and bring state and regional decision-makers, the media, and community stakeholders out on the river to share information about wildlife, critical habitat zones, pollution sources and water quality management issues. As a result of our programs and staff dedicated to our patrol boat, our water quality testing program, and our New York City-based work, Riverkeeper has significant experience and presence on the water up and down the Hudson River as well as on the East River near Manhattan, Newtown Creek, Flushing Bay, Gowanus Canal, and the New York-New Jersey Harbor.

Below we provide comments to the Corps for use in determining the appropriate scope of NEPA review for the forthcoming Interim Draft Report and Draft Feasibility Report/Tier 1 EIS for the proposed NY/NJ HAT Feasibility Study.

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INTRODUCTION

Climate change is already significantly affecting—and will continue to affect with increasing severity—New Yorkers’ interactions with the marine, estuarine and riverine ecosystems which surround the islands of New York City. Riverkeeper agrees that sea level rise and more frequent, more intense storms require planning and action, and therefore we advocate for adapting and constructing more protective and resilient shorelines. Rather than installing massive, in-water barriers that threaten to permanently alter the Hudson River and the New York-New Jersey Harbor, the Corps can and should address the flooding threats that New Yorkers face without sacrificing entire ecosystems. In addition to the harbor and 150-mile long Hudson River Estuary, massive in-water barriers threaten the Passaic River to the Dundee Dam, the Hackensack River to the Oradell Reservoir, the Long Island Sound, and other tributaries.

The NY/NJ HAT Feasibility Study process has been tainted by four fundamental problems, which must be resolved if this process is to adequately address the flooding threats that New Yorkers face, and to meaningfully engage with members of the public. First, the Corps has been tasked with answering the wrong question. The current feasibility study is focused solely on addressing threats from increased storm surge and fails to grapple with sea level rise concerns. The in-water barriers included in several of the Corps’ proposed project alternatives would do absolutely nothing to protect people in New York and New Jersey against flooding from sea level rise associated with climate change. Any proposed project alternatives must address the whole picture, and any alternative that does not address sea level rise is, from the start, fatally flawed and should not be a matter for study.

Second, the Corps’ NY/NJ HAT Feasibility Study process, driven by the 3x3x3 Rule, is flawed. The 3x3x3 Rule (3-years, \$3 million, 3 levels of Corps vertical team engagement), discussed below, is not actually a rule, at all. It is, instead, an internal Corps policy established to provide benchmarks that would apply to the average feasibility study.³ In fact, there is an exemption process within the 3x3x3 policy that would allow for extending timelines and monetary limits,⁴ and the Corps itself has stated that the 3x3x3 policy “never contemplated something of this scale.”⁵ Because the Corps is treating the 3x3x3 policy as binding rule rather than a policy that allows exemptions, the agency is pushing forward much too quickly for a project of such enormous scope. The project area is more than 2,100 square miles, it involves

³ See U.S. Army Corps of Eng’rs, *WRRDA Section 1001(f) Interim Report* at 2 (Nov. 5, 2015) available at https://www.usace.army.mil/Portals/2/docs/civilworks/Project%20Planning/rep2cong/Section1001ReporttoCongress_15Nov2015.pdf?ver=2016-06-02-103604-190; see also U.S. Army Corps of Eng’rs, *The Corps feasibility study – finding a balanced solution* (Jan. 14, 2016) available at <https://www.usace.army.mil/Media/News-Archive/Story-Article-View/Article/643197/the-corps-feasibility-study-finding-a-balanced-solution/> (“Some complex studies may require additional time or funds but those are the exception rather than the rule.”).

⁴ The Water Resources Reform and Development Act (“WRRDA”) statutory language allows for exceptions to the 3x3x3 Policy, listing “factors” to be evaluated when considering such an exception for “complex” studies, which include, *inter alia*, “the type, size, location, scope, and overall cost of the project,” and “whether there is significant public dispute as to the economic or environmental costs or benefits of the project.” 33 U.S.C. §§ 2282c(d)(2)(A)-(E); see also U.S. Army Corps of Eng’rs, *Planning Bulletin 2012-04: 3x3x3 Rule Exemption Process* (Jan. 1, 2013) available at <https://planning.erdc.dren.mil/toolbox/library/pb/PB2012-04.pdf>.

⁵ See The Villager, *Anti-flood plan surging ahead too fast, many activists say* (Aug. 23, 2018) available at <http://thevillager.com/2018/08/23/anti-flood-plan-surging-ahead-too-fast-many-activists-say/> (quote of Thomas Hodson, chief of the Corps’ Plan-Formulation Branch).

more than 900 miles of waterfront in three different states, and it affects approximately 16 million people—making it *precisely* the kind of complex project that warrants an exemption from the 3x3x3 policy.

Third, the Corps is ignoring the value of ecosystem services for each of the proposed alternatives in “winnowing down” the options to two to three alternatives for consideration in the integrated Draft Feasibility Report/Tier 1 EIS. This “winnowing down” will be based on a cost-benefit analysis that disregards ecosystem services. However, Riverkeeper believes that the environmental resources, ecosystems, and immeasurable natural benefits of the Hudson River Estuary, the NY/NJ Harbor and their tributaries can and must be valued before the Corps eliminates alternatives from consideration. That requires obtaining an exemption from the 3x3x3 policy before the Corps prepares the Draft Feasibility Report/Tier 1 EIS,

Finally, the Corps should be promoting a process that truly engages the public and provides adequate data and information-sharing to allow for meaningful public participation. Yet, the Corps’ process thus far has been woefully inadequate in informing the public of the proposed project alternatives and the feasibility study process. Going forward, the Corps must meaningfully engage with members of the public throughout the proposed project’s entire 2,100 square mile range; share data, reports and resources upon which it is relying with the public before decisions are made; and present and allow for meaningful public comment on proposed project alternatives which address both storm surge and sea level rise. Without sufficient data, studies, or information on which to comment, the public is deprived of its right to meaningfully participate in this process. This is especially troubling because the majority of the proposed alternatives include in-water barriers that would restrict the tidal flow and migration of fish, and have catastrophic effects on the life in and around the Hudson River and NY/NJ Harbor.

For the NY/NJ HAT Feasibility Study to be scientifically sound and for the agency to meaningfully engage the public, the Corps must slow its pace, fix the flawed process, and seek to protect New Yorkers from both storm surge and sea level rise in a way that allows our rivers to run free.

COMMENTS

In the wake of Hurricanes Sandy and Irene, it is indisputable that New York City must adapt its shorelines, infrastructure, and culture to accommodate ever more intense storm surges and coastal flooding. While we appreciate the daunting task faced by the Corps of preparing a feasibility study to evaluate coastal storm risk in a more than 2,100 square mile project area, we nevertheless expect the Corps to take a holistic approach to the problem. Any storm surge adaptation that fails to consider the undeniable impacts of sea level rise associated with climate change will be fatally flawed.

The general purpose of a feasibility study is “to identify, evaluate and recommend to decision makers an appropriate, coordinated and workable solution to identified water resources problems and opportunities.”⁶ During preparation of a feasibility study, the Corps also undertakes NEPA compliance, evaluating the environmental impacts of the alternatives analyzed in the feasibility study. This concurrent evaluation results in an Integrated Feasibility/NEPA Report.⁷ Ultimately, as a result of this process, the Corps will produce a Chief’s Report which recommends one of the alternatives evaluated in the Feasibility/NEPA Report to Congress for consideration of implementation and funding appropriation.⁸

The stated purpose of the NY/NJ HAT Feasibility Study is to “assess[] the feasibility of coastal storm risk management alternatives to be implemented within the authorized study area with a specific emphasis on the NY/NJ Harbor.”⁹ Acknowledging that the “New York metropolitan area[] is highly vulnerable to damage from coastal storm surge, wave attack, erosion, and intense rainfall-storm water runoff events that cause riverine or inland flooding, which can exacerbate coastal flooding,” the Corps was tasked with “conduct[ing] an investigation into potential coastal storm risk management solutions” under Public Law 84–71, June 15, 1955 (69 Stat. 132).¹⁰

The Corps is accepting public comments on scoping for the Interim Draft Report through November 5, 2018.¹¹ According to the Corps, that report will be released to the public by the

⁶ See U.S. Army Corps of Eng’rs, *SMART Planning Feasibility Studies: A Guide to Coordination and Engagement with the Services* at 2 (Sept. 2015) [hereinafter “SMART Planning Guide”] available at https://planning.ercd.dren.mil/toolbox/library/smart/SmartFeasibility_Guide_highres.pdf.

⁷ *Id.*

⁸ *Id.*

⁹ 83 Fed. Reg. at 6,169.

¹⁰ *Id.*

¹¹ See U.S. Army Corps of Eng’rs, *New York-New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study: National Environmental Policy Act Scoping Meeting Presentation* at 35 (October 2018) [hereinafter “Public Meeting Presentation”] available at <http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/ny/coast/NYNJHAT/NYNJHAT%20NEPA%20Scoping%20Presentation%203%20Oct%2018.pdf?ver=2018-10-12-151150-907>; see also, U.S. Army Corps of Eng’rs, *New York-New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study: Public Meeting Presentation Posters* at 5 (July 2018) [hereinafter “Public Meeting Posters”] available at http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/ny/coast/NYNJHAT/NYNJHATS_All_NEPA_Scoping_Posters.pdf?ver=2018-07-06-104831-627.

winter of 2019.¹² Subsequently, the Corps plans to release a Draft Feasibility Report/Tier 1 EIS by spring of 2020, and then a Final Feasibility Report/Tier 1 EIS by approximately spring of 2021.¹³ The Corps anticipates that a Chief's Report to Congress will be completed by approximately summer of 2022.¹⁴ After this, a Tier 2 EIS will be prepared during what the Corps calls the "Pre-Construction Engineering and Design Phase."¹⁵ These timelines may be extended, as the Corps has acknowledged that "[d]ue to the scale and complexity of the study, the study team plans to pursue an exemption to [] budget and schedule requirements" requiring completion "within three years" and "at a cost not to exceed 43 million."¹⁶

The Corps has announced six alternatives that are currently under consideration;¹⁷ however, the Corps initially stated that this range of alternatives would be "winnowed down" to two or three (the "Tentatively Selected Plan") in a Draft Feasibility Report/Tier 1 EIS, originally slated to be released to the public in the fall of 2018.¹⁸ After intense public pressure, the Corps announced that an Interim Draft Report would be prepared which evaluates the environmental impacts of all six alternatives, and that the Draft Feasibility Report/Tier 1 EIS would instead be released in 2020, focusing on broad and big-picture environmental impacts.¹⁹ A Tier 2 EIS—which evaluates environmental impacts of the project based on "site-specific detailed design information"²⁰—will be undertaken after one of the alternatives is recommended in the Chief's Report to Congress.

Below we provide Riverkeeper's procedural and substantive NEPA scoping comments for the NY/NJ HAT Feasibility Study, as well as our recommendations for the Corps in moving forward on this important issue.

I. The Corps' Process is Deeply Flawed.

The Army Corps' process for undertaking this Feasibility Study and NEPA review has been seriously flawed.²¹ We recommend that, going forward, the Corps work closely with communities to ensure public engagement, and to be more transparent by sharing essential information with the public. Thus far, the process has failed to engage the affected communities, undermined meaningful public comment, and rushed important decisions without providing the public with adequate time or notice. The Corps' public outreach efforts have simply failed to

¹² Confusingly, the Feasibility Study Webpage still does not reflect the addition of the Interim Draft Report and the comment period. U.S. Army Corps of Eng'rs New York Dist., *New York/New Jersey Harbor & Tributaries Focus Area Feasibility Study* (accessed Oct. 29, 2018) <http://www.nan.usace.army.mil/Missions/Civil-Works/Projects-in-New-York/New-York-New-Jersey-Harbor-Tributaries-Focus-Area-Feasibility-Study/> [hereinafter "Feasibility Study Webpage"] (stating in the "September 2018 Update" section that the "draft report [is] anticipated to be released in late November/early December 2018").

¹³ Public Meeting Presentation at 35.

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.* at 32.

¹⁷ See Public Meeting Presentation at 9, 10-16.

¹⁸ *Id.* at 32.

¹⁹ *Id.*

²⁰ *Id.*

²¹ See generally Riverkeeper Blog, *Storm surge barrier plans for NY Harbor: The process is an outrage* (Aug. 15, 2018) available at <https://www.riverkeeper.org/blogs/ecology/storm-surge-barrier-plans-ny-harbor-process/>.

reach the vast majority of individuals and organizations that would be affected by the proposed alternatives.

A. The Corps' Public Outreach Has Been Unclear, Inconsistent, and Deficient.

In its Federal Register notice, the Corps initially stated its intention to hold “NEPA Scoping Meetings in March and April 2018.”²² Unfortunately, the Corps never held such meetings in March and April, and never updated the Federal Register with the dates of the meetings it eventually held later that year.²³ Further, though the Corps had been coordinating with local government agencies and some local organizations²⁴ since January of 2017,²⁵ the Corps’ February 2018 notice in the Federal Register was the very first notification to the *public* of the existence of the forthcoming NY/NJ HAT Feasibility Study. In that notice, the Corps provided a link to the NY/NJ HAT Feasibility Study Webpage, indicating that was where “[p]ertinent information about the study c[ould] be found.”²⁶ However, the Feasibility Study Webpage provided scant additional information, with links only to a Fact Sheet, an October 2017 powerpoint presentation, and information about signing up to receive additional information and notices via email.²⁷ Unfortunately, some of the individuals who signed up for the email notices were not added to the email list, and therefore did not receive notice of the public NEPA scoping meetings—which were *only* announced via email, and delayed postings on the Feasibility Study Webpage.²⁸

Despite stating that information about public meetings would also “be published in the appropriate local newspapers, municipality web pages, and the Corps’ New York District web page . . . and will be distributed to the local stakeholders and known interested parties,” Riverkeeper is unaware of any notices posted in local newspapers, provided to municipalities, or given to local stakeholders.²⁹ Furthermore, notwithstanding the fact that the Corps invited

²² 83 Fed. Reg. at 6,169.

²³ See Feasibility Study Webpage.

²⁴ Riverkeeper met with the Corps for the first time on January 23, 2018 and was notified of the forthcoming NY/NJ HAT Feasibility Study shortly before in winter 2017.

²⁵ 83 Fed. Reg. at 6,169 (“The Corps, the NYSDEC and the NJDEP hosted three agency workshop meetings in January and February 2017, with representatives from federal and state agencies, as well as representatives from local agencies and towns.”).

²⁶ 83 Fed. Reg. at 6,169 (listing website: <http://www.nan.usace.army.mil/Missions/Civil-Works/Projects-in-New-York/New-York-New-Jersey-Harbor-Tributaries-Focus-Area-Feasibility-Study/>).

²⁷ See Wayback Machine Web Archive Snapshot (February 21, 2018) available at https://web.archive.org/web/*/http://www.nan.usace.army.mil/Missions/Civil-Works/Projects-in-New-York/New-York-New-Jersey-Harbor-Tributaries-Focus-Area-Feasibility-Study/.

²⁸ The Corps non-responsiveness is also reflected in its utterly unsatisfactory response to a March 26, 2018 letter sent by Riverkeeper to the Corps which noted that because the “March/April window” announced for the scoping meetings “is quickly closing,” that “there will clearly be insufficient notice to the public ahead of the meetings, since March ends next week.” See Letter from Paul Gallay, Riverkeeper president to Bryce Wisemiller, Project Manager, and Nancy Brighton, Watershed Section Chief, U.S. Army Corps of Engineers at 3 (Mar. 26, 2018) [attached hereto as “Attachment A”]. The Corps only response was an email which stated “We are in the process of responding to your letter.” See Email From Nancy Brighton to Riverkeeper Staff and Others (Apr. 16, 2018) [attached hereto as “Attachment B”]. Besides this email, Riverkeeper has not received a response to its March letter.

²⁹ In fact, when asked at the New York City Public Scoping Meeting if the NYS DEC had announced the meetings, a DEC representative responded that there hadn’t been enough time to publicize the meetings or post them on the

Riverkeeper to a stakeholders meeting on this project in December of 2017, no person at Riverkeeper was notified of the July 2018 public meetings, raising the question of whether other “known interested parties” received notice. The Corps also failed to update the Federal Register with a revised notice providing the dates of the meetings that it eventually held.³⁰

In fact, the Corps first announced the unexpected, July 2018 public scoping meetings (in Manhattan, Newark, and Poughkeepsie) with less than two weeks’ notice and over the July 4th federal holiday.³¹ When the Corps ultimately provided the first extension to the scoping comment period, it did so only seven days before the end of the comment period, and via an incomplete email listserv. The Corps announced the second extension again via email listserv only three days before the public comment period closed. In the same email listserv notification, the Corps announced a public scoping meeting (in Coney Island, Brooklyn) again with only three days’ notice. Another public meeting was announced for October 3, 2018 (in Westchester) with only eight days’ notice, and a final public meeting was announced for October 23, 2018 (in Long Island), again with only eight days’ notice.

Providing public meetings is of no practical utility to the public if people do not have enough time to schedule childcare, arrange early leave from work, or organize transportation, etc., in order to attend. It is particularly dismaying that the Corps *only* conducted its outreach attempts via email listserv and belated updates to its Feasibility Study Webpage, despite stating it would post notice in local newspapers and on state agency websites, and notify municipalities and local stakeholders:

Public notices announcing the meeting date, time, location and agenda will be published in the appropriate local newspapers, municipality web pages, and the Corps’ New York District webpage . . . and will be distributed to the local stakeholders and known interested parties.³²

The failure to adequately publicize the meetings compounds the Corps’ failure to give adequate advance notice of the meetings. In short, the Corps’ actions here are utterly inadequate to foster meaningful public participation.

In stark contrast to the Corps’ haphazard and confusing outreach attempts, the Council on Environmental Quality (“CEQ”) regulations implementing NEPA have specific public notice requirements for draft EISs, designed to adequately inform the public and allow for meaningful public comment. First, agencies are required to “[m]ake diligent efforts to involve the public in preparing and implementing their NEPA procedures.”³³ More specifically, with regard to how an agency must provide notice to the public of “NEPA-related hearings [and] public meetings,” it must be done in such a way “so as to inform those persons and agencies who may be interested

state agency’s website. Another DEC representative reiterated this position at the Westchester Public Scoping Meeting.

³⁰ See Feasibility Study Webpage.

³¹ Telephone calls and messages to the Corps offices requesting information about when the public meetings would be scheduled were unanswered, and no follow-up information was provided once the July meetings were announced.

³² 83 Fed. Reg. 6,169.

³³ 40 CFR § 1506.6(a) (using “shall”).

or affected.”³⁴ Further, “[i]n all cases the agency shall mail notice to those who have requested it on an individual action.”³⁵

Here, the Corps’ conduct has failed to meet the CEQ regulations for EISs. While not binding in this instance, it is very discouraging to see that the Corps has been less than forthcoming with information and has failed to provide adequate notice to the very individuals and organizations most interested in the details of the study—namely, those individuals who requested to receive information about the project through the email listserv and those who attended meetings as long ago as 2017.

The Corps needs to develop a comprehensive plan to inform the public and to engage communities around their study process. The ways in which the Corps can make this process more transparent and effective include, without limitation, the following:

- Sharing the studies that the agency plans to evaluate and rely upon, as well as the details and timelines of additional studies that the agency is planning to undertake;
- Creating and regularly communicating with a comprehensive list of every member of the public who has attended a meeting, commented, or communicated with the Corps in the study area;
- Publicizing meetings, deadlines, updates, and information in places other than the Feasibility Study Webpage;
- Undertaking outreach to community groups, local elected officials, and environmental groups;
- Conducting authentic outreach and engagement with environmental justice communities and groups that are or may be most affected by storm surge and f rise;
- Consulting with Federal and State recognized tribes in the study areas—particularly since, to date, the Corps has made *no* mention of tribal nations potentially affected by the study.³⁶

B. The Feasibility Study Information Provided to the Public Is Insufficient.

The Corps has provided very limited information to the public about the proposed alternatives, the purpose and goals of the NY/NJ HAT Feasibility Study, and the studies, research, and data underlying its feasibility evaluations and environmental analyses. Prior to the announcement of the July 2018 public meetings on NEPA scoping, the only information provided to the public was the Fact Sheet and the October 2017 powerpoint presentation linked to on the Feasibility Study Webpage.³⁷ Subsequently, the webpage was updated to include a

³⁴ *Id.* at (b).

³⁵ *Id.* at (b)(1).

³⁶ See Riverkeeper, *Testimony of Jessica Roff and Paul Gally, Riverkeeper Before the New York City Council “Oversight - Resiliency in the Face of Sea Level Rise” and Resolution 509* (Oct. 22, 2018) [hereinafter “Riverkeeper NYC Council Testimony”] available at <https://www.riverkeeper.org/wp-content/uploads/2018/10/Riverkeeper-testimony-at-NYC-City-Council-10.22.pdf>.

³⁷ See Wayback Machine Web Archive Snapshot (February 21, 2018) available at https://web.archive.org/web/*/http://www.nan.usace.army.mil/Missions/Civil-Works/Projects-in-New-York/New-York-New-Jersey-Harbor-Tributaries-Focus-Area-Feasibility-Study/.

powerpoint which accompanied the public meeting presentations and an electronic copy of the poster boards displayed at the meetings.³⁸

Without access to the underlying data, research, or studies the public is deprived of its right to meaningfully comment on the proposals. In fact, the CEQ regulations explain that

NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.³⁹

By merely providing powerpoint presentations that contain imprecise and conceptual graphical representations of the proposed alternatives, the Corps can hardly be said to have provided “high quality” environmental information “before decisions are made and before actions are taken.”⁴⁰

Additionally, and unfortunately, like its dissemination of information about the public meetings and comment period deadline extensions, the Corps has sown confusion by disseminating slightly different information at each public meeting, both in verbal remarks and on the presentation slides. As a result, individual members of the public and organizations relying on information received at an earlier meeting are unknowingly commenting on outdated information. Furthermore, crucial pieces of information provided at earlier public meetings are now incorrect or outdated, due to recent updates by Corps staff.

For example, the Corps initially stated in public meetings that Alternative 2 would cost between \$30 and \$40 billion to construct; at more recent public meetings (Westchester and Long Island), it stated that it anticipates the cost to be approximately \$140 billion. The Feasibility Study Webpage also does a poor job of archiving changes or updates to information and, in some cases, still displays outdated and incorrect information. For example, the Feasibility Study Webpage does not reflect the addition of the Interim Draft Report and extension of timeline for preparing the Draft Feasibility Study/Tier 1 EIS—the practical effect of which is to change the very content that the public is commenting on by moving the Corps timeline for selecting of the Tentatively Selected Plan from fall of 2018 to spring of 2020.⁴¹

While the Corps is to be commended for responding to the public’s requests for additional public meetings throughout the study area, its oversight in not originally considering communities throughout the more than 2,100 square mile project area is particularly problematic. The alternatives being evaluated in this study could have impacts on all of the communities

³⁸ See Public Meeting Posters.

³⁹ 40 C.F.R. § 1500.1(b).

⁴⁰ *Id.*

⁴¹ Feasibility Study Webpage (accessed Oct. 29, 2018) (stating in the “September 2018 Update” section that the “draft report [is] anticipated to be released in late November/early December 2018”).

located along the shorelines of New York City, NY/NJ Harbor, northern New Jersey, western Connecticut, and the Hudson River up to Troy. Many residents of these communities—and even elected officials—are still unaware of the Corps’ Feasibility Study and the proposed alternatives. It is unacceptable that the Corps has not engaged these essential stakeholders in this process from the beginning.

In sum, the Corps’ failures to share necessary data, research and studies, conduct outreach with affected communities, and clearly notify the public of critical changes to the project analyses and timeline have completely frustrated the public’s ability to meaningfully comment on the Feasibility Study.

C. The NEPA Scoping Public Comment Period Was Unacceptably Brief.

In its Federal Register notice, the Corps initially explained it would provide a 30-day public comment period on scoping considerations for the Feasibility Study, set to begin after it held public “NEPA Scoping Meetings.”⁴² After holding those meetings in July 2018,⁴³ the Corps announced that it would accept public comments on scoping through August 20, 2018—a 40-day window. On August 13, 2018—one week before closure of the comment period—the Corps notified the NY/NJ HAT email listserv that it had extended the comment period to September 20, 2018 for a total comment period of 70 days.⁴⁴ Then, the Corps announced another extension to the public comment period only three days before the comment window was set to expire, making the new deadline November 5, 2018.⁴⁵

Despite providing additional time for public comment, the Corps’ practice of twice extending the public comment period mere days before it was set to expire only led to confusion among members of the public seeking to understand Feasibility Study process for this project. As discussed, the Corps was largely unsuccessful in adequately notifying the public of the comment period extensions, and the agency was slow to update its project website with the new deadlines. That left members of the public rushing to draft and submit comments to meet an outdated deadline. And, as noted above, merely extending comment period deadlines does little to fostering meaningful public comment where agencies fail to provide the data, research, and studies underlying the action that it proposes to take.

Further, the incredibly vast and far reaching extent of the Feasibility Study area cannot be adequately evaluated by the public in the time period provided for public comment. The Feasibility Study area “encompasses approximately 2,150 square miles” including parts of various New York and New Jersey counties.⁴⁶ The study area also extends up the Hudson River from NY/NJ Harbor throughout the entirety of the tidal and estuarine portions to the federal lock and dam at Troy, New York, as well as up the Passaic River to the Dundee Dam and up the

⁴² 83 Fed. Reg. at 6,169.

⁴³ See Feasibility Study Webpage.

⁴⁴ NY/NJ HAT Feasibility Study Webpage (accessed August 14, 2018).

⁴⁵ *Id.*

⁴⁶ 83 Fed. Reg. 6,169.

Hackensack River to the Oradell Reservoir.⁴⁷ Furthermore, the project’s impacts will likely be felt by communities in Connecticut due to its impacts on the Long Island Sound.

The proposed project will have numerous significant environmental impacts throughout the entirety of this widespread study area, with potentially different and unique impacts in each ecologically diverse portion. Given this incredibly widespread and varied study area, a three-month comment period is inadequate for the public to effectively understand the Corps’ Feasibility Study process, and investigate and identify the broad scope of potential adverse environmental impacts that the agency should consider. For this reason, we appreciate that the Corps, in response to the intense public outcry, and has integrated a second public comment period for the Draft Feasibility Report/Tier 1 EIS by establishing a comment period on the Interim Draft Report. Additional time for public comment can further ensure that a range of stakeholders who have relevant knowledge, expertise, and information, and who hold diverse viewpoints, are included in the public process. However, this additional time will only serve to adequately address public concerns if the public is given access to the data research, and studies underlying the conclusions in the Interim Draft Report.

In contrast to the Corps’ process here, the U.S. Coast Guard provided an extension to its comment period for an expansive proposal by industry to establish a large number of new anchorages for commercial vessels in the Hudson River—43 berths in 10 locations from Yonkers to Kingston, comprising more than 2,400 acres.⁴⁸ In that case, the comment period—ultimately extended twice, from 90 days to a total comment period of six months—provided the public with adequate time to understand the nature and impacts of the proposal, as well as prepare meaningful comments on the project. This extended time frame ensured that interested and affected parties were not only aware of the proposed action, but were able to be meaningfully involved in the process.⁴⁹ The NY/NJ HAT Feasibility Study will potentially have an even more widespread impact than the anchorages proposal, and the comment period here should give an adequate and appropriate amount of time necessary for the public to comprehend the complex process, as well as the potentially significant impacts of the project.

The extensions also had limited value here since the Corps changed the very document that the public was asked to comment on—from a Draft Feasibility Study/Tier 1 EIS to an undefined “Interim Draft Report”—two-thirds of the way through the extended comment period. When it made this change to the study timeline, the Corps did not explain the difference between the Draft Feasibility Study/Tier 1 EIS and the Interim Draft Report. The Corps did not clearly explain this modification to the study process and timeline, and the practical implications of this change are still unclear.

From the beginning, the Corps’ attitude towards public engagement has been as merely an inconvenience to its own established bureaucratic process. Public knowledge and expertise

⁴⁷ *Id.*

⁴⁸ See, e.g., *Anchorage Grounds, Hudson River; Yonkers, NY to Kingston, NY*, 81 Fed. Reg. 61639 (Sept. 7, 2016).

⁴⁹ In the regulatory context, the an Executive Order has acknowledged that “meaningful” public comment can only occur in a *minimum* of sixty days. See Exec. Order No. 12866, *Regulatory Planning and Review*, 58 Fed. Reg. 51735 (Sept. 30, 1993) (requiring that “each agency should afford the public a meaningful opportunity to comment on any proposed regulation, which in most cases should include a comment period of *not less than 60 days*”) (emphasis added).

with the project area has gone unappreciated, and no effort has been made to clearly explain the project process to the public. The bait-and-switch changing of the document the public is supposed to comment on more than halfway through the extended comment period, without adequate clarification from the Corps, completely undermines any effort made to give the public a longer time period in which to comment.

D. State and Local Officials and Municipalities Also Have Procedural Concerns.

The Corps' failure to conduct adequate public outreach, share necessary information, and provide sufficient time for the public comment on the Feasibility Study are fundamental procedural concerns which undermine the legitimacy of this process. These procedural concerns have been echoed and reiterated by numerous stakeholders—many of whom have not been contacted by the Corps, and whose communities and constituents are unaware of the Corps' proposals.

Twenty-three different municipalities have passed resolutions calling for the Corps to improve the process by which it is undertaking this Feasibility Study, and to increase transparency and public engagement by sharing detailed information with the public. All twenty-three municipal resolutions are attached to these comments in Attachment C.⁵⁰ In addition, numerous newspaper articles discussing the Corps' flawed process and the potential adverse environmental impacts of the proposals have decried the Corps' failure to engage meaningfully with affected individuals and concerned members of the public in the study area.⁵¹ Those concerns have also been echoed by local, state, and federal public officials and nonprofit organizations. Below we provide a selection of assorted commentary by public officials, journalists and members of the public calling for better public engagement, information sharing and transparency.⁵²

It is clear to me that a project of this significance must be fully understood by all who would be affected. The opportunity for study and comment has been unnecessarily brief. While I understand that recent storms have prompted a call for urgent action, we must not rush into construction and permanent change to the nature of the river until we have public approval to proceed.

– Congresswoman Nita Lowey, Letter to U.S. Army Corps of Engineers (July 30, 2018).⁵³

Connecticut residents rightly have comments and concerns about each of these proposals, particularly those that call for building a

⁵⁰ Additionally, the New York City Council recently held a hearing on this issue on October 22, 2018, and is currently considering a similar resolution on storm surge barriers. See N.Y. City Council, *Committee on Environmental Protection Schedule* (Oct. 22, 2018) <https://www.riverkeeper.org/wp-content/uploads/2018/10/Agenda.pdf>.

⁵¹ See Attachment D (listing newspaper articles with links).

⁵² See also Riverkeeper Blog, *Storm surge barrier plans for NY Harbor: Comments from the public* (July 27, 2018) <https://www.riverkeeper.org/blogs/ecology/storm-surge-barrier-plans-for-ny-harbor-comments-from-the-public/>.

⁵³ Congresswoman Nita Lowey, Letter to U.S. Army Corps of Eng'rs (July 20, 2018) available at <https://lowey.house.gov/sites/lowey.house.gov/files/USACE%20Storm%20Surge%20Barriers%20Letter.pdf>.

barrier around the Throgs Neck Bridge. Even though this project is still in its early stages, what alternatives are chosen for further study have great implications for Connecticut. Ensuring our constituents have the ability to include their voices in public comment at this stage is critical.

– Senator Chris Murphy, Senator Richard Blumenthal, Congresswoman Rosa DeLauro, Congressman Joe Courtney, Congressman Jim Himes, Letter to U.S. Army Corps of Engineers (August 16, 2018)⁵⁴

I strongly urge the U.S. Army Corps of Engineers to hold additional informational meetings on the proposal. Every community member impacted by this project should have the opportunity to be part of the conversation.

– Congressman Sean Patrick Maloney, Letter to U.S. Army Corps of Engineers (July 17, 2018)⁵⁵

The public needs to be involved and be present at these meetings, because our Hudson River comes above all else.

– New York State Senator Terrence Murphy (June 30, 2018)⁵⁶

When they're proposing that kind of massive proposal, they need to do a full environmental impact study and have better engagement.

– Shino Tanikawa, SWIM (“Storm Water Infrastructure Matters”) Coalition (July 11, 2018)⁵⁷

I am concerned that despite the significance of the potential impacts and cost to taxpayers for the measures under consideration, there has been a lack of outreach, involvement and information on this project provided to both the public and local municipal leaders.

– Yonkers Mayor Mike Spano, Letter to U.S. Army Corps of Engineers (August 1, 2018)⁵⁸

⁵⁴ Senator Chris Murphy, Senator Richard Blumenthal, Congresswoman Rosa DeLauro, Congressman Joe Courtney, Congressman Jim Himes, Letter to U.S. Army Corps of Eng’rs (Aug. 16, 2018) *available at* <https://www.riverkeeper.org/wp-content/uploads/2018/07/USACE-NY-NJ-Comment-Period-Letter-081718.pdf>.

⁵⁵ Congressman Sean Patrick Maloney, Letter to U.S. Army Corps of Eng’rs (July 17, 2018) *available at* https://www.riverkeeper.org/wp-content/uploads/2018/07/Congressman-Maloney_Letter_USACE.pdf.

⁵⁶ New York State Senator Terrence Murphy, Press Release (June 30, 2018) *available at* <https://www.nysenate.gov/newsroom/press-releases/terrence-murphy/fast-track-army-corps-plan-flood-structures-could-dry-hudson>.

⁵⁷ Westchester News 12, *Army Corps of Engineers Proposes Plan to Build Severe Storm Barriers*, SWIM Coalition, Letter to U.S. Army Corps of Eng’rs (July 11, 2018) *available at* <http://westchester.news12.com/story/38625675/army-corps-of-engineers-proposes-plan-to-build-severe-storm-barriers>.

⁵⁸ Mike Spano, Mayor of Yonkers Letter to U.S. Army Corps of Eng’rs (August 1, 2018) *available at* <https://www.riverkeeper.org/wp-content/uploads/2018/07/MayorSpanoLettertoUSACE.pdf>.

In addition to extending the comment period, I also request that more information be shared with the public, including the studies that the United States Army Corps of Engineers is using to evaluate alternatives. A longer comment period and the availability of more information will create a more transparent and productive dialog between New Yorkers who will be affected by this proposal and the federal government.

– New York State Senator Terrence Murphy (July 31, 2018)⁵⁹

The Hudson River is the lifeblood for so many of our local communities and protecting and preserving it needs to always be one of our highest priorities. While we understand the critical importance of properly preparing our area for extreme weather, in doing so, we need to hear directly from the communities that would be impacted.

– New York State Senator Sue Serino (July 31, 2018)⁶⁰

With communities still recovering from the devastation of Superstorm Sandy, it is paramount to include the insights and concerns of our residents. If another storm hits our region, Long Island will undoubtedly face the brunt of the disaster given our proximity to water. I call on the Army Corps of Engineers and the State DEC [Department of Environmental Conservation] to make sure that Long Islanders have the opportunity to be heard and have our needs addressed.

– New York State Senator Elaine Phillips (July 31, 2018)⁶¹

Given the enormous and eternal consequences that would result from the project alternatives listed in the NYNJHAT Feasibility Study, any initial selection or prioritization of alternatives is unconscionable without knowledge of the full range of impacts.

– League of Women Voters of the Rivertowns (Sept. 16, 2018)⁶²

These excerpts account for only some of the outcry from the public and elected officials over the flawed process for the storm surge barriers feasibility study. The Corps' failure to share necessary data, research and studies; conduct outreach with affected communities; and clearly notify the public of critical changes to the project analyses and timeline are unacceptable.

⁵⁹ New York State Senator Terrence Murphy (July 31, 2018) *available at* <https://www.nysenate.gov/newsroom/press-releases/terrence-murphy/not-so-fast-new-york-state-senators-call-extension-comment>.

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² League of Women Voters of the Rivertowns, Letter to U.S. Army Corps of Eng'rs (Sept. 16, 2018) *available at* <https://www.riverkeeper.org/wp-content/uploads/2018/09/League-of-Women-Voters-of-the-Rivertowns-Comment-Letter.pdf>.

E. The Corps' Use of Environmental Review "Tiering" Has Muddled the NEPA Process.

Though it is the Corps' normal process to conduct a feasibility study simultaneously with NEPA environmental review of a proposed project,⁶³ "[g]iven the complexity and scale of this study," the Corps has deviated from its standard practice here by dividing its environmental review into two "tiers."⁶⁴ The Corps originally stated that it would produce a Draft Tier 1 EIS/Feasibility Study by the fall of 2018 with the six alternatives "winnowed down" to two or three, and a Chief's Report to Congress recommending a "tentatively selected plan" by summer of 2022, to be followed by a Draft Tier 2 EIS/Feasibility Study.⁶⁵ Now, the Corps has stated it is planning to produce a Draft Interim Report by winter of 2019, a Draft Feasibility Report/Tier 1 EIS by spring of 2020, a Final Feasibility Report/Tier 1 EIS by spring 2021, a Chief's Report to Congress by summer of 2022, and a Draft Feasibility Report/Tier 2 EIS sometime thereafter.⁶⁶

Despite changing this timeline by adding in a Draft Interim Report and time for public comment on that report, the Corps has never clarified the purposes or scope of different tiers of review it is utilizing in this study. Currently, the Corps has identified three different non-final documents—the Draft Interim Report, Draft Feasibility Report/Tier 1 EIS and Draft Tier 2 EIS—but has not clarified the purpose, scope, or focus of any of these documents.

Generally, the CEQ regulations explain that the "tiering" process "refers to the coverage of general matters in broader environmental impact statements . . . with subsequent narrower statements or environmental analyses . . . incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared."⁶⁷ It further explains that "tiering" may be appropriate in two circumstances:

- a) From a program, plan, or policy environmental impact statement to a program, plan, or policy statement or analysis of lesser scope or to a site-specific statement or analysis.
- b) From an environmental impact statement on a specific action at an early stage (such as need and site selection) to a supplement (which is preferred) or a subsequent statement or analysis at a later stage (such as environmental mitigation). Tiering in such cases is appropriate when it helps the lead agency to focus on the issues which are ripe for decision and exclude from consideration issues already decided or not yet ripe.⁶⁸

⁶³ See Smart Planning Guide at 2 ("It is also during the feasibility stage that NEPA compliance takes place and environmental documentation is prepared. The Corps uses the NEPA process and documentation to tie the impact analysis together and discuss effects and compliance with other environmental laws that are applicable to the study . . .").

⁶⁴ Public Meeting PPT Presentation at 26.

⁶⁵ U.S. Army Corps of Eng'rs, *Presentation on the New York-New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study to the Hudson River Estuary Management Advisory Committee ("HREMAC")* at 1 (Mar. 18, 2018) [hereinafter "HREMAC Presentation"] (attached hereto as Attachment E).

⁶⁶ Public Meeting Presentation at 35.

⁶⁷ 40 C.F.R. § 1508.28.

⁶⁸ *Id.* §§ 1508.28(a), (b).

These two types of tiering can be referred to as a) programmatic-to-site specific tiering and b) early-to-late stage tiering. The use of programmatic-to-site specific tiering is much more common,⁶⁹ and is clarified in the CEQ’s “Final Guidance for Effective Use of Programmatic NEPA Reviews.”⁷⁰ Unfortunately, there is little formal guidance on how to undertake the early-to-late stage type of NEPA tiering that the Corps seems to be undertaking here. Typically, in tiered environmental analyses, the agency provides the public with guidance as to what types of information it is seeking during the scoping process, and explains what types of considerations will be discussed in each level of its tiered evaluation.

Here, the Corps has only explained that

due to the large scope and scale of this study and the significance of potential impacts, the study team will be preparing a Tier 1 EIS, with a Tier 2 EIS to be developed once design details are better known. The Tier 1 EIS will assess potential impacts more broadly, using all available information, and the Tier 2 EIS will include the site-specific detailed design information.⁷¹

However, neither this description nor any other publicly-available materials clearly identifies which type of NEPA tiering the Corps will be using during the Feasibility Study process for this project, and the Corps has not adequately described the scope of issues that it intends to cover during Tier 1 review. Even further complicating this process, the Corps has inserted an additional unspecified level of review via its belated addition of an “Interim Draft Report.”

When asked at the October 3, 2018 public meeting in Westchester how the addition of an “Interim Draft Report” would affect the substance of what the public is actually submitting comments on, the Corps’ replied that submissions made during the current public comment period would be applied to both the Interim Draft Report and the Draft Feasibility Study/Tier 1 EIS. The agency never clarified how those two documents differ. In this way, and by not identifying the scope of issues to be addressed in each tier of its two-tiered environmental analysis for the Feasibility Study, the Corps has repeatedly failed to give the public the opportunity to submit meaningful comments.

F. The Corps’ Reliance on Cost-Benefit Analyses Undervalues Ecosystem Services.

Throughout its public meetings, the Corps has repeatedly stated that it will only use a “cost-benefit” analysis, looking strictly at the economics of how much each alternative would cost to build as compared how much real estate and infrastructure it could protect, to “winnow

⁶⁹ See, e.g., *Programmatic Environmental Assessment for Construction and Operation of Solar Photovoltaic Renewable Energy Projects on Army Installations*, 81 Fed. Reg. 87,025-25 (“Tiering from this PEA [programmatic environmental assessment] would avoid or reduce the costs of repetitive, similar analyses, and allow the Army to focus resources on only those site-specific environmental issues that merit a deeper analysis.”)

⁷⁰ *Council on Env’tl. Quality Final Guidance for Effective Use of Programmatic NEPA Reviews*, 79 Fed. Reg. 76,986 (Dec. 23, 2014) available at <https://www.gpo.gov/fdsys/pkg/FR-2014-12-23/pdf/2014-30034.pdf>

⁷¹ *Id.*

down” the proposed alternatives. The Corps has made it clear that the value of the environment, the river and harbor ecosystem—what it terms “ecosystem services”—are simply not a factor.

Under the Corps’ new timeline—which added the Draft Interim Report and additional comment period—the Corps has stated it will produce the interim report in early 2019 with additional detail on the six alternatives and a preliminary analysis of their relative costs and benefits.⁷² The Corps said during its October 3, 2018 public meeting (Westchester County) that it would share some of the studies used in the preliminary analysis. This is significant, as the preliminary cost benefit analysis and shared studies would be the first actual substantive data and design details shared with the public for the Feasibility Study.

NEPA requires that the lead agency—the Corps—take a “hard look” at the project’s potential adverse environmental impacts in its EIS, ensuring that an “agency decision maker has before him and takes into proper account all possible approaches to a particular project (including total abandonment of the project) which would alter the environmental impact and the *cost-benefit balance*.”⁷³ NEPA contemplates those hard-to-economically-define benefits of ecosystem services as components of its requirement to evaluate all direct, indirect and cumulative impacts of an agency’s action.⁷⁴ In fulfilling its obligations under NEPA, the Corps must also quantify and value those invaluable services provided by species, the environment, and ecosystems which may be adversely impacted by the proposed alternatives.⁷⁵

G. The 3x3x3 Rule Is Unduly Constraining the Corps’ Feasibility Study Process.

The Corps is being unreasonably constrained by the 3x3x3 Rule, which is, in fact, a policy that can and must be waived for the Feasibility Study. The Corps’ 3x3x3 Rule is a component of its SMART (Specific, Measurable, Attainable, Risk Informed, Timely) Planning process for conducting civil works feasibility studies for water resources development projects. The goal of the SMART Planning process is to “complete feasibility studies within three years, at a cost of no more than \$3 million, and with three levels of the Corps [District, Division, and Headquarters] engaged throughout” under the so-called 3x3x3 Rule.⁷⁶ This rule, and the process for obtaining exemptions from the rule, originated in a 2012 Corps policy directive⁷⁷ which was

⁷² Originally, the Corps stated that it would not conduct any new environmental studies before “winnowing down” the six alternatives to two or three to be evaluated in the Draft Feasibility Report/Tier 1 EIS, but rather, would only consider existing environmental studies. Despite repeated requests from the public, local organizations, and elected officials, the Corps stated it would not even share the public studies it would be relying upon with the public.

⁷³ See *Calvert Cliffs’ Coordinating Comm., Inc. v. U. S. Atomic Energy Comm’n*, 449 F.2d 1109, 1114 (D.C. Cir. 1971) (emphasis added).

⁷⁴ 40 C.F.R. § 1508.25(c) (requiring analysis of “impacts which may be (1) direct; (2) indirect; (3) cumulative”).

⁷⁵ See, e.g., U.S. Env’tl. Prot. Agency, *Considering Ecological Processes in NEPA Environmental Impact Assessments* (July 1999) available at <https://www.epa.gov/sites/production/files/2014-08/documents/ecological-processes-eia-pg.pdf>.

⁷⁶ SMART Planning Guide at iii, 3.

⁷⁷ See U.S. Army Corps of Eng’rs, *Memorandum of Deputy Commanding General for Civil and Emergency Operations* (Feb. 8, 2012) available at https://planning.ercd.dren.mil/toolbox/library/MemosandLetters/USACE_CW_FeasibilityStudyProgramExecutionDelivery.pdf.

later codified as part of the Water Resources Reform and Development Act (“WRRDA”) of 2014.⁷⁸

The 3x3x3 Rule is a policy that allows for exemptions. As stated by the Corps itself in a 2015 report to Congress,

The 3x3x3 (3-years, \$3 million, 3 levels of vertical team engagement) rule *is not a strict ‘rule’*. Instead, it is a policy established to provide benchmarks that would apply to most feasibility studies.⁷⁹

The Army Corps Planning Bulletin 2012-04 (“3x3x3 Rule Exemption Process”) explains the process for requesting an exemption from the 3x3x3 Rule.⁸⁰ Consistent with the planning bulletin, the WRRDA statute also lists “factors” to be evaluated when considering such an exemption for “complex” studies, which include, *inter alia*, “the type, size, location, scope, and overall cost of the project,” and “whether there is significant public dispute as to the economic or environmental costs or benefits of the project.”⁸¹

In public meetings, the Corps has stated that the 3x3x3 Rule was never intended to be used for studies of such enormous scope and magnitude as NY/NJ HAT. It would be impossible to accurately study all the necessary information to determine the feasibility of a project with impacts to three states, that spans more than 2,100 miles, and could forever alter numerous ecosystems. However, an exemption has not been obtained by the Corps for the NY/NJ HAT study as of the date of these comments.

A handout discussing upcoming milestones for the project distributed at the July 10, 2018 public information meeting on NEPA scoping hosted by the Corps in Newark stated that “[d]ue to the scale and complexity of the study, the study team plans to pursue an exemption to these [3x3x3 policy] study requirements.”⁸² Initially, in conversations at this meeting, Corps representatives explained that they would not seek an exemption from the 3x3x3 policy until after the release of a Draft Feasibility Report/Tier 1 EIS for public comment and review.⁸³ However, the Corps has subsequently announced that it is seeking a waiver of the 3x3x3 policy,

⁷⁸ 33 U.S.C. §§ 2282c(a), (d) (codifying the 3x3x3 Rule and exemptions) available at <https://www.law.cornell.edu/uscode/text/33/2282c>.

⁷⁹ See U.S. Army Corps of Eng’rs, *WRRDA Section 1001(f) Interim Report* at 2 (Nov. 5, 2015) available at https://www.usace.army.mil/Portals/2/docs/civilworks/Project%20Planning/rep2cong/Section1001ReporttoCongress_15Nov2015.pdf?ver=2016-06-02-103604-190 (emphasis added); see also U.S. Army Corps of Eng’rs, *The Corps feasibility study – finding a balanced solution* (Jan. 14, 2016) available at <https://www.usace.army.mil/Media/News-Archive/Story-Article-View/Article/643197/the-corps-feasibility-study-finding-a-balanced-solution/> (“Some complex studies may require additional time or funds but those are the exception rather than the rule.”).

⁸⁰ See U.S. Army Corps of Eng’rs, *Planning Bulletin 2012-04, 3x3x3 Rule Exemption Process* (Jan. 1, 2013) available at <https://planning.erdc.dren.mil/toolbox/library/pb/PB2012-04.pdf>; see also 33 U.S.C. § 2282c(d) (“the Secretary may extend the timeline of a study by a period not to exceed 3 years, if the Secretary determines that the feasibility study is too complex to comply with the requirements of subsections (a) and (c)”).

⁸¹ 33 U.S.C. §§ 2282c(d)(2)(A)-(E) (listing factors).

⁸² See also Public Meeting Posters at 5.

⁸³ Statements of Nancy Brighton, U.S. Army Corps of Engineers, *NY/NJ HAT NEPA Scoping Meeting, Newark, NJ* (July 10, 2018).

and the agency has stated that it will wait until Spring 2020 to winnow down the alternatives to one to two options to consider in depth. Yet, without a 3x3x3 waiver, the entire study process is still confined to three years and any changes to the timeline do not affect the overall three-year completion deadline. It is crucial that the Corps obtain a waiver from this rule before more time, energy, and resources are invested in this flawed feasibility study process.

II. The Corps Must Consider the Numerous Potential Adverse Environmental Impacts of the Proposed Alternatives.

As an initial matter, the bounds of this scoping period are unclear. The CEQ regulations define “scope” as the range of actions, alternatives, and impacts to be considered in an environmental impact statement.”⁸⁴ However, the Corps’ has provided very limited guidance to the public on how the scoping process will apply under its two-tiered environmental review process. The public does not know whether the Corps will conduct a new scoping process for each tier of review, or whether this scoping comment period must encompass the project’s potential environmental impacts at each stage and in its entirety.

Further, it is very difficult to summarize the many environmental impacts of the proposed alternatives, given the breadth of project study area and the alternatives’ varying geographic locations and barrier types. It is particularly challenging to do so at this point when all of the alternatives under consideration are solely conceptual, and the Corps has provided absolutely no engineering or on-the-ground specifics to inform the scoping process. Consequently, our substantive comments on NEPA scoping provided below attempt to raise—given the limited information provided by the Corps—the most obvious concerns and environmental impacts posed by the conceptual project alternatives.

The Corps is currently evaluating six alternative storm surge-related plans which will be winnowed down to two or three within the next year and a half. One is the no action alternative (Alternative 1), and four of the remaining five alternatives involve massive, in-water barriers of various sizes closing off the mouths of different waterways along the shores of New York and New Jersey. The proposed in-water barriers pose numerous threats to each of those waterways and the wildlife within them. The most egregious is the five-mile barrier from Sandy Hook, New Jersey to Breezy Point on the Rockaway Peninsula (Alternative 2), which would close off the mouth of the Hudson River, a tidal estuary, stopping the ebb and flow of the water and permanently impairing the estuary and its ecosystem. Yet, even at that scale, the in-water barrier would not protect communities against sea level rise or deflection flooding.

Riverkeeper submits the following comments on the substantive problems and potential adverse environmental impacts of the Corps’ proposals.

⁸⁴ 40 C.F.R. § 1508.25.

A. The Corps Must Consider the Extent to Which the Alternatives Evaluated by the Feasibility Study Address Flooding Impacts from Every-Day Sea Level Rise in Conjunction with Storm Surge.

When asked frequently at public meetings about whether the alternatives under consideration by the Corps in this study would address flooding impacts from sea level rise, the Corps has repeatedly explained that the barrier alternatives under consideration will be designed to be high enough to hold back rising seas, and will have extra-large, adaptable foundations. The Corps has purposefully avoided answering the actual question posed—whether the barrier alternatives would protect communities against every-day sea level rise—presumably because the answer is that they will *not*.⁸⁵ The unfortunate truth is that the Corps has been tasked with studying alternatives to address “coastal storm risk management” which does not include alleviating risks from other types of flooding such as every-day sea level rise, sunny-day flooding from tidal surge,⁸⁶ or freshwater riverine flooding.

The NY/NJ HAT Feasibility Study is authorized under Public Law 84-71, June 15, 1955 (69 Stat. 132) with the purpose of conducting an investigation into potential coastal storm risk management solutions.⁸⁷ The statute specifically directs the Corps to examine damages in coastal and tidal areas due to coastal storms, such as hurricanes, “and of possible means of preventing loss of human lives and damages to property, with due consideration of the economics of proposed breakwaters, seawalls, dikes, dams, and other structures, warning services, or other measures which might be required.”⁸⁸ It was authorized in 1955, and does not contain any requirement to consider the impact of sea level rise in its mandate to conduct an “examination and survey of the coastal and tidal areas of the eastern and southern United States, with particular reference to areas where severe damages have occurred from hurricane winds and tides.”⁸⁹

The NY/NJ Harbor was selected as an area of high vulnerability to coastal storm risk in response to the devastation of Super Storm Sandy under the Corps’ North Atlantic Coast Comprehensive Study (“NACCS”) Report, issued in January 2015. The NACCS Report identified the harbor as one of nine focus areas that warranted further study.⁹⁰ However, Sandy

⁸⁵ When pressed with a very clear question about every-day, non-storm event sea level rise at the Brooklyn public meeting, the Corps responded that the in-water barrier alternatives would not protect against flooding from every-day sea level rise.

⁸⁶ See Curbed N.Y., *In Queens, chronic flooding and sea-level rise go hand in hand* (Oct. 12, 2017) available at <https://ny.curbed.com/2017/10/12/16462790/queens-climate-change-jamaica-bay-flooding-photos> (“As ‘sunny-day flooding’ increases in the communities near Jamaica Bay, residents seek solutions.”)

⁸⁷ See 83 Fed. Reg. 6,169.

⁸⁸ See U.S. Army Corps of Eng’rs, *Fact Sheet: New York/New Jersey Harbor & Tributaries Focus Area Feasibility Study* (Oct. 2018) [hereinafter “NY/NJ HAT Fact Sheet”] available at <http://www.nan.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/644997/fact-sheet-new-yorknew-jersey-harbor-tributaries-focus-area-feasibility-study/>.

⁸⁹ See Public Law 84-71, June 15, 1955 (69 Stat. 132) available at <https://www.gpo.gov/fdsys/pkg/STATUTE-69/pdf/STATUTE-69-Pg132.pdf>. In fact, this statute notes that such a survey should examine impacts of “particularly the hurricanes of August 31, 1954, and September 11, 1954, in the New England, New York, and New Jersey coastal and tidal areas, and the hurricane of October 15, 1954, in the coastal and tidal areas extending south to South Carolina.” *Id.* (emphasis added).

⁹⁰ See NY/NJ HAT Fact Sheet; see also, U.S. Army Corps of Eng’rs, *North Atlantic Coast Comprehensive Study: Resilient Adaptation to Increasing Risk* at 10 (Jan. 2015) [hereinafter “NACCS Report”] available at http://www.nad.usace.army.mil/Portals/40/docs/NACCS/NACCS_main_report.pdf. The NACCS Report was a two-

marked the beginning of a new type of hurricane—one that is exacerbated by climate change and the rising sea levels and increased ocean temperatures that come with it. The October 8, 2018 United Nations’ Intergovernmental Panel on Climate Change (“IPCC”) Report—by a non-political, international body of independent scientists—warned that climate change and its impacts are much more dire and occurring far more quickly than many scientists had warned and for which world leaders were preparing.⁹¹ Still, the Corps was only tasked with addressing coastal zone flooding and storm surge, not sea level rise, and certainly not climate change. As a result, the Corps is essentially ignoring two of the most significant challenges faced by communities in the study area.

Four of the six alternatives under consideration in this study (Alternatives 2, 3A, 3B, and 4) involve in-water storm surge barriers, or giant sea gates, which would need to remain open most of the time to accommodate ships in one of the busiest shipping channels in the world—NY/NJ Harbor. The Corps has stated that these barriers would only be closed to address major storms and so, when the gates are open, shorelines are not protected against sea level rise or other flooding from other non-catastrophic storm events. But, as the sea level steadily rises, the ship gates will need to be closed more and more frequently because smaller and more frequent events will lead to major flooding. As the closures increase, so will the negative impacts to the Hudson River. Increased closures will also exacerbate the severity of flood events behind the barriers and the threats posed by contamination from combined sewage overflows and storm water runoff when the harbor’s ability to flush water out to sea is impeded by the barriers.

In order to develop a comprehensive plan addressing all sources of flooding that endanger the communities in the study area, the Corps must begin to properly frame the question to be addressed. That begins with acknowledging that the sea level is rising and that only building barriers, sea walls, or levees with extra-large foundations to support later expansion is not an adequate or comprehensive plan for addressing sea level rise.

According to the IPCC, humans have about twelve years to completely change the systems that put carbon dioxide into the atmosphere. The report predicts dire consequences will be evident by as soon as 2040. Even more concerning, there are many scientists who say this latest report is downplaying the gravity of our current situation and the impending impacts. Statements from the Corps at public meetings about adapting to sea level rise and assessing risk and uncertainty do not make massive in-water barriers responsive to sea level rise. Comprehensive onshore levees, dunes, and floodwalls, on the other hand—such as those contemplated in Alternatives 1 and 5—can be built first in the communities and areas at greatest risk, can be modified as needed over time, are a fraction of the cost of the large in-water barriers, will not require massive amounts of money to maintain and operate, and will work in conjunction with ongoing measures to make our shorelines more adaptive. Plus, developing

year study to address coastal storm and flood risk to vulnerable populations, property, ecosystems, and infrastructure affected by Hurricane Sandy in the North Atlantic region of the United States. U.S. Army Corps of Eng’rs, *About the North Atlantic Coast Comprehensive Study* (last visited June 19, 2018) <http://www.nad.usace.army.mil/CompStudy/>.

⁹¹ See generally United Nations Intergovernmental Panel on Climate Change, *Special Report on Global Warming of 1.5°C* (Oct. 8, 2018) available at <http://www.ipcc.ch/report/sr15/>.

those onshore measures provides meaningful points of engagement with shoreline and other affected communities.

The latest IPCC report instills a heightened sense of urgency in working to address climate change and highlights the need to respond in ways that are effective and efficient. The Corps cannot address a problem of this magnitude—the storm surge and sea level rise flooding that New York City and other coastal communities face—without well-researched science- and community-based solutions that incorporate the new data from the IPCC report and evaluate the totality of the circumstances, including increasingly intense and frequent storm surge, every-day sea level rise, and riverine and tidal flooding.

B. The Corps Must Consider the Potential Adverse Impacts of Induced and Deflection Flooding.

Induced or deflection flooding could occur outside of the in-water barriers when shipping gates are closed in the event of a coastal storm, causing Atlantic Ocean water to be deflected towards other coastal communities located outside of the storm surge barriers. Communities located along the waterfront of the Long Island Sound are particularly vulnerable to such deflection flooding because of the geographical shape of the waterbody. The Long Island Sound is shaped like a funnel, with its widest breadth situated where it meets the Atlantic ocean. The Sound gets narrower and narrower until it reaches a small funnel at its point of connection with the East River, called the Throgs Neck. Various proposed alternatives call for construction of a storm surge barrier at the Throgs Neck; this would act as a stopper at the bottom of the funnel in circumstances when a wave of storm surge from the Atlantic Ocean is barreling down the Long Island Sound, gaining velocity as the waterway narrows. When a surge of water is squeezed through that funnel and then encounters a barrier, significant on-shore flooding should be anticipated in the communities on either side of the barrier when the displaced water has nowhere else to go.⁹²

Such induced coastal flooding or deflection of storm surge to areas adjacent to the barrier alternatives could also be accompanied by flooding on the inside of the barriers due to heavy rainfall events upriver. In contrast to the high storm surge caused by Hurricane Sandy, Hurricanes Irene and Lee experienced significantly less coastal storm surge but instead saw heavy rainfall in up-river communities, causing significant freshwater flooding along the Hudson River, and sending a surge of freshwater down the Hudson River to New York City. If storm surge gates are in place and/or closed during future storms like these, there is a significant threat of riverine back-flooding behind the barriers. This non-coastal storm surge flooding may be induced or exacerbated by the implementation of in-water barriers.

This scenario was studied by Dr. Philip Orton at the Stevens Institute in 2012.⁹³ Modeling that evaluated impacts of three conceptual in-water barriers (similar to Alternative 2) when closed for ten days showed that, in an Irene-like storm event, river water would be trapped

⁹² Please also refer to comments submitted on this issue by Connecticut Fund for the Environment/Save the Sound, which we incorporate by reference herein.

⁹³ See Stevens Institute, *Presentation to NYC Council* (Dec. 12, 2012) (attached hereto as Attachment F).

behind storm surge barriers and would threaten back-flooding.⁹⁴ The Corps must carefully consider whether it is inducing other types of flooding or risks with its proposals, and seek a comprehensive solution that accounts for all types of flooding, including not only coastal storm surge but also freshwater riverine flooding, sea-level rise, and tides.

The Corps must model and study the unintended adverse impacts that in-water barriers can have to areas both inside and outside of the structures. In addition to deflected water, in-water barriers also deflect wave energy. Deflected wave energy often causes increased erosion and scour of adjacent shorelines, which leads to shoreline destabilization and additional flooding impacts.

The Corps must also model and evaluate the potential impacts to communities located outside the in-water barriers' protective zones to ensure that its proposals do not sacrifice communities—particularly lower income communities located in the outer boroughs of New York City that are already disproportionately subjected to environmental harms—by inducing flooding via deflection from storm barriers.

C. The Corps Must Evaluate and Draw Experiences From Other Existing Barriers.

The predicted and observed adverse environmental impacts associated with existing in-water storm surge barriers in the United States and Europe must be considered by the Corps in its evaluation of the various alternatives proposed here. Additionally, all of the lessons learned from these barriers—ecologically, economically, and on effectiveness—must be applied to this Feasibility Study as well.

1. Proposed Boston Harbor Barrier

The May 2018 feasibility study for construction of a multi-billion-dollar barrier to protect Boston Harbor from storm surge and sea level rise concluded that 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.”⁹⁵

As proposed, the barrier would be 3.8 miles in length with 12 vertical lift gates at 130 feet each and two floating sector gates at 650 feet and 1500 feet, for a total of 3,710 feet of flow gates. In addition, there would be 2,100 feet of artificial islands/arms/receiving structures on either side of the gates and 14,100 feet of fixed caisson wall.⁹⁶ Dividing the linear flow capacity (3,710 feet) by the length of fixed barrier infrastructure (14,100 + 2,100 = 16,200 feet) yields a gate-to-fixed-barrier ratio of 1:4.5 or 18% open gate, 82% fixed barrier.

The proposed Boston Harbor barrier would impact current velocity, wave changes (induced mixing), residence times, circulation, shoreline stability, nutrient loading and bacterial

⁹⁴ *Id.*

⁹⁵ Univ. of Mass., Boston Sustainable Solutions Lab, *Feasibility of harbor-wide barrier systems, preliminary analysis for Boston Harbor* (May 2018) available at <https://www.dropbox.com/s/zwznes9jin41i5k/Feasibility%20of%20Harbor-wide%20Barriers%20Report.pdf?dl=0>.

⁹⁶ *Id.* at 42.

respiration. Reduction in flow velocities caused by the barrier gates results in longer residence times, slower flushing from shallow areas, lower oxygen concentration, and higher nutrient and contaminant concentrations. The barrier would also dissipate wave energy, and

Any reduction in wave energy would reduce sediment resuspension and shift shallow areas from higher-energy sandy bottom environments and beaches to finer-grained bottom environments and mudflats. This would tend to shift some beaches into mudflats and/or salt marshes.⁹⁷

In addition, the barrier would diminish the beneficial aspects of storms in coastal wetlands. For example,

During storm events elevated water levels allow ocean water to wash over these areas, depositing sediment and increasing the elevation of the coastal landform. Further, these overwash events often deposit sediment into deeper waters in a fan-like landform; these “wash-over fans” in turn provide substrate for the establishment or enhancement of biologically productive habitat such as salt marsh, eelgrass, and/or other submerged aquatic vegetation. These beneficial aspects of fine-grain sediment distribution to shallow backwater areas would be reduced.⁹⁸

Further,

Decreased residence times, increased temperatures, and increased respiration rates should lower available dissolved oxygen. . . . Increased water temperatures will also increase benthic respiration rates again in areas of high surface to volume ratios (i.e., shallow areas). Reduced DO [dissolved oxygen] will result in a decrease in benthic biodiversity and could lead to surface sediment or bottom water hypoxia events which would greatly degrade habitat quality. . . . The inability of storm events to ventilate the entire harbor and surface sediments through resuspension, and to increase interstitial flushing, will also lead to increases in overall eutrophication and hypoxia in some areas in the presence of a barrier. Reduced wave action and resuspension would add to this effect.⁹⁹

Sediment quality (based on the concentration of contaminants) would decrease. With the barrier in place, “fine-grain sediments would be allowed to settle more in shallow backwaters because of decreased wave action, the removal of sediment-mobilizing storms, and decreased

⁹⁷ *Id.* at 78.

⁹⁸ *Id.* at 80.

⁹⁹ *Id.* at 86.

current velocities.”¹⁰⁰ Problematically, “[t]hese fine-grain sediments are associated with hydrophobic organic and metal contaminants.”¹⁰¹

Thus, “[a]s a result of increased residence times, and especially decreased flushing after a storm event, the bacterial water quality following a storm event would likely get significantly worse with the barrier in place.”¹⁰² The increasing water temperatures will enhance bacterial respiration and stratification, which will in turn enhance nutrient loading.¹⁰³

The barrier would also impact subtidal, intertidal, shoreline habitats. With the removal of storm-surge threats, ecosystem services such as fisheries (lobster and finfish, for example), harbor recreation, carbon storage, shoreline land use and stormwater remediation would increase coastal development and further impact the Boston Harbor’s natural ecosystems.¹⁰⁴ Barrier impacts to intertidal habitats and water quality could also impact the abundance, distribution, and behavior of fish populations, which could in turn impact both commercial and recreational fisheries.¹⁰⁵

Construction activities associated with the barrier would also impact Boston Harbor:

Dredging and resuspension of contaminated surface sediments, increases in turbidity and therefore reduction in water clarity during under-water and shoreline construction, large construction noise effects on fish and marine mammal behavior, and increased shipping during construction are just a few of the construction-related impacts that would be expected to negatively affect Boston Harbor, if only for a limited period.¹⁰⁶

2. New Orleans Delta Barriers

The 10,000-foot Borgne surge barrier crosses marshland and open river at the confluence of the Gulf Intracoastal Waterway and the Mississippi River Gulf Outlet. The barrier includes 150-ft-wide sector and barge gates across the Intracoastal Waterway to allow for passage of barges and large ships, and a 50-foot-wide lift gate near the center of the barrier for commercial and recreational fishing boat access. The rest of the barrier is constructed of fixed vertical and batter pilings to form a solid 26-foot-high floodwall. Open gate-to-fixed-barrier ratio is 1:29 or 3.5% of total barrier length.

Following the devastation of Hurricane Katrina, the Corps set forth environmental design parameters to avoid or minimize impacts associated with the Lake Pontchartrain, Lake Borgne and Seabrook Harbor barriers in New Orleans. It follows that Corps would also apply the same parameters in studying the proposed NY/NJ Harbor barriers:

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² *Id.* at 85.

¹⁰³ *Id.* at 80

¹⁰⁴ *Id.* at 99.

¹⁰⁵ *Id.* at 3.

¹⁰⁶ *Id.* at 103.

- Minimize impacts to wetlands and natural hydrological regime;
- Minimize potential adverse impacts to fisheries;
- Maintain a water flow capacity that is comparable to the waterway’s capacity prior to construction;
- Accommodate vertical and horizontal fishery distribution patterns with interior marsh tidal pathways and coastal passage;
- Minimize the migratory distance from opening to enclosed wetland habitats;
- Minimize creation of steep environmental gradients (i.e., changes in salinity regimes, changes in physical slope of channel);
- Maintain velocities suitable for fish passage (i.e., a maximum of 2.6 feet/second water flow during peak flood or ebb tides);
- Maintain velocities suitable for fish passage (i.e., a maximum of 2.6 feet/second water flow during peak flood or ebb tides).
- Provide for reopening of structure even if electricity is unavailable. This could entail a manual mechanical opening system, using a tow boat, crane operated, etc.;
- Minimize overall project footprint;
- Structures shall be designed to close during storm events, routine testing, maintenance operations, or if closing the structure is needed to provide access to other features of the project;
- Minimize potential for turbidity-causing sediment erosion during construction and throughout the project life; and
- Avoid or minimize disturbance of contaminated sediments and other hazardous, toxic or radioactive waste in the project area.¹⁰⁷

A 2006 study defends the case for restoring coastal wetlands and greening existing development in New Orleans and the Mississippi Delta,¹⁰⁸ and a 2012 reconnaissance study of a Mississippi storm surge barrier identifies impacts of painting and lubrication during construction. The study proposes that “[g]iven the dimensions of the project, it is likely that the environmental footprint will have the most significant environmental impact.”¹⁰⁹

3. Norfolk Barriers

In October 2017, the U.S. Army Corps of Engineers and the City of Norfolk, Virginia released a “Draft Coastal Storm Risk Management Feasibility Study,” which proposed a system of storm surge barriers, floodwalls, tide gates, beach/dune restoration, and non-structural

¹⁰⁷ U.S. Army Corps of Eng’rs, Wilkinson, L. and L. Walker, *Planning hurricane storm damage risk reduction with an emphasis on minimizing impacts to the Lake Pontchartrain Basin* (2011) available at https://conference.ifas.ufl.edu/NCER2011/Presentations/Friday/Waterview%20A-B/am/0840_WilkinsonWalker.pdf.

¹⁰⁸ Portland State Univ. Institute for Sustainable Solutions, Costanza, R., W.J. Mitsch & J.W. Day, *Frontiers in Ecology and the Environment*, “A new vision for New Orleans and the Mississippi delta: applying ecological economics and ecological engineering,” at 465–472 (2006) available at https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1013&context=iss_pub.

¹⁰⁹ Proceedings of the 33rd International Conference on Coastal Engineering in Santander, Spain, Van Ledden, M., A. Lansen, H. De Ridder & B. Edge, *Reconnaissance level study Mississippi storm surge barrier* at 9 (July 1-6, 2012). <https://repository.tudelft.nl/islandora/object/uuid%3Aa73b2e7a-9a2a-4704-aa22-247848982564>.

measures to protect Norfolk from flooding during storm events *and* sea level rise¹¹⁰—a distinction from the NY/NJ HAT study here. The study identifies temporary and permanent environmental impacts associated with the proposed barrier systems.

Minor to moderate, temporary and permanent adverse effects to fish and other aquatic organisms may occur as a result of construction of the storm surge barriers and gate openings. During construction, noise and temporary minimal sedimentation due to disturbance of the bottom is expected, which could disrupt foraging, reproduction, and passage. Once completed, the storm surge barrier gates will remain open except during major storm events requiring closure. The gates will allow passage of aquatic organisms; however, passage and availability of prey species may be more restricted than currently. Closures would temporarily cut off passage of all aquatic organisms. Adverse effects on Essential Fish Habitat (EFH) and marine mammals are being addressed through coordination with the National Marine Fisheries Service, pursuant to the Magnuson-Stevens Act, and the Marine Mammal Protection Act (MMPA), respectively. Similarly, the project may adversely affect Atlantic sturgeon, fin and sei whales, and Kemps Ridley, loggerhead, and green sea turtle species. Adverse effects on threatened and endangered species are being addressed through coordination with the U.S. Fish and Wildlife Service (USFWS), pursuant to the Section 7 Endangered Species Act formal consultation process.¹¹¹

The Corps must evaluate the extent to which the in-water barriers proposed here could similarly have the above-discussed adverse environmental impacts on species and the environment.

4. Netherlands Delta Works

In response to centuries of coastal flooding during storm events, the Netherlands began planning construction of 13 surge barriers and dams for flood mitigation in 1953. Though largely functional nearly complete in 1997, the last retaining wall in the system was not raised until 2010. Most of the readily available environmental studies focus on impacts of the Eastern Scheldt barrier, which is the longest Delta Works barrier (9 km) and has been in service since 1986.

¹¹⁰ The Corps study authority in Norfolk was to evaluate methods for “flood damage reduction.” U.S. Army Corps of Eng’rs, *Draft Integrated City of Norfolk Coastal Storm Risk Management Feasibility Study/Environmental Impact Statement* at 6 (Oct. 2017) available at <http://cdm16021.contentdm.oclc.org/utills/getfile/collection/p16021coll7/id/5483>.

¹¹¹ *Id.* at vi.

The Eastern Scheldt barrier is 9 km in length. It has 62 movable gates, each spanning 42 m.¹¹² The full open gate span then is $62 \times 42 = 2,604$ m, or 29% of the 9,000-m barrier. Therefore, the ratio of flow gates to fixed barrier is approximately 1:3.5.

In 1981, the Royal Netherlands Academy of Arts and Sciences published a report identifying potential significant adverse environmental impacts of the Eastern Scheldt barrier to the Eastern Scheldt Estuary.¹¹³ The report predicted impacts including reduction in tidal area and flow, salinity, temperature, and sediment transport. These impacts would result in a reduction and redistribution of the benthic community, an increase in nutrient loading, and changes and impediments to fish and plankton migration.¹¹⁴

More recently, Eelkema et al. reported changes in the morphology of the Eastern Scheldt inlet from the North Sea.

The morphology of the Eastern Scheldt inlet in the southwestern Netherlands has been changing for the past 25 years in response to the construction of the Eastern Scheldt storm-surge barrier in 1986. As a result of the barrier, there has been a decrease in tidal amplitudes, tidal volumes, and average flow velocities, and there is hardly any sediment exchange through the barrier. Bathymetrical measurements of the ebb-tidal delta show multiple effects: (1) An overall decrease in sediment volume, (2) a decrease in morphological activity, (3) erosion of the shoals and sedimentation in most channels, (4) northward reorientation of channels and shoals, and (5) an increase in wave-driven features. Results from a process-based model show that the erosion is related to the wave action, and the reorientation is related to the interaction between cross-shore and alongshore tide. The steady erosive trend, combined with the decline of morphological activity, points toward a system dominated by relatively small and mostly negative bed-level changes. This system is still far from any kind of equilibrium, and is still adapting itself to the new hydraulic forcing regime, even though sediment transport capacities have decreased.¹¹⁵

¹¹² Van Noortwijk, J. & H. Klatter, *Optimal inspection decisions for the block mats of the Eastern Scheldt Barrier* at 4 (June 7, 2000) available at

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.5.6728&rep=rep1&type=pdf>.

¹¹³ Marine Pollution Bulletin Vol. 12, issue 8, Elgershuizen, J., *Some environmental impacts of a storm surge barrier* at 265-71 (Aug. 1981) available at <https://www.sciencedirect.com/science/article/pii/0025326X81904495>.

¹¹⁴ *Id.* at 268.

¹¹⁵ Coastal Engineering Journal Vol. 55, issue 3, Eelkema, M., et al., *Morphological effects of the Eastern Scheldt storm surge barrier on the ebb-tidal delta* (Oct. 2013) available https://www.researchgate.net/publication/263805018_Morphological_effects_of_the_eastern_scheldt_storm_surge_barrier_on_the_ebb-tidal_delta.

Even though it was designed as an open barrier, the Eastern Scheldt barrier “still has a strong effect on the tidal hydrodynamics [and]... acts as a block against sediment transport so the basin receives virtually no sediment from outside.”¹¹⁶

As a result of the storm surge barrier, the average tidal flows inside and outside the basin have decreased. Inside the basin this has led to degradation of the intertidal area. As tidal current is the main process that enables sediment transport towards intertidal area, the decrease in currents has also led to a decrease in sediment transport towards the flats. Meanwhile, wind waves inside the Eastern Scheldt, which are the main erosive process for tidal flats, are not affected by the presence of the barrier. As a result, the flats are being eroded more by wind waves than that they are being built-up by currents, and thus are experiencing net erosion. This degradation has consequences on navigation, fishery, dike safety, and especially nature values [ecosystem services].¹¹⁷

In addition, the Eastern Scheldt barrier has impacted the estuary’s phytoplankton and shellfish populations. Phytoplankton species composition, abundance and seasonality changed in post-barrier period due to the altered light-nutrient-salinity regime induced by the barrier.¹¹⁸ Induced erosion has changed the morphology of the intertidal flats and depleted populations of some shellfish species.¹¹⁹

The evolution of the ebb-tidal delta of the Eastern Scheldt tidal basin has changed dramatically in response to the construction of the storm-surge barrier, which was finished in 1986.¹²⁰ As a result of the storm-surge barrier, the average tidal flows inside and outside the basin have decreased dramatically. Inside the basin this has led to degradation of the intertidal area. On the ebb-tidal delta, the effect is that the morphological activity decreased. Apart from this, it seems that the barrier forms a blockage for the exchange of sediment between the basin and ebb-tidal delta. The processes that govern the morphology of the ebb-tidal delta since the construction of the barrier are still insufficiently understood.¹²¹

Before the barriers the Eastern Scheldt was exporting significant quantities of sediment. The tidal range has had a large effect on the tidal flow. The concrete gates decreased significantly effective inlet cross section. This constriction causes a loss of energy and a 12% decrease of tidal range. The reduction of tidal range and a 22% reduction of basin area has

¹¹⁶ *Id.* at 135-0010-3.

¹¹⁷ *Id.*

¹¹⁸ Hydrobiologia Vol. 282, issue 1, Bakker, C., et al., *A new trend in the development of the phytoplankton in the Oosterschelde (SW Netherlands) during and after the construction of a storm-surge barrier* at 79-100 (May 1994) available at <https://link.springer.com/article/10.1007/BF00024623>.

¹¹⁹ Troost, K. & T. Ysebaert, *Oosterschelde: Long-term trends of waders and their dependence on intertidal foraging grounds* (May 26, 2011) available at <http://library.wur.nl/WebQuery/wurpubs/fulltext/196346>.

¹²⁰ Eelkema, et al., *supra* n. 115.

¹²¹ *Id.*

caused a 25% decrease in tidal prism.¹²² On both sides of the barrier, at the location where the bottom protection ends, large scour holes of locally more than 50 meters deep developed due to the constriction, the large amounts of turbulence, and large local flow velocities. From simulations the idea that the barrier caused a strong decrease in currents and gross transport rates is confirmed. It is still not clear what exactly causes the absence of sediment exchange between the basin and the delta, and what the long-term effect of this absence is. Also the effect of the barrier on the exchange between this ebb-tidal delta and its neighboring delta's remains unclear. Twenty-six years after construction of the Eastern Scheldt, there are still many unresolved questions and an enormous amount of ecological change to evaluate. For example, it has also been observed that even with the gates open, 25% of the tidal range and energy has been lost.

Looking forward here, the Corps must consider the following questions concerning various issues that have plagued the Eastern Scheldt:

- Since no bedrock is available to build on in NY/NJ Harbor, will compaction of the seabed and mats will be necessary?
- What will be the diameter of the mats to support the piers that support the gates?
- How will the proposed barriers alter the morphological basin of the NY/NJ Harbor and the East River?
- How profound will the undeniable ecological, morphological, and hydrodynamic changes be to the Hudson River Estuary and the East River as a result of an in-water barrier?
- How will barriers alter sediment transport? Shipping channels? Tidal range? Tidal prism? Tidal energy?
- What about impacts on water dependent businesses (including small businesses), such as marinas, boat basins and marine terminals?

It is undeniable that sweeping changes have occurred in the age-old rhythm of ebb and flow of the Eastern Scheldt. What sweeping changes will occur to the Hudson River Estuary and East River with the construction of in-water storm surge barriers?

5. Thames River Tidal Barrier

Operational as of 1982, the Thames River tidal barrier consists of rotating sector gates that rest on the seabed when not deployed. When raised, the gates can be rotated to allow for “underspill” current to continue circulate tidal flow during storm surges.¹²³

Thames River water quality is improving but has been impaired for decades. Combined sewage overflows (“CSOs”) and urban runoff continue to stress the Thames. As of 2016, phosphorus, aluminum and coliform bacteria still exceeded surface water quality criteria.¹²⁴ There are no readily available recent studies of the extent to which the tidal barrier contributes to

¹²² *Id.*

¹²³ United Kingdom Env'tl. Agency, *Guidance: How the Thames Barrier works, and when it is scheduled to close.* (Apr. 24, 2014, updated Oct. 30, 2018) <https://www.gov.uk/guidance/the-thames-barrier>.

¹²⁴ City of London, *Thames River water quality 2016* (March 2017) available at <https://www.london.ca/residents/Environment/Rivers-Creeks/Documents/Thames-River-Water-Quality-2016-AODA.pdf>

the river's water quality impairment or causes other environmental impacts; however, a 1997 report claimed "the barrier does not have a significant influence on the water quality of the Estuary."¹²⁵

In 2002, England's Environment Agency established a project to protect London and the Thames Estuary from flooding. "The key driver for the project was to consider how tidal flood risk was likely to change in response to future changes in climate and people and property in the floodplain."¹²⁶ In 2009, Environment Agency published a forward-looking, long-term strategy called the Thames Estuary 2100 Plan (TE2100). One of the key factors considered in the cost-benefit analysis of TE2100 was impact to the environment, including impacts to physical habitats and biodiversity, water quality and quantity, and natural processes.¹²⁷ Much of the existing flood management infrastructure will reach the end of its projected useful life by 2060, and the Thames River Barrier will do the same by 2070. To address the impacts of climate change and changes in socio-economic conditions over the next 100 years, the plan proposes to continue managing tidal flood risk by maintaining and improving existing infrastructure during its lifetime.¹²⁸ To meet the 2070 lifetime benchmark for the Thames Barrier, Environment Agency will decide by 2050 whether to continue to upgrade and modify existing practices and infrastructure, or to construct a new tidal flood barrier.¹²⁹

In 2016, Environment Agency published a five-year monitoring review of TE2100.¹³⁰ In addition to rising sea level, the monitoring program also documented erosion and deposition in a variety of habitats, including salt marsh, intertidal mudflats, coastal grazing marsh and freshwater wetlands. The review predicted that 1,200 hectares (2,965 acres) will be required to replace lost habitat over the life of TE2100. Impacts to habitats by extensive erosion and deposition of sediment will in turn adversely impact water quality and the biotic communities within the freshwater and marine environments. These impacts are further exacerbated by frequent closures of the Thames Barrier restricting tidal flow—during winter 2013/14 the barrier was closed 50 times.¹³¹

6. Venetian Lagoon Barriers

The MOSE project in Venice, Italy ("MOdulo Sperimentale Elettromeccanico" or "Experimental Electromechanical Module") is a system of gated barriers across three lagoons to isolate the lagoons from the Adriatic Sea. Already the gates have been eroded by mussels, the hinges are at risk of cracking, and despite a cost of €5.5 billion, the barriers will not be

¹²⁵ Env't. Agency Information Ctr., *The water quality of the tidal Thames* at 13 (Feb. 1997) <http://www.environmentdata.org/archive/ealit:1710/OBJ/20000756.pdf>.

¹²⁶ *Id.* at 5.

¹²⁷ *Id.* at 46.

¹²⁸ *Id.* at 49.

¹²⁹ *Id.* at 30.

¹³⁰ United Kingdom Env'tl. Agency, *TE2100 5 year monitoring review* (Oct. 2016) available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/558630/TE2100_5_Year_Review.pdf.

¹³¹ *Id.* at 36.

operational until 2022.¹³² Because the MOSE barrier system consists of inflatable gates that rest on the seabed when not deployed, there is no interference with circulation of water between the lagoons and the sea when the gates are at rest.

“In 1998, a national EIA [Environmental Impact Assessment] opinion on the Venice, Italy barriers gave a negative opinion, highlighting their impact on the Lagoon’s sediment balance and the risk of accelerated erosion of its salt marshes and other ecosystems.”¹³³ Since then, the Italian government has rejected nine petitions filed by various NGOs opposing the MOSE project on environmental grounds, all of which were affirmed on appeal.¹³⁴

Proponents of the MOSE barriers are concerned about sea level rise in a city that is famous for already being under water. Opponents cite impacts of predicted frequent gate closures from October through January: “As such a high concentration of gate closures will limit the circulation of water that is essential to biological life in the lagoon, this could have negative impacts on levels of water pollution and the ecology of the lagoon.”¹³⁵ Italian environmental groups also invoked the precautionary principle, arguing that “technology ought to be severely restricted if not banned, unless it can be proven to be absolutely safe.”¹³⁶

The Environmental Justice Atlas identifies impacts of the MOSE project that include decreased biodiversity, deforestation and loss of vegetative cover, flooding, surface water pollution, decreased physical, chemical and biological water quality, and reduced ecological/hydrological connectivity. “The further deepening of the channels, as required by the MOSE, and the consequent more intense water exchange with the sea, would cause a significantly increased erosion of the lagoon bed. The project caused measurable damages to the lagoon environment during the lengthy building phase.”¹³⁷

A modeling study of the changes in tidal flow dynamics generated by the MOSE barrier system in three Venice lagoons demonstrated that the increased flow velocities caused by constriction at the inlets can change sediment deposition patterns and impact benthic habitats. Erosion from increased flow velocities could impact not only the lagoon and sea beds but also the barrier infrastructure itself. In addition, “the micro-circulation between the breakwater and

¹³² La Stampa, Giovannini, R., *Venice and MOSE: story of a failure* (Dec. 10, 2017) available at <http://www.lastampa.it/2017/10/12/esteri/lastampa-in-english/venice-and-mose-story-of-a-failure-2XRaxsCgFhcmKEXidalyxJ/pagina.html>.

¹³³ European Union, European Climate Adaptation Platform, *Storm surge gates/flood barriers* (2015) available at https://climate-adapt.eea.europa.eu/metadata/adaptation-options/storm-surge-gates-flood-barriers/#costs_benefits.

¹³⁴ Corrado lo Sorto, *The MOSE project* at 8 (Feb. 2015) available at http://www.mega-project.eu/assets/exp/resources/The_MOSE_project.pdf.

¹³⁵ Standish, D., *Venice in Environmental Peril?: Myth and Reality, Barriers to barriers: why environmental caution has delayed mobile floodgates to protect Venice* at 50 (2012) available at http://www.academia.edu/441655/Barriers_to_barriers_why_environmental_precaution_has_delayed_mobile_flood_gates_to_protect_Venice.

¹³⁶ *Id.* at 51.

¹³⁷ Env'tl. Justice Atlas, *MOSE project in Venetian lagoon, Italy* (2014) available at <https://ejatlas.org/conflict/mose-project-in-venetian-lagoon>.

the coast in [barrier] inlets can be a trap for pollution or suspended sediment.”¹³⁸ The changes in flow, sediment transport and sea-lagoon hydrodynamics could have consequences for the lagoon ecosystem as a whole.

The experiences learned and empirical data gathered from these existing in-water storm surge barriers—only some of which are discussed in these comments—are of critical importance and must be evaluated and considered by the Corps when evaluating the proposed in-water barrier alternatives for the NY/NJ Harbor and tributaries.

D. The Corps Must Evaluate the Numerous and Varied Impacts on Water Quality and Sediment Movement.

The complex interactions of total flow, salinity, and sediments transfer will invariably be impacted by the construction of in-water barriers. The Corps must thoroughly study and evaluate the ways in which these complex and interdependent systems—and their effect on species and ecosystems in the Hudson River Estuary—will be impacted by its proposed alternatives.

The Hudson River flows 315 miles from its source to its confluence with the Atlantic Ocean at the NY/NJ Harbor. Owing to unique geomorphology, bathymetry and hydrodynamics, it forms a physically complex interface between land and water, and encompasses the second largest estuary on the east coast of the United States. The Hudson River maintains a dynamic connection between the flowing freshwater draining its watershed and seawater intruding from the ocean. This results in a chemically complex boundary between freshwater and salt water that is in a state of constant flux through the vigorous mixing processes related to the physics of water density and the physical features of the estuary.

Above the Federal Dam at Troy, the Hudson River is strongly influenced by fresh flowing water, whereas below the Dam, the river is considered tidal. River flow produces a net southward motion in the tidal river, but tidal velocities are usually much higher than the net southward motion from river flow.¹³⁹ Thus, the estuary is highly responsive to tidal influence, with the tides producing most of the energy and fluid transport within the river below the Troy dam.¹⁴⁰ Nevertheless, modest river flow velocity correlating with slow gradational changes of landscape elevation from Albany southward still has a dramatic influence on the estuary by providing a density contrast to the tidally-introduced seawater. Thus, the present hydrological regime in the lower Hudson River is a partially mixed estuary, with vigorous tide-induced mixing between fresh and salt waters.¹⁴¹ Density differences between fresh and salt water cause the lighter freshwater to essentially slide over the heavier tidal-induced seawater that moves landward and creates what is known as a “salt wedge” that is replete with attendant vortices occurring because of frictional forces acting along the substrate and at the boundary layers of the water. In addition, hydrodynamic action causes horizontal and vertical mixing that results in

¹³⁸ Coastal Engineering Vol. 57, Ghezzi, M., et al., *Changes in Venice Lagoon dynamics due to constriction of mobile barriers* at 694-708 (July 2010) available at <https://www.sciencedirect.com/science/article/pii/S037838391000030X>

¹³⁹ Geyer, W. & Chant, R., *Estuarine Boundary Layer Mixing Processes: Insights from Dye Experiments* (July 2006) available at <https://journals.ametsoc.org/doi/10.1175/JPO3088.1>.

¹⁴⁰ *Id.*

¹⁴¹ *Id.*

patterns of stratification due to the tidal cycles that operate in the estuary and are vital to the biotic energy, sediment deposition, and, ultimately, the foundational support of the entire ecosystem.

Tides are often responsible for the bulk of the kinetic energy present in estuaries. They play a critical role in determining the strength of vertical mixing, produce significant residual circulation, and drive other circulation patterns.¹⁴² As a result of its unique geomorphic and hydrodynamic characteristics, the Hudson River Estuary is essentially a machine for transporting sediment via two estuarine processes, which include a reversing tidal current and saltwater intrusion that causes resultant circulation patterns.¹⁴³ Estuarine circulation is one of the most fundamental and important qualities of an estuary, and affects almost all of its other processes.¹⁴⁴ Here, estuarine circulation ultimately causes the Hudson River to function as a net exporter of sediments to the estuary and the NY/NJ Harbor, supplying approximately 1,000,000 metric tons of fluvial sediment a year and importing an unknown amount of marine derived sediments into the estuary.¹⁴⁵

The complex hydrodynamics that occur with the Hudson River Estuary are closely related to the sediment transport processes that operate within it. Sediment distribution patterns can be roughly superimposed on the estuarine circulation patterns but, because the estuary is partially mixed, it becomes a sink for fine grained sediments. Marshes, pier lines, shellfish beds, and eddies are frictional places that tend to accrete sediments. Oscillating circulation patterns in conjunction with seasonal cycles tend to re-suspend and redistribute the sediments within and throughout the estuary. Conveyance of the sediment is largely accomplished through the movement and circulation of water throughout the estuary. However, sediment transport capacity in the lower estuary depends largely on river discharge, but is modified by the seasonal events and sub-tidal fluctuations in sea level.¹⁴⁶ One of the primary results from both observations and models is that the estuarine sediment flux is highly segregated laterally, with landward flux in the channel and seaward flux on the shoals,¹⁴⁷ similar to the instability that occurs through the mixing of salt and fresh waters of different densities. Though sediment accumulation within the estuary is largely in a state of dynamic equilibrium, a net export, spatial, or temporal variation may cause certain areas to accumulate fine grained sediments at higher rates than others. Much of the sediment tends to accrete in navigational and shipping channels and in areas of frictional flux.

¹⁴² Ocean Dynamics, Seim, S., Blanton J. & Elton S., *Tidal Circulation and Energy Dissipation in a Shallow Sinuous Estuary* at 360-75 (July 2006) available at <https://link.springer.com/article/10.1007/s10236-006-0078-x>.

¹⁴³ Bokuniewicz, H., et al., *Submarine Ground Water Discharge and Salt Penetration Across the Sea Floor* (Mar. 24, 2006) available at <https://doi.org/10.1111/j.1745-6584.2004.tb02637.x>.

¹⁴⁴ Geyer, W., et al., *The dynamics of a partially mixed estuary* at 2035-48 (Aug. 2000) available at https://www.ldeo.columbia.edu/~orton/results/HudsonMixing/refs/Geyer_etal_JPO00_DynamicsPartiallyMixedEstuary.pdf.

¹⁴⁵ Bokuniewicz, *supra* n. 143. The actual contributions of even fine-grained fluvial and coarse-grained marine derived sediment entering the estuary are essentially unknown and thus more comprehensive study is required.

¹⁴⁶ Ralston, D. et al., *Effects of estuarine and fluvial processes on sediment transport over deltaic tidal flats* (Feb. 8, 2012) available at https://www.whoi.edu/cms/files/RalstonEtal_CSR_2012_inPress_136124.pdf; Geyer & Chant, *supra* n. 144.

¹⁴⁷ Ralston, *supra* n. 147.

Sediment transport and tidal mixing are the most fundamental drivers of the Hudson River ecosystem. Sediments are foundational in the river's food chain and are ecological drivers of processes unique to the Hudson River. The foundation of the food web in the Hudson is critically important, as the river is a migration corridor for a number of diadromous and amphidromous fish species, many of which are in a state of dramatic decline. Moreover, sediment deposition, which is a function of watershed inputs and estuarine circulation patterns, supports a myriad of life forms, including hundreds of species of fish, birds, amphibians and mammals throughout their various life stages.

Similarly, the East River is not a river but is actually tidal strait since it receives no significant source of freshwater—outside of sewage outflows, which contribute the largest source of freshwater input to the East River. However, the tidal currents in the East River are among the strongest in the region due to the difference in amplitude and timing of tides between the Long Island Sound and the harbor. This causes the tides in the East River to be 70% larger than those experienced in the NY/NJ Harbor.¹⁴⁸ Physical restriction of water movement and tidal flow in this high energy area could have enormous ancillary impacts upon the contaminant load, sediment distribution and fauna that traverse or inhabit this region.

Storm surge barriers on the Eastern Scheldt in the Netherlands have been considered model barriers by the Corps' in its study of coastal storm surge in the NY/NJ Harbor and tributaries. However, the construction of these barriers on the Eastern Scheldt has led to a 30% decrease in tidal amplitudes, tidal volumes, and average flow velocities. This means that the channels that were physically restricted by more than 80% suddenly had to convey a smaller volume of water during each ebb and flood tide. It also means that the tidal currents building up the tidal flats were no longer in balance with the wave action eroding them. Moreover, hardly any sediment exchange is observed through the barrier, and the sill supporting the structure acts as a boundary wall for the entire benthic ecosystem. As a result, the sediment inside the basin has been redistributed, with the navigation channels filling up with sediment and the ecologically-important tidal flats eroding away. Scientists have observed that sediment depletion and rigorous human interventions in deltas, including storm surge defense works, disrupt the dynamic morphological equilibrium causing erosion and severe scour at the channel bed, even decades after intervention.¹⁴⁹

In-water barriers greatly affect intertidal exchange because they significantly constrict the tidal flow, and were found to severely affect the ecosystem of the inner bay of the Eastern Scheldt.¹⁵⁰ Overall, the presence of the in-water barriers there has caused a decrease in average tidal flow velocity and magnitudes. The lack of net sediment transport through the barrier gates is caused by the same general decrease in flow velocities. The effect of this decrease is that the morphological activity, i.e., the average magnitude of the bed-level changes, also decreased. In spite of this, the sediment budget still shows a strong erosive trend there. The low sediment transport capacity inside and outside the basin lies at the root of many of the ecological problems

¹⁴⁸ Geyer & Chant, *supra* n. 144.

¹⁴⁹ Hoitink, A., et al., *Tidal controls on river delta morphology* at 637-45 (July 31, 2017) available at <https://doi.org/10.1038/ngeo3000>.

¹⁵⁰ Mooyart, L.F., & Jonkman, S.N., *Overview and Design Considerations of Storm Surge Barriers* at 1-9 (2017) available at <https://journals.tdl.org/icce/index.php/icce/article/view/7849>.

in the Eastern Scheldt, caused by a lack of sediment transport from the channels towards the flats, brought on by the general decrease in tidal flow velocity magnitudes. In the case of the Eastern Scheldt, there are no viable mitigation possibilities to stimulate sediment import in quantities that are sufficient to counter the deficit. The bathymetric data clearly shows a change in trend in these channels in response to the construction of the barrier.

Furthermore, the whole coastline around the in-water barriers in the Eastern Scheldt has been altered, and these coasts have had to be maintained and sustained by a combination of breakwaters and beach renourishment projects. Furthermore, the Dutch concede that caution and constant attention to these coastlines remains necessary, as the channels in front of them are still growing larger and erosion is increasing. Overall, thirty years after the building of the in-water storm surge barriers in the Eastern Scheldt, ecosystems have collapsed from their former state, and what remains is in a state of constant flux. Despite years of study, there are no permanent or acceptable solutions to the damage that has been wrought upon the landmass, the ecosystem, the culture and the finances of the Dutch people by these barriers.

For these reasons, there are serious concerns about whether the Corps' proposed barriers could have similar or related adverse environmental impacts in the Hudson River Estuary. The Corps must evaluate baseline conditions in the estuary with which to compare any in-water barrier scenarios. Baseline considerations must include research and studies that identify the current amount of marine sediments imported into the estuary on an annual basis, as well as the actual amount of fluvial sediment that is exported from the river in the various reaches and into the harbor. The Corps must then evaluate:

- How in-water barriers could affect the sedimentation and estuarine circulation patterns vital to the entire river and its ecosystem?
- How could contaminants, such as PCBs be redistributed throughout the estuary and food chain as a result of alteration in patterns of sediment deposition?
- Will sediment distribution patterns be altered causing contaminants to become re-suspended and mobilized into the food chain so as to threaten human health? Will health warnings related to contaminants mobilized up the food chain need to be implemented?
- How will oyster reef reseeded efforts, such as those conducted by the Billion Oyster Project, be affected by altered patterns of estuarine circulation and transport of sediments? Will these reefs be harmed by sediments and contaminants without adequate flushing?
- If circulation and sediment transport patterns change as a result of in-water barriers, will channels need to be dredged more frequently as a result of barriers?
- How will the change in tidal and sediment deposition patterns affect all forms of biotic life in the Hudson River ecosystem?
- Will barrier beaches and all coastal communities need to be re-supported through sand replenishment or supplementation efforts?
- How will the longshore drift patterns affect all the beach communities, especially those on barrier beaches? Will additional annual maintenance funds be required for these communities?
- How will microbial action (important to secondary production) be impacted by changes in sedimentation rates and patterns?

- How will the patterns of altered sedimentation deposition patterns and rates impact the entire benthic community?
- How will altered patterns of sedimentation affect federally endangered shortnose sturgeon and Atlantic sturgeon spawning habitat, or the habitat of other species?
- How will altered patterns of estuarine circulation impact spawning efforts of striped bass and shad since their eggs and larvae are negatively buoyant and have adapted to and have been evolutionarily hard-wired to the extant patterns?

Scientists at the Hudson River Foundation (“HRF”) have conducted preliminary studies of the potential impacts of the Corps’ proposed in-water barriers.¹⁵¹ HRF evaluated predictions of the impact of in-water barriers on tidal flow, salinity mixing, and velocity under three existing models for the NY/NJ Harbor.¹⁵² The preliminary report found that though two of the three models “were not originally developed to address the questions posed in this study,” “the model results on the effects of barriers on physical conditions are largely consistent with each other and with our understanding of the dominant physical processes in the Hudson.”¹⁵³ HRF concluded that

More restrictive barriers lead to:

- Stronger tidal currents and mixing near the barrier gate openings
- Widespread reductions in tidal range, currents and mixing through the rest of the estuary
- Increased stratification in the estuary due to the reduction in tidally-driven mixing
- Greater salinity intrusion due to the stronger stratification and estuarine circulation
- More pronounced changes during spring tides than neap tides¹⁵⁴

This preliminary report found that even with storm surge gates that restrict tidal flow by 30%¹⁵⁵—the lowest restriction amount estimated by the Corps for the NY/NJ Harbor proposed in-water barriers—the environmental impacts would be dramatic. When restrictions in tidal flow approach 40%, tidal range drops off dramatically, indicating that even the Corps’ best case scenario for reducing flow restrictions is precariously close to inciting dramatic changes in the Hudson River Estuary and the NY/NJ Harbor.¹⁵⁶ These impacts must be modeled by the Corps, and compared to existing models used by the HRF to carefully evaluate the anticipated adverse environmental impacts of the in-water barriers. The preliminary report also raised numerous issues that the Corps must study in its evaluation of the in-water barrier proposals, such as “[m]odeling or other analyses . . . on topics such as dissolved oxygen, residence time, sediment transport and trapping, contaminant transport, and habitat changes.”¹⁵⁷

¹⁵¹ Hudson River Found., Orton, P. & Ralston, D., *Preliminary Evaluation of the Physical Influences of Storm Surge Barriers on the Hudson River Estuary* (September 2018) available at http://www.hudsonriver.org/download/surge_barrier_report_V8.pdf.

¹⁵² *Id.* at 4-5.

¹⁵³ *Id.* at 8.

¹⁵⁴ *Id.* at 10.

¹⁵⁵ The Hudson River Foundation preliminary report refers to this as “gated flow area.” *Id.* at 3.

¹⁵⁶ *Id.* at 6.

¹⁵⁷ *Id.* at 10.

The Corps should also study the impact of barriers on water quality in the NY/NJ Harbor. Despite incremental progress in improving water quality, New York City is home to more than 20 waterbodies that do not meet federal water quality standards. Unrestricted tidal flow is a significant factor in alleviating this pollution, as it acts to flush out and disperse high concentrations of contaminants. The closure of in-water barriers during storm events could further impair water quality, as storm events trigger pollution sources such as combined sewer overflows.

As aptly noted by HRF in its preliminary report, there is much to be studied in order to wholly and comprehensively understand the potential enormous and wide-ranging impacts of the proposed in-water barriers on the Hudson River Estuary: “To avoid unintended negative consequences for the estuary, a rigorous scientific evaluation of potential physical, chemical and biological effects is needed in parallel with the assessment of other factors such as flood risk reduction and costs for the barrier configuration alternatives.”¹⁵⁸

E. The Corps Must Analyze the Potential Impacts of the Alternatives on Estuarine, Riverine and Marine Ecosystems and Species that Inhabit Them.

As discussed above, the Hudson River is a tidal estuary where salt water from the ocean combines with freshwater from northern tributaries. This “brackish” water extends from the mouth of the Hudson in NY/NJ Harbor to the Federal Dam in Troy, approximately 150 miles. The salt front of the estuary, where the freshwater runoff meets the saline water, can range from the Tappan Zee Bay near Tarrytown/Nyack in the spring to Newburgh Bay in Poughkeepsie/Newburgh in the late summer or during droughts.

As a tidal estuary, the Hudson River supports a biologically rich environment, making it an important ecosystem for various species of aquatic life. More than 200 species of fish are reported to thrive in the Hudson River and more than 300 species of birds have been observed in the estuary. There are also many hundreds of species of invertebrates in the Hudson River Estuary and Long Island Sound (East River). For many key species, the estuary provides critical habitats and essential spawning and breeding grounds. Thus, it is essential for the Corps to evaluate the ecosystem impacts of the different proposals prior to eliminating any from consideration in order to make an environmentally informed opinion. In particular, the Corps must evaluate the ecosystem impacts during construction, one year after construction, into the future with increased gate closures, and during gate closures themselves.

The Hudson River ecosystem appears to be declining in terms of stability. Neither the ecosystem as a whole, nor many of the individual constituent species’ populations, is in a healthy state.¹⁵⁹ Rather, the estuary is in a state of flux, with temperatures increasing; dissolved oxygen decreasing; invasive species increasing, while carrying diseases and expanding their range; community shifts from more southern species; and indigenous species both increasing and

¹⁵⁸ Hudson River Found., *supra* n. 151, at 1.

¹⁵⁹ Pisces Conserv. Ltd., Seaby, R., & Henderson, P., *The Status of Fish populations and the Ecology of the Hudson River* (Apr. 2008) available at <https://www.riverkeeper.org/wp-content/uploads/2009/06/Status-of-Fish-in-the-Hudson-Pisces.pdf>.

decreasing. Habitat destruction, altered habitat, suboxic conditions, and temperature change are leading factors that threaten species' survival in the Hudson.

The ecological health of the river and the estuary is directly related to the infinite number of ecological interactions seen and unseen, known and unknown, between species and their environment and between one another. "What escapes the eye is a much mired insidious kind of extinction: the extinction of natural interactions."¹⁶⁰ Observations on animals suffering extinction suggests that for a given species, there is a minimum viable population that can exist under average environmental conditions, but which may succumb to calamities from various environmental perturbations.¹⁶¹ The physical environment is the foundation upon which the biological world is built, and so the Corps must consider potential, even minute changes in temperature and oxygen levels in the estuary as having profound consequences for its ability to support life.

1. Stages of Environmental Impacts

Potential adverse environmental impacts would differ at the three different stages of project implementation: construction (Stage I); construction completed, gates open (Stage II); construction completed, gates closed (Stage III). Below we address the types of impacts that are likely to occur at each stage, and that the Corps must study and evaluate in its environmental analyses under NEPA.

i. Construction of Barriers (Stage I)

Whales, porpoises, and seals are now regularly seen in the NY/NJ Harbor, the Long Island Sound and elsewhere. Consequently, prior to construction or winnowing down of alternatives, the Corps must evaluate how each proposed alternative will impact marine mammals during construction. For instance, will whales be at greater risk for ship strikes because of increased traffic in and around the harbor and at construction sites? This is of particular concern with right whales, which have been seriously impacted by ship strikes.

Further, the Corps must evaluate how much noise will be produced during construction from, for example, blasting, drilling or pile driving. Will the noise negatively impact the sensitive hearing of whales and other aquatic life? In evaluating acoustic impacts, the Corps also must consider the extent to which marine mammals will become disoriented by all the unnatural noise generated in and around the harbor, as well as whether the noise will cause permanent auditory damage to whales or interfere with the hearing of fishes that possess Weberian apparatuses.

Construction would also have significant adverse impacts on endangered Atlantic sturgeon. Specifically, Corps must evaluate and study the following scenarios:

¹⁶⁰ Janzen, D., *Natural History* at 48, 83 (1974).

¹⁶¹ Shaffer, M., *Minimum Species Size for Conservation* (Feb. 1981) available at http://www.co.monterey.ca.us/planning/major/Pebble%20Beach%20Company/Pebble_Beach_DEIR_Nov_2011/Pebble_Beach_DEIR_Admin_Records_Nov_2011/Shaffer/Shaffer_1981_Minimum.pdf.

- Whether construction should be stopped during migrational runs?
- Whether a sill should be utilized to stabilize the piers?
- How would a sill impact the benthic community? Would a mat impact the benthic community more or less?

ii. Construction Completed, Gates Open (Stage II)

Tidal inlets are dependent upon the flux of water that flows through them for their existence. They represent one of the most fragile elements of a barrier-inlet system. Any changes to the coastal zone that result in some modification of this tidal flux or tidal prism will bring about change in the inlet, typically one that is detrimental.¹⁶² The open gates will act like a causeway, partially blocking the flow of water and causing complexity in flow. The Corps must critically evaluate and study the following questions:

- How will the causeway of gates affect flushing, sedimentation delivery, and the tidal prism?
- Will the gates break the diffuse the force of the tidal bore and cause a loss of hydrodynamic inertia in both directions? In a tidal estuary, this would be catastrophic.
- How will the tidal prism change in response to a series of piers?
- Will flow disturbance caused by piers induce scour and eddies around the structures?
- Will flow become halted at the upstream side of the pier causing a change in the pressure field around the structures?

In evaluating these questions, the Corps should consider that velocity and pressure are higher near the surface than in the substrate, which results in downflow that impinges on the bed. The boundary layer of the approaching flow undergoes three-dimensional separation due to the adverse pressure gradient induced by the pier. In a tidal reach, the aforementioned phenomena will cause scour on the sides and both faces of the piers. These adverse environmental impacts must be modeled and studied by the Corps in its NEPA review.

The JFK Causeway in Corpus Christi, Texas shows at least a 5% decrease in tidal flow, whereas here it was stated that anything less than 25 to 30% reduction in tidal flow would be considered optimistic. How will any and every area of the estuary be impacted with respect to tidal flow, tidal prism and tidal range? How will salinity levels change with respect to a causeway with multiple piers?

Areas of deepest water (e.g., Throgs Neck Bridge, Verrazano Bridge) are at risk of low oxygen and/or oxygen depletion. How will the causeway/gages impact oxygen levels at these areas? The consumption of oxygen leads to the depletion of carbon dioxide, which lowers pH. Oxygenated waters from offshore tend to have the highest pH. The Corps must study and evaluate how the acidification of estuarine water may affect aquatic organisms. The ability of organisms to make calcareous shells depends on the amounts of dissolved calcium and carbonate in the water. This dependence is often described by the aragonite saturation index. How will the

¹⁶² Davis, R. & Barnard, P., *How anthropogenic factors in the back-barrier area influence tidal inlet stability: examples from the Gulf Coast of Florida, USA* (May 12, 2016) available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.912.4010&rep=rep1&type=pdf>.

causeway affect the aragonite calcium index? Additionally, deeper channels will allow cooler, low-pH water to penetrate farthest upstream. An increase of nutrient loading and oxygen deficiency will then be susceptible to pH alterations.

The Corps must also study and evaluate what will happen to all the larval and planktonic creatures that rely on tidal transport in or out of the estuary when they become entrained in more complex currents created by in-water barriers. Further, what will happen to the force of the tidal bore as a result of these structures, which tend to break the force of the water in both directions? What will happen to all the forage fish when they enter these vortices? Will they be more susceptible to predation as a result of turbulence?

In Tampa Bay, north of the Courtney Campbell Causeway, scientists have observed persistent algal blooms. This indicates that there is a circulation problem, as water does not flush the upper part of the bay causing an inadequate circulation. Will similar problems arise from in-water barriers in NY/NJ Harbor?

The Corps must also evaluate potential sediment deposition issues. How will the causeway-like structure affect shipping channels? Will the shipping channels need to be dredged more often due to scour and re-deposition of sediments? How will this impact benthic ecosystems and species?

iii. Construction Completed, Gates Closed (Stage III)

In its NEPA review, the Corps must study and consider the adverse environmental impacts that are likely to occur once construction is completed, such as an increase in algal blooms and hypoxic conditions inside the barriers. Other questions the Corps must consider include:

- How will migratory fish be affected when the gates are closed?
- Will migratory fish turn away or resorb their eggs if they miss their spawning window?
- How long can we expect the gates to be closed during severe winter storms and early spring storms, which persist for several days?
- How will extended closures such as these impact Atlantic herring and winter flounder?
- How will the closures in late winter early spring affect the migration of glass eels? The Corps must study the impact to the glass eel migration which, since they are poor swimmers, could be severe.
- How will fish react when they confront these closed gates?
- What is the impact to marine mammals when the gates are closed and they are trapped behind them?
- What is the impact to seals if they discover the gates closed when they are looking to enter places such as Jamaica Bay?
- Can we expect the gates to remain closed for longer durations or more frequently in the future?

The Corps must also evaluate the impacts of the in-water storm surge barrier gates after construction is completed and when the gates are closed on abiotic conditions in the NY/NJ Harbor. These questions include:

- Will nutrient loading be increased with the gates closed? What about when they are open?
- How will marsh and wetland accretion be impacted by reduced amounts of flushing or decreased tidal flow?
- How will circulation patterns throughout the estuary be impacted, especially as related to the transport of larvae and/or sediments?
- How will any alterations of sediment transport affect benthic organisms and the habitat for the wide variety of organisms that utilize the estuary as a spawning and nursery ground?
- How will vertical mixing and stratification of the water column in the estuary change with altered tidal flow and flushing rates?
- How will barriers affect the salt wedge and movement of the salinity gradient throughout the estuary?
- How will benthic and pelagic organisms be affected by any changes to the salt wedge and tidal mixing?

Factors associated with estuarine habitat degradation (e.g., pollution, coastal development, and climate change) and recurring human activities (e.g., vessel traffic, dredging, and power plant operations) are varied in nature and scale of impact both spatially and temporally. Early in the ebb, shear increases across the pycnocline and internal shear layer instabilities provide the dominant mechanism for buoyancy flux. The Corps must study and evaluate:

- Whether there will be any changes to the pycnocline during tidal movements?
- Will there be changes to buoyancy flux that could affect benthic organisms and/or fish eggs?
- What will be the impact to the infinitude of physical-biological interactions, especially with larvae and eggs that depend on minute details of turbulence and mixing throughout the estuary?
- How will stratification of the lower estuary be altered and advection of the salt wedge be modified?
- How will any changes in the advection of the salt wedge affect tidal transport of various eggs, larvae, and juvenile organisms?
- Which organisms will be affected?
- Will there be any changes to the stratification of the water column during tide changes?
- Will there be any changes to the shear forces or boundary layers in stratified waters?
- Will nearby coastlines be host to increased erosion as a result of a diminishing loss of sediment transport?
- Would onshore and naturally barrier designed barriers help reduce heat island effects and would in-water barriers alone increase the heat island effects?

2. Potential Adverse Environmental Impacts

The Corps must also evaluate the extent and variation of both direct, indirect and cumulative potential adverse environmental effects and impacts under NEPA.¹⁶³ The Corps has yet to explain or define the scope of any potential planned or future long-term environmental studies to determine the environmental impacts to the Hudson River Estuary and NY/NJ Harbor ecosystems and the wildlife, species, and organisms within them. In studying these issues, the Corps must also consider and evaluate the following:

- How will it be determined if there are impacts to fish migrations or movements of other creatures?
- How will any and all parts of the estuary be studied to determine if there are any environmental impacts before during and after construction?
- Will studies be conducted that evaluate impacts to the myriad of zeitgebers for the multitude of creatures that utilize a variety of cues to regulates their life stages? How will it be determined if any creatures are impacted?
- In the future with sea level rise and longer duration and increased frequency of nor'easters, we can expect gate closures of more than a week. How will this impact life in and around the estuary?
- How will environmental research conducted for this study take into account changing conditions predicted for the future? What will be the impact on the estuary of another 2° C by year 2100 (for a total of 4°)? How will increased water temperature leading to increased acidification, decreased oxygen, decreased tidal flow combined with closed gates synergistically impact life in the estuary?
- Would sufficient shoreline-based measures present an environmental and ecological advantage over in-water barriers?

These questions form only the very beginning of the enormous task the Corps faces in understanding and evaluating the acceptability of environmental risk to the study area. We further discuss specific environmental impacts anticipated to occur as a result of the in-water barriers below.

i. pH (Ocean Acidification)

When carbon dioxide (“CO₂”) is absorbed by seawater, chemical reactions occur that reduce seawater pH, carbonate ion concentration, and saturation states of biologically important calcium carbonate minerals. These chemical reactions are termed “ocean acidification.” Calcium carbonate minerals are the building blocks for the skeletons and shells of many marine organisms. In areas where most life now congregates in the ocean, the seawater is supersaturated with respect to calcium carbonate minerals. This means there are abundant building blocks for calcifying organisms to build their skeletons and shells. However, continued ocean acidification is causing many parts of the ocean to become undersaturated with these minerals, which is likely to affect the ability of some organisms to produce and maintain their shells.

¹⁶³ See 40 C.F.R. §§ 1508.7, 1508.8 (defining “cumulative impacts” and “direct and indirect effects”); see also Council on Env'tl. Quality, *Considering Cumulative Effects Under the National Environmental Policy Act* (Jan. 1977) https://www.energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-ConsidCumulEffects.pdf.

Since the beginning of the Industrial Revolution, the pH of surface ocean waters has fallen by 0.1 pH units. Studies have shown that lower environmental calcium carbonate saturation states can have a dramatic effect on some calcifying species, including oysters, clams, sea urchins, shallow water corals, deep sea corals, and calcareous plankton. In recent years, there have been near total failures of developing oysters in both aquaculture facilities and natural ecosystems on the West Coast. Larval oyster failures appear to be correlated with naturally occurring low pH waters undersaturated in aragonite as well as other water quality changes to nearshore environments.¹⁶⁴

In the study area for the NY/NJ HAT proposals, the Corps must study and evaluate how increasing trends toward ocean acidification would be exacerbated or impacted by the proposed in-water barriers. The Corps must consider if the in-water barriers will contribute to an increase in carbon dioxide, decreased pH, and hypoxia throughout the harbor, the estuary, Jamaica Bay, the East River, and the Long Island Sound as a result of decreased flushing and restricted tidal movements. Further, since growth rate of shellfish and important forage fish such as *Menidia menidia* declines and leads to low survivability in the presence of hypoxic conditions and acidification, the Corps must consider whether the barriers would endanger the survivability of these species. Other considerations the Corps must address include:

- If algal blooms increase in duration and/or frequency, will organisms be impacted by increased pH levels (more basic water)?
- If oxygen decreases and carbon dioxide increases, will the pH of the system decrease and, if so, how will it impact shellfish and fish otoliths?
- How will any potential changes in pH impact photosynthesis of phytoplankton, diatoms, cyanobacteria etc.?
- If a 0.1 pH drop profoundly affects human health (e.g., inducing seizures, arrhythmia and coma), how will any potential changes in pH affect physiology of a variety of organisms and the ecosystem, including photosynthesis, reproduction, and shell and skeletal construction?
- Aside from shell formation, how will any increases in pH affect otolith construction in Telost fishes?
- Since low pH may be a factor in the current oyster reproductive failure, how will shellfish be impacted with any potential changes in pH?
- Will reef-building corals be impacted by changes in pH?

New York City was once the oyster capital of the world, with billions of oysters throughout our local waterways, wetlands, and marshes. Oysters can filter up to 50 gallons of water a day, making them key partners in working toward obtaining clean water in the New York City. Changes to the pH in the NY/NJ Harbor and Hudson River Estuary would further frustrate this objective and endanger oyster populations and recovery efforts.

¹⁶⁴ Nat'l Oceanic and Atmospheric Admin., *What is Ocean Acidification?* (last accessed Nov. 3, 2018) <https://www.pmel.noaa.gov/co2/story/What+is+Ocean+Acidification%3F>.

ii. Temperature Change

Water temperature in the Hudson is increasing with a mean annual temperature more than 2° C from the 1960s. The Corps must study and evaluate how in-water barriers could affect water temperature, especially since there will be restriction of tidal flow, even with the gates open. It must also evaluate the following:

- How will any increases in temperature affect survival, growth and metabolism, activity, swimming performance and behavior, reproductive timing and rates of gonad development, egg development, hatching success, and morphology of various temperature sensitive fishes?
- How will potential increases in temperature affect the survival of fishes stressed by other factors such as toxins, disease, or parasites?
- How will young and smaller fish—which are more vulnerable to elevated water temperatures than adults—be impacted by potential increases in temperature inside the barriers, such as in the NY/NJ Harbor?
- How will the larvae, juvenile, and small forage fishes be impacted by any potential changes temperature?
- Will water impounded behind closed tidal gates heat up even more through solar radiation?

Already, maximum summer water temperatures in the Hudson river are about 81 °F (27.2 °C), which most fish can just barely tolerate. How will species be impacted by any temperature changes caused by in-water barriers? The least temperature-tolerant fish species are tomcod, alewife, rainbow smelt, yellow perch and American shad. This list includes many species that have seen recent large declines in abundance. What happens to these fish when they attempt to seek cooler waters but the gates on the proposed in-water barriers are closed?

iii. Combined Sewer Overflows

Nearly two-thirds of New York City is served by sewer systems that are connected to stormwater systems, in what is known as a “combined” sewer system. When it rains—as little as one-twentieth of an inch in some places—stormwater and untreated sewage mix in these combined sewer pipes, overwhelm the infrastructure’s limited capacity, and discharge from combined sewer overflows (“CSOs”) all around the waterfront. During rain events, anything you flush down a toilet, any water from a sink, shower, or laundry machine, and anything washed off of a building, car, and or all combine below ground and can be discharged into local waterways. The city’s approximately 460 outfalls dump billions of gallons of pathogen-laden, oil-swept, litter-filled combined sewage into New York City waterways each year.

More than 27 billion gallons of raw sewage and polluted stormwater are discharged into NY/NJ Harbor via New York City’s CSOs alone, not to mention additional discharges from other municipalities throughout the Hudson River Valley, in New Jersey, and in the western portions of Long Island. These discharges carry with them significant amounts of pollutants, including pathogens, nitrogen, floatables, and biological and chemical oxygen demand, among others. Due to these pollutants, the waters throughout the NY/NJ Harbor routinely suffer from

water quality violations. In relation to CSO discharges into every tributary within the scope of this study area from both New York and New Jersey, the Corps must study and critically evaluate the following:

- What will be the impact of reduced tidal exchange on the presence of pathogens, dissolved oxygen and other sewage pollutants in waters throughout the NY/NJ Harbor, especially in areas with already low tidal exchange?
- Will the reduced tidal exchange cause an increase in water quality violations in and around New York City?
- Will New York City and/or other municipalities and private wastewater treatment plant operators incur additional sewage treatment costs?

We additionally urge the Corps to engage with expert local community groups on this issue, such as the SWIM Coalition, of which Riverkeeper is a member. The SWIM Coalition is dedicated to ensuring swimmable and fishable waters around New York City through natural, sustainable stormwater management practices (called green infrastructure) in local New York City neighborhoods.¹⁶⁵ This approach is environmentally and fiscally responsible because it utilizes stormwater, currently viewed as waste, as a resource. Further, SWIM Coalition members endorse a truly sustainable view of watershed management, one that restores ecological systems, creates local economic opportunities and equitably distributes the benefits of green infrastructure. The Corps must critically evaluate how any in-water barriers would frustrate these environmentally and economically sound stormwater management practices.

iv. Dissolved Oxygen Levels

The distribution of dissolved oxygen (“DO”) within the water column is complex. It can be affected by many factors including tidal flow, riverine metabolism, stratification and atmospheric diffusion. DO levels are also influenced by temperature and salinity. The solubility of oxygen, or its ability to dissolve in water, decreases as the water’s temperature and salinity increase. As would be predicted, the significant upward trend in temperature has resulted in a statistically significant downward trend in DO. This results in many fish and other aquatic organisms living in below optimal oxygen levels during hot summer periods.

In the Hudson River ecosystem, and in the NY/NJ Harbor in particular, CSO events have led to DO measurements of close to zero, suffocating fish species in hypoxic dead zones. The pollutant load from these CSOs includes pathogens associated with raw sewage, along with pharmaceuticals and other household chemicals; heavy metals, salts and oils from the street; and loads of plastic, cigarette butts, and other trash. In Flushing Creek, as part of expanded dissolved oxygen monitoring with CUNY Queens College, Riverkeeper has measured almost zero oxygen.¹⁶⁶ When CSO events trigger poor water quality, a massive fish kill in an area such as Flushing Creek or Newtown Creek can kill a large number of fish, putting vulnerable species an entire year behind in recovery efforts.

¹⁶⁵ SWIM Coalition, *Mission* (last accessed Nov. 3, 2018) <https://www.swimmablenyc.org/mission>.

¹⁶⁶ See Riverkeeper Blog, *NYC sewage overflows kill thousands of fish* (Aug. 9, 2017) available at <https://www.riverkeeper.org/blogs/water-quality-blogs/nyc-sewage-overflows-kill-thousands-fish/>.

The impacts of decreased flushing of CSO pollutants can have dire consequences for aquatic species that suffocate in un-oxygenated water. The Corps must study and evaluate the extent to which the proposed in-water barriers will additionally exacerbate CSO pollution impacts and the negative impacts on species.

v. PCBs (Polychlorinated Biphenyls)

The Hudson River is the largest Superfund site in the country, with contamination from polychlorinated biphenyls (“PCBs”) extending 200 miles from Hudson Falls to the NY/NJ Harbor. There are PCBs in Hudson River water, biota, and sediment. The Corps must consider how the fate and transport of PCBs will be affected if tidal flushing is reduced as a result of in-water barriers.

PCBs do not disappear from the environment; they just go somewhere else. Every day—and especially after heavy rain—PCBs move downstream into the ecosystem of the tidal Hudson, affecting the region’s fish, wildlife, and people. The Corps must evaluate how reduced tidal flow and decreased contaminant flushing will impact levels of PCBs in the environment and in the Hudson River food chain.

vi. Algal Blooms

Runoff, stormwater discharges, and sewage pollution can lead to anything from toxic algal blooms to hypoxic or anoxic “dead zones” (with low levels of oxygen) in the NY/NJ Harbor, Long Island Sound, and the NY Bight. The Corps must consider how the in-water barriers could potentially contribute to an increase in algal blooms. Further, the Corps must study the ways in which an increase in algal blooms could cause gill damage to fish species, and whether decreased tidal flow could stimulate algal blooms and subsequently induce the death and decay of algae leading to increased CO₂, decreased pH, and hypoxia.

3. Potentially Affected Species of Concern

i. Fish Species

The extensive data sets produced by the Longitudinal River Ichthyoplankton Survey (known as the “Long River Survey”), the Fall Shoals Survey, and the Beach Seine Survey allow a general analysis of the change in fish community structure in the Hudson River ecosystem since the 1980s. Aquatic organisms, including fish such as shad and river herring, depend on steady flows of water to guide them to their spawning sites. Stagnant reservoir pools disorient migrating fish and can significantly increase the duration of their migration. Slow-moving or still reservoirs can heat up, resulting in abnormal temperature fluctuations that can affect sensitive species. It can also lead to algal blooms and decreased oxygen levels. The Corps must study and evaluate:

- How much more will the species be impacted by in-water barriers than by merely dredging alone?
- Will the proposed barriers impact the abundance, distribution, and behavior of fish populations, which would in turn impact both commercial and recreational fisheries?

- Can the damage to the fish and fisheries including shellfish be quantified?

Going forward with this study, the Corps must ensure that aquatic species are protected from adverse impacts by the proposed in-water barriers. It is especially likely that many species will be directly or indirectly impacted by the building of storm surge gates in NY/NJ Harbor and tributaries. Some fish species of particular concern are discussed below.

Rainbow Smelt (*Osmerus mordax*) – extirpated: Rainbow Smelt (*Osmerus mordax*) has not been seen in the Hudson River Estuary for the past ten years. It is believed that warming temperatures forced the rainbow smelt out of the Hudson system. This fish is exemplary of the delicate nature of cold-blooded fish.

Winter Flounder (*Pseudopleuronectes americanus*) – depleted: Populations of winter flounder are depleted and thus commercial moratoriums and restrictions have been implemented on recreational fishing for these species. Spawning stock biomass is only 18% of target biomass. The Corps must therefore consider how habitat alterations could impact the species' natural mortality. Since these winter flounder enter shallow estuaries like the Hudson River in the fall to spawn, and then migrate back out to deeper waters in the estuary or more coastal waters in response to thermal conditions and trophic availabilities, how will in-water barriers affect spawning? Will winter flounder movements be impacted during all three phases of barriers? NY/NJ Harbor, Jamaica Bay, Newark Bay, Raritan Bay, the East River, and the Hudson River all form essential fish habitat for winter flounder. As regards reductions or restrictions to sediment transport as a result of the proposed barriers, how will changes in sediment deposition affect their demersal eggs? How will their forage base be impacted by alterations in sedimentation? How will circulation patterns—which are essential for retention of winter flounder eggs and larvae in the estuary—be impacted by altered patterns of estuarine circulation. Will their recruitment effort be wasted?

Winter flounder is a commercially and recreationally important flatfish that uses portions of the Hudson River estuary as spawning, nursery, and foraging habitat. Dredging to maintain and deepen shipping channels within the harbor is a factor that may affect winter flounder, which is demersal throughout its life cycle.¹⁶⁷ Because mortality rates associated with early life history stages may strongly influence fish recruitment processes,¹⁶⁸ protecting winter flounder eggs and larvae from detrimental impacts is important to local population recovery. During spawning, females release demersal (negatively buoyant or neutrally buoyant) eggs. How will their eggs be impacted by in-water barriers?

¹⁶⁷ Pereira, J., *Essential Fish Habitat Source Document Update Memo: Winter flounder, Pseudopleuronectes americanus, Life History and Habitat Characteristics* (Nov. 2004) available at https://www.researchgate.net/profile/Jose_Pereira47/publication/267392279_Essential_Fish_Habitat_Source_Document_Update_Memo_Winter_flounder_Pseudopleuronectes_americanus_Life_History_and_Habitat_Characteristics/links/544e64220cf26dda08900f6b/Essential-Fish-Habitat-Source-Document-Update-Memo-Winter-flounder-Pseudopleuronectes-americanus-Life-History-and-Habitat.

¹⁶⁸ Houde, E., *Fish early life dynamics and recruitment variability* (1987) available at https://scholar.google.com/citations?user=Rh5-peAAAAAJ&hl=en#d=gs_md_cita-d&p=&u=%2F citations%3Fview_op%3Dview_citation%26hl%3Den%26user%3DRh5-peAAAAAJ%26citation_for_view%3DRh5-peAAAAAJ%3Au5HHmVD_uO8C%26tzom%3D300.

Many factors influence larval or juvenile growth and survival, including temperature, salinity, dissolved oxygen and food availability. How will all these factors affect winter flounder recruitment during early life stages when the fish are extremely vulnerable and sensitive to change?

Atlantic Tomcod (*Microgadus tomcod*) – vanishing, facing extirpation: The Atlantic tomcod is anadromous and the Hudson is its southern spawning limit. Tomcod enter estuaries in mid-winter to spawn in brackish water. The main spawning area in the Hudson is between West Point and Poughkeepsie. They are unusual in that their growth slows and stops as the water temperature rises. The tomcod is in long-term decline in the Hudson and suffering from exposure to PCBs. Because it is at the southern extremity of its geographical range within the Hudson estuary, sensitivity to climatic factors, particularly temperature, should be anticipated.

Bay Anchovy (*Anchoa mitchilli*) – long-term decline: Bay anchovies are an important forage fish, especially for birds and juvenile piscivorous fish such as striped bass, bluefish and weakfish. It is tolerant of a range of salinities, and will remain in estuaries the whole year. Bay anchovy are a shoaling fish that feed on plankton. They spawn in the lower part of the Hudson, with each female spawning many times in a single year. Bay anchovies are in long-term decline, possibly linked to striped bass.

Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) – endangered: There has been a very slight positive trend in sturgeon recruitment, but that news is overshadowed by the loss of over 100 adult fish from the Tappan Zee Bridge construction/demolition project. Populations of Atlantic sturgeon have declined due to overfishing, loss of habitat, limited access to spawning areas, and water pollution. How will in-water barriers affect Atlantic sturgeon populations and different life stages, during all three phases? The Long Island Sound, the East River, NY/NJ Harbor, and the Hudson River all comprise critical habitat for Atlantic sturgeon under the Endangered Species Act. Can the largest population and most important distinct population segments withstand any more perturbations without significant impact to the health of their overall populations? How will their movements be impacted by all three phases of the in-water barriers?

River Herring and Shad: Populations of alewife, blueback herring, and American shad have declined 99.9% in several major rivers from Maine to the Chesapeake.¹⁶⁹ American shad (*Alosa sapidissima*) is depleted and showing little rebound. Shad in the Hudson have declined because of overfishing, pollution and habitat loss. Ocean intercept fishery was closed in 2005 and commercial fishing in the river was closed in 2007¹⁷⁰ and yet the fishery shows little signs of rebounding. Alewife (*Alosa pseudoharengus*) are in steep decline, and are a candidate species for listing under the Endangered Species Act. Blueback herring (*Alosa aestivalis*) are in steep decline, listed by the International Union for Conservation of Nature (“IUCN”) as vulnerable, and are a candidate species under the Endangered Species Act. The Corps must consider adverse impacts the in-water barriers may have on these species.

¹⁶⁹ Limburg, K. & Waldman, J., Dramatic Declines in North Atlantic Diadromous Fishes (Dec. 2009) available at https://www.researchgate.net/publication/232691365_Dramatic_Declines_in_North_Atlantic_Diadromous_Fishes.

¹⁷⁰ N.Y. State Dep’t of Env’tl. Conserv., *American Shad* (last accessed Nov. 3, 2018) <https://www.dec.ny.gov/animals/62510.html>.

American Eel (*Anguilla rostrata*) – IUCN endangered, steep decline: According to the 2017 stock assessment update, the American eel population remains depleted in U.S. waters. According to the Atlantic States Marine Fisheries Commission, “[t]he stock is at or near historically low levels due to a combination of historical overfishing, habitat loss, food web alterations, predation, turbine mortality, environmental changes, toxins and contaminants, and disease.”¹⁷¹ Significant downward trends in multiple surveys across the coast is cause for concern.¹⁷² There are downward trends in the Hudson River for both glass eels and yellow eels from 1974 to the present.¹⁷³ Glass eels enter the harbor in late spring and early winter. The Corps must consider how they will be impacted by the gate closures when storm surge from nor’easters are most common, such as during the autumn when silver eels are leaving the estuary on their return migration.

Striped Bass (*Saxatilis morone*): The striped bass is profoundly important to the Hudson River and mid-Atlantic region. The Hudson River is the second-largest breeding ground for striped bass. It is one of the most economically and recreationally important fish to the entire region. The striped bass relies on populations of river herring and shad as forage fish. The Corps must evaluate what fraction of the striped bass population will be displaced as a result of in-water barriers? Will the storm surge barriers act as behavioral barriers to striped bass and other fishes? How will in-water barriers affect recreational fishing for this species? Will this have adverse economic impacts within communities reliant on sport-fishing tourism or recreation income?

Bluefish (*Pomatomus saltatrix*): Bluefish spawn offshore of the NY/NJ Harbor, and the Hudson River is an important nursery ecosystem for juvenile bluefish. They appear to be in decline coast-wide since the 1980s.¹⁷⁴ These fishes are adapted to pelagic conditions, and are not well adapted to low oxygen conditions. Several instances show that bluefish avoid areas of low oxygen. Temperature is probably the single most important environmental parameter determining bluefish migrations, distributions, spawning, feeding and recruitment success. Bluefish are probably the most sensitive fish to hypoxia.¹⁷⁵ Declines of diversity and abundance occurs when DO is below 2 mg/l. The Corps must consider impacts to bluefish from incidence of hypoxia and temperature changes caused by in-water barriers.

Lined seahorse (*Hippocampus erectus*) – IUCN vulnerable: There are not any numbers measuring seahorse populations in NY/NJ Harbor and the Hudson River. Typically, their presence in a region indicates high water quality and overall health of waterways. In part because of this, they have been listed as vulnerable by the IUCN since 1996.¹⁷⁶ Additionally, lined seahorse have lost significant habitat to pollution and coastal development. The Corps must study and evaluate how in-water barriers could adversely impact this vulnerable species in

¹⁷¹ Atlantic States Marine Fisheries Commission, *2017 Annual Report* at 10 (Feb. 2018) [hereinafter “ASMFC Report”] available at <https://www.asmfc.org/files/pub/2017AnnualReport.pdf>.

¹⁷² *Id.* at 12.

¹⁷³ *Id.*

¹⁷⁴ *Id.*

¹⁷⁵ Howell, P. & Simpson, D., *Estuaries* (June 1994) available at <https://doi.org/10.2307/1352672>.

¹⁷⁶ Int’l Union for the Conserv. of Nature, *Red List of Threatened Species: lined seahorse* (last accessed Nov. 3, 3018) <https://www.iucnredlist.org/species/10066/20191442>.

NY/NJ Harbor, or preclude it from ever returning to this region by negatively affecting its potential habitat.

White Catfish aka White Bullhead (*Ameiurus catus*) – steep decline: White catfish are found in the lower Hudson in brackish waters. This species is in steep decline. The Corps must evaluate and study how in-water barriers could adversely affect white catfish, particularly as its population decreases.

Other Fish Species Present in the NY/NJ Harbor and Tributaries: There are numerous other fish species present in the NY/NJ Harbor and tributaries that the Corps must consider in evaluating the adverse environmental impacts of the in-water barriers. These species include but are not limited to:

- Shortnose sturgeon (*Acipenser brevirostrum*) – endangered
- Menhaden (*Brevoortia tyrannus*)
- Weakfish (*Cynoscion regalis*) – depleted¹⁷⁷
- Sand lance (also called sand eels) (*Ammodytes americanus*)
- Butterfish (*Peprilus triacanthus*)
- Tautog (*Tautoga onitis*)
- Longfin inshore squid (*Loligo pealeii*)
- Ilex shortfin squid (*Illex argentinus*)

ii. Birds & Waterfowl

The Corps must consider the extent to which the in-water barrier proposals could adversely affect bird species which migrate through the Hudson River Estuary and NY/NJ Harbor. Bird species that utilize the estuary and feed upon the aquatic species that inhabit it form a valuable and rich part of the Hudson River ecosystem. For example, one-fourth of all nesting herons between Rhode Island and Cape May make their home in the Hudson River Estuary.

The study area is also home to the Jamaica Bay Wildlife Refuge, which covers “9,000 acres (20 square miles) of open bay, saltmarsh, mudflats, upland field and woods,” and is part of the Gateway National Recreation Area.¹⁷⁸ This area is also designated an “Important Bird Area” by the Audubon Society in recognition of the essential habitat for bird species.¹⁷⁹ At last count by the National Park Service, 332 different bird species have been sighted at the refuge over the last 25 years—accounting for nearly half the bird species in the Northeast.¹⁸⁰

More than one of the Corps’ in-water barrier proposals would restrict flow into Jamaica Bay, which could dramatically impact the exchange of nutrients, fish species, and sediment into the wetlands. These impacts could also degrade habitat quality for bird species throughout the

¹⁷⁷ ASMFC Report at 32.

¹⁷⁸ NYC Audubon, *Jamaica Bay Wildlife Refuge* (last accessed Nov. 3, 2018) <http://www.nycaudubon.org/queens-birding/jamaica-bay-wildlife-refuge>.

¹⁷⁹ Audubon Society, *Important Bird Areas: Jamaica Bay* (last accessed Nov. 3, 2018) <https://www.audubon.org/important-bird-areas/jamaica-bay>.

¹⁸⁰ NYC Audubon, *Jamaica Bay Wildlife Refuge*, *supra* n. 178.

Hudson River Estuary. The Corps must study and carefully evaluate all of the potential adverse impacts to bird species and their habitat from the proposed in-water barriers, including but not limited to:

- Piping plovers (endangered)
- Short-eared owl (endangered)
- Black rail (endangered)
- Peregrine falcon (endangered)
- Red knot (threatened)
- Pied-billed grebe (threatened)
- Least bittern (threatened)
- Common tern (threatened)
- Upland sandpiper (threatened)
- Northern harrier (threatened)
- Common loon
- Osprey (special concern)
- Cooper's hawk
- Sharp shinned hawk
- Black skimmer
- Red-shouldered hawk
- Common night hawk
- Whip-poor-will
- Seaside sparrow
- Cerulean warbler

iii. Plant Species

Various plant species within the Hudson River Estuary and project study area could be affected by the Corps' proposed in-water barriers. Today, 90% of the seagrass that has historically surrounded the Long Island Sound and the NY/NJ Harbor has been eliminated.¹⁸¹ Seagrass, such as the renowned eelgrass (*Zostera marina*) in Long Island Sound, provides habitat for species, like flounder, bay scallops and American lobster—commercially and recreationally important species.¹⁸² Further, healthy seagrass meadows also help to improve water quality by absorbing nutrients and to reduce shoreline erosion by stabilizing sediments.¹⁸³ They also help mitigate climate change by sequestering carbon.¹⁸⁴ For these same reasons, eelgrass restoration is being undertaken by the New York City Department of Environmental Protection in Jamaica Bay as well.¹⁸⁵

¹⁸¹ See Nature Conservancy, *Protecting Seagrass in Long Island Sound* (last accessed Nov. 3, 2018) <https://www.nature.org/en-us/about-us/where-we-work/united-states/connecticut/stories-in-connecticut/protecting-seagrass-in-long-island-sound/>.

¹⁸² *Id.*

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ N.Y. City Dep't of Env'tl. Prot., *Press Release: DEP Expands Eelgrass Pilot Project in Jamaica Bay* (May 13, 2010) available at http://www.nyc.gov/html/dep/html/press_releases/10-49pr.shtml#.W94J1pNKhPY.

The Corps must critically evaluate and study how the in-water barriers could affect these, and other aquatic plant species. This includes consideration of the following questions:

- How will the restriction of tidal flow from the gates affect eelgrass restoration in the Long Island Sound and Jamaica Bay?
- How will the adverse impacts on eelgrass restoration negatively impact aquatic species who rely on seagrass as critical habitat essential to their recovery?

iv. Other Species of Concern Potentially Impacted By In-Water Barriers

The Endangered Species Act¹⁸⁶ helps to ensure that the federal government does not contribute to the decline of endangered and threatened species or their potential for recovery. Federal agencies are prohibited from destroying or adversely modifying designated critical habitat. This means that agencies must consult with the Fish and Wildlife Service about actions that they carry out, fund, or authorize to ensure that they will not destroy or adversely modify critical habitat.

Going forward with this study, the Corps must ensure that all of the species discussed herein are protected from adverse impacts by the proposed in-water barriers. It is especially likely that many of these species will be directly or indirectly impacted by the building of storm surge gates in NY/NJ Harbor, and/or the tributaries. Species of particular concern are discussed below.

Mussels: Freshwater mussels may be North America's most imperiled animals.¹⁸⁷ Alewife floater (*Anodonta implicata*) freshwater mussels have declined over 90% in the tidal Hudson River and are host specific to alewife.

Blue crabs: Blue crabs are the only commercial fishery left in the Hudson River. What will be the impact to the local fishermen if the zoea or the megalopae are impacted, in addition to when the storm surge gates are shut? Blue crabs migrate to the mouth of the estuary to release their larvae, the timing of which is believed to be influenced by light, tide, and lunar cycles. How will the chronobiology of blue crab reproductive cycles be impacted by the barriers being open or shut, with reduced restriction of tidal flow? Additionally, how will the transport of eggs, zoea, megalopae of blue crabs hatch all be affected by any changes in tidal regimes? Megalopae (larvae) selectively migrate upward in the water column as tides travel landward toward estuaries. How will the megalopae be affected if gates are closed?

Atlantic Horseshoe crab – IUCN vulnerable: Atlantic horseshoe crabs range from shallow coastal habitats such as lagoons, bays, and estuaries, including the NY/NJ Harbor. Horseshoe crabs spawn on sandy beaches during high tides. Breeding events are caused circadian rhythms that are in response to tidal cycles. When Atlantic horseshoe crabs were exposed to artificial tidal cycles in the lab, circatidal rhythms were observed. That study found that light and dark cycles

¹⁸⁶ 16 U.S.C. §§ 1531 *et seq.*

¹⁸⁷ BioScience, D. Strayer et al., *Changing Perspectives on Pearly Mussels, North America's Most Imperiled Animals* (May 2004).

may influence locomotion, but not as much as tidal activity.¹⁸⁸ “Artificial tides synchronize circatidal rhythms of locomotion in the American horseshoe crab, *Limulus Polyphemus*.”¹⁸⁹ The Corps must evaluate and study how in-water barriers could adversely affect horseshoe crab species. Additionally, the red knot is a threatened bird species whose migratory populations depend on consumption of horseshoe crab eggs. If horseshoe crabs decline even further, red knots could be imperiled. The Corps must thus evaluate each species independently, as well as impacts to the entire food web and ecosystem.

Eastern oyster: 25 million oysters have been planted in NY/NJ Harbor at great expense and effort. How will they be affected by altered tidal flows, sedimentation, pH changes, etc. when storm surge barrier gates are closed?

Sturgeon species (Atlantic and shortnose): The New York Bight distinct population segment of Atlantic sturgeon, which is found in the Hudson River, was among those that the National Marine Fisheries Service (“NMFS”) listed as endangered in 2012. At the time, the agency was unable to determine any critical habitat. However, NMFS subsequently designated the main stem of the Hudson River from the Federal Dam in Troy to the mouth of the Hudson River at the NY/NJ Harbor as critical habitat for endangered Atlantic sturgeon.¹⁹⁰ As noted in our 2018 comments on the species’ Five Year Review, federal agencies must consider the range of “significant and growing uses of the Hudson River [which] will adversely affect Atlantic Sturgeon.”¹⁹¹ This includes now, as the Corps evaluates proposals to construct in-water barriers which could have significant adverse impacts on the species’ recovery.

Sea turtle species: Endangered and threatened sea turtle species which could be adversely impacted by the Corps in-water barriers include the Atlantic Kemp’s Ridley sea turtle (endangered), Atlantic Hawksbill sea turtle (endangered), Leatherback sea turtle (endangered); the Loggerhead sea turtle (threatened), and Green sea turtle (threatened).

Cetacean species: Critically endangered species such as the North Atlantic right whale have been observed in NY/NJ Harbor. Other cetacean species observed in NY/NJ Harbor include the Blue whale (endangered), Finback whale (endangered), and Sei whale (endangered); as well as one species under New York State review, the Humpback whale. Other species known to inhabit the project study area include the harbor porpoise (species of special concern) and the Atlantic spotted dolphin. The Corps must consider the problems that could arise for these enormous and majestic endangered whales and other cetaceans if they are trapped in NY/NJ Harbor when the in-water barrier gates are closed. In addition, the Corps must evaluate the adverse aesthetic impacts to communities who value observing whales, porpoises, and dolphins in the harbor and Hudson River Estuary.¹⁹²

¹⁸⁸ *The Biological Bulletin*, Chabot, CC & Watson, Win III, *Rhythms of locomotion expressed by Limulus polyphemus, the American horseshoe crab: I. Synchronization by artificial tides* (2008).

¹⁸⁹ *Id.*

¹⁹⁰ See Riverkeeper, *Comments on Critical Habitat Designation for Atlantic Sturgeon* (Sept. 1, 2016) available at <https://www.riverkeeper.org/wp-content/uploads/2016/09/20160901-Critical-Habitat-Comments.pdf>.

¹⁹¹ See Riverkeeper, *Comments on Atlantic Sturgeon 5-year Review* (May 15, 2018) (attached as Attachment G).

¹⁹² See, e.g., Popular Science, Pierre-Louis, K., *Why whales are back in New York City* (June 7, 2017) available at <https://www.popsoci.com/new-york-city-whales>.

Shark species: Numerous protected shark species could also be adversely impacted by the Corps' proposed in-water barriers. Like cetaceans and fish species, shark species could also become trapped inside the harbor when barriers are closed, and could be adversely impacted by ambient water temperature increases and increased pollution concentrations behind the barriers. These and other adverse impacts must be carefully studied by the Corps. Shark species that could be adversely impacted include but are not limited to the Sandbar shark (protected), Sand tiger shark (protected), and Dusky shark (protected).

4. Specific Considerations for Unique Areas and Ecosystems Within the Study Area

Certain areas and ecosystems within the NY/NJ HAT Feasibility Study are raise unique and varied concerns which the Corps must carefully study and evaluate. Some of those unique areas and ecosystems are discussed in more detail below. We additionally refer the Corps to the comments made by other local waterkeeper organizations for their expertise on their respective waterways, including the environment and ecosystems therein, the various tributaries, and the surrounding communities. We also incorporate those comments by reference here.¹⁹³

i. East River and Throgs Neck

From the Battery to Long Island Sound, and up through the Harlem River, the East River is the focal point of many of NYC's tributaries and waterfronts. Importantly, the East River is not actually a river, it is a tidal strait, through which Mid-Atlantic tides rush twice a day. The East River watershed and waterfront is home to huge development projects, long-standing industrial pollution, ferry services, and millions of people. It is fed by waters from small tributaries like Bushwick Inlet, large tributaries like Newtown Creek or the Bronx River, and both separate and combined sewer systems. As such, the East River is burdened by a huge amount of sewage, oil, toxic, and legacy pollutants. The Corps must evaluate the environmental impact on this region of in-water barriers which will reduce tidal flow when gates are open, and restrict it even further when the gates are closed for storm events.

Three-dimensional seasonal circulation patterns in the Long Island Sound exist in response to salinity, temperature, tides, Coriolis effects and bathymetry and undoubtedly influence tidal delivery of a variety of aquatic larvae and passive movements of fish. Fish migrations routes and movements are patterned in response to tidal movements and circulation patterns in the Long Island Sound. Fish enter and leave the Long Island Sound in response to these currents; the Corps must thus evaluate how any in-water barriers could impact the movement of fish based on disruption of water circulation and tidal exchange:

¹⁹³ We thus incorporate by reference here the comments submitted by Connecticut Fund for the Environment/Save the Sound, the NY/NJ Baykeeper, and the Hackensack Riverkeeper in particular. We also urge the Corps to reach out to local community, environmental, and environmental justice groups with expertise on specific waterways and localities. This list should include but is not limited to: Jamaica Bay Eco Watchers, Friends of Rockaway Beach, Sebago Boat Club, Guardians of Flushing Bay, Empire Dragon Boat Team, Newtown Creek Alliance, North Brooklyn Boat Club, Harbor Lab, Gowanus Canal Conservancy, Gowanus Dredgers, Hudson River Drinking Water Intermunicipal Council, Walkill River Association, Hudson River Fisherman's Association, Hudson River Foundation, Rockland County, Sierra Club, Scenic Hudson, Clearwater, Bronx Council for Environmental Quality, Bronx River Alliance, SWIM Coalition, River Project and others.

- How will the fish and the currents be affected by any structure that restricts recirculation and tidal movement? What about flushing of polluted water?
- How would a structure alter the movement of this water?
- Contingents of different fish species—including striped bass, bluefish, fluke, weakfish, eels, river herring, menhaden etc. ad infinitum—move through the East River and to the East River from the Long Island Sound. How would barriers affect species traversing through this narrow region?
- How would construction impact fish migrations and seasonal movements?

ii. Jamaica Bay

Jamaica Bay is already unstable and losing approximately 33 acres of marsh land annually. The Corps must evaluate how the bay and marsh will be impacted by a decrease in tidal flow or sedimentation, which is necessary for accretion of marsh land. There is little to no freshwater flowing into Jamaica Bay and it must be sustained by tidal circulation and connection to the ocean. Jamaica Bay suffers from hypoxia in borrow pits. As such, the Corps must consider what will happen with decreased tidal flow and increased residence times of water trapped in the bay, even with the gates open. Jamaica Bay is already the most nitrogen-polluted body of water in the world. The Corps must evaluate how will it be impacted by further alterations in circulation caused by the proposed in-water barriers.

Jamaica Bay is also a primary winter flounder spawning location and nursery area for a large variety of economically and recreationally important fish species as well as an extremely important stopover for migrating waterfowl. It serves as a stop along the way for approximately 20% of North America's bird species, with 75 different bird species nesting in Jamaica Bay. The bay is home to more than 100 species of fish, mollusks, crustaceans diamondback terrapins and the critically endangered Kemps Ridley sea turtle. Bivalves and oysters were historically a significant component of Jamaica Bay, due to their important role in providing ecosystem filtration, habitat and storm surge protection there has been increased interest in restoring bivalves to the bay.

With existing issues of hyper-eutrophication, sediment loss, channelization, borrow pits, armoring of inlets and landmasses, raw and treated sewage outflows, endocrine interrupters affecting the biotic community, loss of wetlands and marsh, loss of islands, algal blooms, landfill leaching, nitrogen loading from vehicular traffic, John F. Kennedy Airport runaways and other impacts from the airport, explosive growth of *Ulva* species, train and automobile bridges, altered bottom contours, reduced tidal flushing, and stratification of water profiles all synergistically affecting the health of the bay, how will further changes to tidal flows from the Atlantic Ocean impact the bay?

In light of this, the Corps must study and carefully evaluate the following:

- Will macroalgal blooms in Jamaica Bay and elsewhere increase and potentially cause more ecosystem disruption?

- Would increases of algal blooms occur with reduced flushing in the bay especially of mahogany, red, brown, rust tides as well as blue green algae?
- Would an increase in algal blooms lead to increased incidences of paralytic shellfish poisoning (“PSP”)? If so, could this contribute to a large die off of diamondback terrapins and other organisms that feed on affected shellfish, such as ribbed mussels?

The Corps must also carefully consider the potential environmental impacts of the proposed in-water barriers on other projects, such as the new flood mitigation projects under review in the Jamaica Bay Reformulation Study Draft EIS.¹⁹⁴ Riverkeeper incorporates its comments on the reformulation study herein.¹⁹⁵ Further, the Corps must critically evaluate the “tentatively selected plan” for the Rockaway Inlet/Jamaica Bay, which consisted of an in-water barrier across the Rockaway Inlet, and which is contemplated in one of the Corps’ in-water barrier proposals here.

a. Jamaica Bay Reformulation Study

In particular, transferring the Jamaica Bay/Rockaway Inlet Barrier proposal from the Jamaica Bay Reformulation Study to the NYNJHAT Feasibility Study raises numerous concerns. The original Draft EIS for Jamaica Bay/Rockaway Inlet considered measures both in the bay and on the shore to address coastal storm risks.¹⁹⁶ As the Revised Draft EIS explains, the Jamaica Bay Reformulation Study now only addresses shoreline measures for dealing with coastal storm risks, and moves the in-water, bay measures to the NYNJHAT study for further consideration.¹⁹⁷ However, this shift creates numerous procedural concerns that the Corps must consider and address in its final EIS.

The Corps must also clarify numerous aspects of the transfer of the Jamaica Bay barrier measures from Jamaica Bay Reformulation Study to the NY/NJ HAT Feasibility Study. First, since funding was already earmarked in the Hurricane Sandy Recovery Fund for the projects contemplated by the Jamaica Bay Reformulation Study, the Corps must explain—now that the project proposals have been split up—how any such funding would be allocated among shoreline and bay measures.¹⁹⁸ Similarly, the Corps must ensure that all environmental impacts associated

¹⁹⁴ See NY/NJ HAT Fact Sheet.

¹⁹⁵ See Riverkeeper, *Comments Revised Draft EIS for the Jamaica Bay Reformulation Study* (Oct. 22, 2018) (attached as Attachment H).

¹⁹⁶ See U.S. Army Corps of Eng’rs, *East Rockaway Reformulation Study Public Meeting Presentation* at 5 (April 22, 2015) (discussing “shoreline alternatives” 0 through 3 and “bay alternatives” A through D) available at <http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/ny/coast/Rockaway/East%20Rockaway%20Reformulation%20Presentation%2022%20April%2015.pdf>.

¹⁹⁷ See generally U.S. Army Corps of Eng’rs N.Y. Dist., *Revised Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Impact Statement - Atlantic Coast of New York - East Rockaway Inlet to Rockaway Inlet and Jamaica Bay* (August 2018) [hereinafter “Jamaica Bay Revised Draft EIS”] available at <http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/ny/coast/Rockaway/RockawayJamaicaBayRevisedDraftGRREIS083018.pdf?ver=2018-08-31-093656-900>.

¹⁹⁸ See U.S. Army Corps of Eng’rs, *Fact Sheet - Atlantic Coast of New York City, East Rockaway Inlet to Rockaway Inlet (Rockaway Beach) and Jamaica Bay* (Feb. 2018) [hereinafter “Rockaway Inlet/Jamaica Bay Fact Sheet”] available at <https://www.nan.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/487597/fact-sheet-atlantic-coast-of-new-york-city-east-rockaway-inlet-to-rockaway-inlet/> “Following the passage of the Disaster Relief Appropriations Act of 2013, the study was fully federally funded.”).

with the alternatives proposed for the bay are adequately studied in the NY/NJ HAT study in light of the implementation of the recommended shoreline measures in the Rockaway Inlet/Jamaica Bay region. Additionally, the Corps should explain which of the NY/NJ HAT study alternatives would incorporate the bay measures shifted from the Jamaica Bay Reformulation Study. The Corps must clarify which NYNJHAT alternatives would include the Jamaica Bay/Rockaway Inlet barrier alternatives.

Further, the bay measure alternatives proposed in the Jamaica Bay Reformulation Study are authorized under “an existing, authorized project for the area that was constructed in 1977 and renourished through 2004, based upon the 1965 construction authorization”¹⁹⁹ under the Flood Control Act of 1965 with an “original multiple purpose” of “coastal erosion control and coastal flooding protection.”²⁰⁰ However, the NYNJHAT Feasibility Study is authorized under Public Law 84-71, June 15, 1955 (69 Stat. 132) with the purpose of conducting an investigation into potential coastal storm risk management solutions.²⁰¹ It specifically directs the Corps to examine damages in coastal and tidal areas due to coastal storms such as hurricanes “and of possible means of preventing loss of human lives and damages to property, with due consideration of the economics of proposed breakwaters, seawalls, dikes, dams, and other structures, warning services, or other measures which might be required.”²⁰²

The Corps must reconcile the studies’ differing statutory mandates in discussing the purposes and goals these alternatives would seek to meet. With different alternatives formulated in pursuit of differing goals, the bay measure alternatives shifted to the NY/NJ HAT for further study may need to be reformulated. The Corps should disclose each statutory mandate and how they may differ or align in its discussion of its decision to shift the bay measure alternatives to the NY/NJ HAT study.

Finally, similar to Riverkeeper’s December 2016 comments on the Draft EIS,²⁰³ we are concerned about the Corps’ lack of information about the bay measure alternatives even as they are moved to the NY/NJ HAT study. First, the Corps’ failed to provide adequate information and detail about the bay measure alternatives in the Draft EIS. In response to these comments, the Corps merely repeatedly stated that these concerns would be “reevaluated” “[a]s the Jamaica Bay Planning Reach segment is integrated into the New York and New Jersey Harbor and Tributaries CSRM [coastal storm risk management] Study.”²⁰⁴ However, the Corps has similarly failed to provide information about other in-water alternatives thus far in the NY/NJ HAT study process. We are concerned that the bay measure alternatives shifted into the NY/NJ HAT study will continue to receive short shrift by the Corps. Without the underlying data, studies, or research

¹⁹⁹ Jamaica Bay Revised Draft EIS at i.

²⁰⁰ *Notice of Intent To Prepare an Environmental Impact Statement for the East Rockaway Inlet to Rockaway Inlet and Jamaica Bay Reformulation Study* 80 Fed. Reg. 17,729, 17,730 (April 2, 2015) available at <https://www.gpo.gov/fdsys/pkg/FR-2015-04-02/pdf/2015-07580.pdf> (“The original multiple purpose (coastal erosion control and coastal flooding protection) project for East Rockaway Inlet to Rockaway Inlet and Jamaica Bay, New York was authorized by the Flood Control Act of 1965 (Pub. L. 89–298).”).

²⁰¹ 30 Fed. Reg. 6,169.

²⁰² See Rockaway Inlet/Jamaica Bay Fact Sheet.

²⁰³ See generally Attachment H.

²⁰⁴ Jamaica Bay Revised Draft EIS, App’x G at 56.

information to critically evaluate, the public is robbed of its right to meaningfully comment on the proposals.

iii. Flushing Bay and Creek

Flushing Bay and Creek are waterways experiencing a renaissance after decades of industrial pollution and neglect. In addition to historic pollution, combined sewage overflows in Flushing Bay and Creek pose ecological and public health risks. Despite these challenges, local groups and recreational users are reclaiming the Queens waterway for their communities and together, fighting protect the waters from historic and new threats. How will adverse environmental impacts of the Corps' proposed in-water barriers affect this renaissance in recreation and citizen engagement? The Corps must critically evaluate and study the impacts of its proposed alternatives on eco-tourism, recreation, and economic impacts of stunting the revival of waterfront and water-dependent uses in this waterway.²⁰⁵ We also urge the Corps to coordinate with and seek expert advice from the community groups that use this waterway, including but not limited to the Guardians of Flushing Bay²⁰⁶ and the Empire Dragon Boat Team.²⁰⁷

iv. Newtown Creek

Newtown Creek, sits on the border of the boroughs of Queens and Brooklyn, across the East River from the United Nations, runs over three miles inland into the Maspeth neighborhood, and along with the Gowanus Canal, is considered to be one of the most heavily contaminated water bodies in the nation.

The Creek, originally a tidal estuary with miles of channels supporting a vast network of marshes and tidelands, was gradually narrowed, filled in, and industrialized beginning in the early 1800s. Over the years, the Creek has been — and continues to be — home to a host of industries, including oil refineries and depots, waste facilities, manufacturing hubs, and transportation sites. Because of this intense industrial use, the Creek's toxic legacy left us with unacceptable levels of PCB, metal, volatile organic compounds, raw sewage, and polycyclic aromatic hydrocarbons. Federal agencies estimate that, over the past century, more oil has been spilled into the Creek than the Exxon Valdez spill in Alaska in 1989.

In 2010, the U.S. Environmental Protection Agency, included Newtown Creek on its National Priorities List making it a Superfund site. Under the Superfund law, the EPA can step in to clean up toxic sites like the Creek, and hold the polluters (past and present) accountable—financially—for that remediation. Riverkeeper has been actively patrolling Newtown Creek since 2002, when its first boat patrol discovered oil seeps, abandoned cars and floating garbage littering the Creek. Riverkeeper also helped found the Newtown Creek Alliance,²⁰⁸ a coalition of

²⁰⁵ See Riverkeeper, *Flushing Waterways Vision Plan* (last accessed Nov. 3, 2018)

<https://www.riverkeeper.org/campaigns/restore-nyc-waterways/flushing-waterways-vision-plan/>.

²⁰⁶ Guardians of Flushing Bay (last accessed Nov. 3, 2018) <https://www.guardiansofflushingbay.org/>.

²⁰⁷ Guardians of Flushing Bay, *Empire Dragon Boat Team Weekly Water Testing* (May 26, 2016)

<https://www.facebook.com/GuardiansofFlushingBay/posts/the-empire-dragon-boat-team-does-weekly-water-testing-of-flushing-bay-as-part-of/982608398436865/>.

²⁰⁸ Newtown Creek Alliance (last accessed Nov. 3 2018) <http://www.newtowncreekalliance.org/>.

elected officials, local residents, business owners and other non-profit organizations working to improve the Creek and adjoining neighborhoods.

Beyond the legacy contamination in the Creek which Riverkeeper is working to ensure gets cleaned up under the Superfund process, we are working on a host of other issues on the Creek, including its huge stormwater overflow problem that brings over a billion gallons of CSO (sewage/rainwater mix) pollution into the Creek each year. The Corps needs to engage with local community partners, including Newtown Creek Alliance, for their expertise in evaluating the adverse environmental and community impacts the in-water barriers could have on this ecosystem, and recovering waterfront. The Corps must also evaluate how the in-water barrier proposals could adversely affect the public's newfound recreational relationship with this waterway as it is being revitalized and cleaned up.²⁰⁹ Further, the corps must seriously consider and study how the in-water alternatives which include a barrier across the mouth of Newtown Creek would adversely affect the ecosystem, environment, recreation, culture and resiliency of this waterbody.

v. Gowanus Canal

Brooklyn's Gowanus Canal is one of the most heavily contaminated water bodies in the nation. The canal, 1.8 miles long and 100 feet wide, was built in the 1800s as industrial waterfront space constraints in Manhattan and along Newtown Creek created a need for a new shipping hub. Historically, Gowanus has been home to industries ranging from manufactured gas plants and cement facilities, to oil refineries, tanneries, and chemical plants. After nearly 150 years of heavy industrial use, the contamination levels of the canal were the worst in the nation; PCBs, heavy metals, pesticides, volatile organic compounds, raw sewage, and polycyclic aromatic hydrocarbons ("PAHs") are found throughout the Canal and the land around it.

In 2010, the U.S. Environmental Protection Agency ("EPA"), included the Gowanus Canal on its National Priorities List making the Gowanus Canal a Superfund site. Under the Superfund law, the EPA can step in to clean up toxic sites like the Gowanus, and hold the polluters — both past and present — financially accountable for that remediation. In 2013, after three years of research, testing, and planning, the EPA issued its "Record of Decision" — the agency's clean-up plan for the canal.

Since 2013, there has been a flurry of activity along the canal; new developments, new grocers, new waterfront access, and a host of clean-up related initiatives. For years, Riverkeeper's monthly patrols on the waterway have led to dozens of Clean Water Act citizen suit enforcement cases. Our community engagement and legal teams are members of the Community Advisory Group for the Superfund clean-up. Riverkeeper has been pushing for stormwater controls and green infrastructure in the watershed to reduce sources of new contamination.

The Corps must critically evaluate and study the impacts of its proposed alternatives on eco-tourism, recreation, and economic impacts of stunting the revival of waterfront and water-

²⁰⁹ See Riverkeeper, *Newtown Creek Vision Plan* (last accessed Nov. 3, 2018) <https://www.riverkeeper.org/campaigns/restore-nyc-waterways/newtown-creek-vision-plan/>.

dependent uses in this waterway. We also urge the Corps to coordinate with and seek expert advice from the community groups that use this waterway, including but not limited to the Gowanus Canal Conservancy.²¹⁰ The Corps must also seriously consider and study how the in-water alternatives which include a barrier across the mouth of the Gowanus Canal would adversely affect the ecosystem, environment, recreation, culture and resiliency of this waterbody. The Corps' in-water barriers would doom this waterbody to the fate that has befallen so many of Brooklyn's historic canals and creeks—non-tidal, toxic lifelessness before being filled-in.

vi. Up-River/Hudson River Valley

While sea level rise projections for the NY/NJ Harbor cited by the Corps measure only centimeters over the course of the next few decades,²¹¹ up the Hudson River in the Hudson Valley, sea level rise is projected to be orders of magnitude higher.²¹² For example, using data from the National Oceanic and Atmospheric Administration, the Corps' anticipates 2 feet of sea level rise in NY/NJ Harbor (intermediate) to 5 feet (high) by the year 2100.²¹³ However, the intermediate range of sea level rise expected up-river north of Kingston, NY by the year 2100 is approximately 11 feet, with the high range estimating 52 or more feet of sea level rise.²¹⁴ The Corps' must seriously evaluate whether the impacts of the in-water storm surge barriers—which will be felt ecologically throughout the entire Hudson River Estuary, and will not do anything to address sea level rise, especially in up-river communities—are worth the economic and environmental costs.

F. The Corps Must Study and Evaluate the Public's Commercial and Recreational Use of Waterways in the Study Area and their Aesthetic Value to Affected Communities.

NEPA requires that the Corps evaluate the potentially significant environmental impacts of its proposed alternatives, including “ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.”²¹⁵

Recreational uses in the Hudson River Estuary and NY/NJ Harbor and tributaries are vast, and operate as the economic drivers of many communities throughout the study area. Additionally, beyond economic impacts, the Corps must also carefully study and consider communities' relationships with their waterways and the aesthetic and cultural significance waterways serve in the study area. Further, the Corps must undertake outreach to the local commercial enterprises and small businesses which rely upon the Hudson River Estuary and NY/NJ Harbor and tributaries. Similarly, the Corps must conduct outreach with local

²¹⁰ Gowanus Canal Conservancy (last accessed Nov. 3, 2018) <https://gowanuscanalconservancy.org/>.

²¹¹ Public Meeting Presentation at 12.

²¹² Scenic Hudson, *Sea Level Rise Projections Along the Hudson River* (Apr. 26, 2013) available at <https://www.scenichudson.org/sea-level-rise-projections-along-hudson-river/2013-04-26> (citing New York State sea level rise estimates).

²¹³ Public Meeting Presentation at 12.

²¹⁴ Scenic Hudson, *Sea Level Rise Projections Along the Hudson River* (Apr. 26, 2013) available at <https://www.scenichudson.org/sea-level-rise-projections-along-hudson-river/2013-04-26>.

²¹⁵ 40 C.F.R. § 1508.8.

municipalities within the study area to better understand the role of waterways in their city budgets, as well as their constituents' cultural, recreational, and aesthetic values.²¹⁶

Members of the public participate in numerous recreational uses of the Hudson River Estuary system, including for recreational fishing (including for striped bass²¹⁷ and trout,²¹⁸ among other fish species), paddling and kayaking,²¹⁹ swimming,²²⁰ recreational (and commercial) boating—including Dragon Boat racing,²²¹ in addition to numerous on-shore activities which set the Hudson River Estuary and waterways as their scenic backdrop, including hiking, biking, walking, running, and other activities.²²² It is precisely because of the dramatic beauty of the Hudson River Valley that it was one of the birthplaces of environmentalism in the United States in the 1960s and 70s.²²³ The Corps must critically evaluate the invaluable cultural significance of a thriving, intact ecosystem and clean and healthy environment in this region in the context of the local history of environmentalism.

Further, various municipalities source their public drinking water from the Hudson River, making these towns critical stakeholders in the Feasibility Study process which the Corps must reach out to and engage with. Five intakes along the mid-Hudson supply more than 100,000 people in the Towns of Esopus, Lloyd, Hyde Park, City and Town of Poughkeepsie and the Village and Town of Rhinebeck with drinking water.²²⁴ The Corps must reach out to and engage with the various municipalities that source their public drinking water from the Hudson River.

²¹⁶ See, e.g., Riverkeeper, *City on the Water Mini-documentary* (June 4, 2017) available at <https://www.riverkeeper.org/blogs/keeping-current/city-water-powerful-mini-doc-nyc-waterways/>.

²¹⁷ See, e.g., Riverkeeper, *Water Quality Data: Esopus Creek* (last accessed Nov. 3, 2018) <https://www.riverkeeper.org/water-quality/citizen-data/esopus-creek/>; Riverkeeper, *Water Quality Data: Rondout Creek* (last accessed Nov. 3, 2018) <https://www.riverkeeper.org/water-quality/citizen-data/rondout-creek/>; Riverkeeper, *Water Quality Data: Catskill Creek* (last accessed Nov. 3, 2018) <https://www.riverkeeper.org/water-quality/citizen-data/catskill-creek-watershed/>.

²¹⁸ Riverkeeper, *Hudson River fish migration: A reason and a season* (May 2018) available at <https://www.riverkeeper.org/blogs/ecology/hudson-river-fish-migration/>.

²¹⁹ Riverkeeper, *Events: Kingston Kayak Festival* (June 9, 2018) available at <https://www.riverkeeper.org/news-events/events/other-events/kingston-kayak-festival-2/>.

²²⁰ 8 Bridges Hudson River Swim (last accessed Nov. 3, 2018) <https://www.8bridges.org/>; Riverkeeper Blog, *Swimming in NYC: The data behind "A beach for Manhattan"* (Aug. 8, 2018) available at <https://www.riverkeeper.org/blogs/water-quality-blogs/swimming-in-nyc-the-data-behind-a-beach-for-manhattan/>; see also N.Y. Times Editorial Board, *A beach for Manhattan* (Aug. 5, 2018) available at <https://www.nytimes.com/2018/08/05/opinion/editorials/a-beach-for-manhattan.html>.

²²¹ N.Y. Times, *Answers to Questions About Boating, Part III* (Aug. 3, 2012) available at <https://cityroom.blogs.nytimes.com/2012/08/03/answers-to-questions-about-boating-part-iii/> (discussing recreational boating in NY/NJ Harbor and the Hudson and East Rivers).

²²² We additionally refer the Corps to the comments made by Scenic Hudson for their expertise and decades-long dedication to protecting the aesthetic beauty of the Hudson River Valley and its environment and ecosystems. We incorporate their comments by reference here, and urge the Corps to conduct outreach directly with these community experts.

²²³ See Hudson Valley One, *Learn How the Hudson River Gave Birth to the Modern American Environmental Movement* (Oct. 4, 2018) available at <https://hudsonvalleyone.com/2018/10/04/learn-how-the-hudson-river-gave-birth-to-the-modern-american-environmental-movement/>.

²²⁴ Riverkeeper Blog, *'Hudson 7' sign agreement to protect Hudson River drinking water supply* (May 31, 2018) available at <https://www.riverkeeper.org/news-events/news/water-quality/hudson-7-sign-agreement-to-protect-hudson-river-drinking-water-supply/>; Riverkeeper, *Press Release: Report calls for enhanced drinking water protections for 100,000 people who rely on Hudson River* (Feb. 22, 2018) available at

Countless commercial operations and small businesses rely upon the Hudson River Estuary, including boatyards, marinas, and fishermen (including commercial glass eel and blue crab fisheries).²²⁵ Changes to tidal flow, salinity and sediment movement anticipated by the in-water barrier proposals would have significant adverse impacts upon many of these commercial enterprises. The Corps must conduct outreach with this critical constituency of Hudson River Estuary stakeholders, as well as carefully study and evaluate the impacts of its proposals on these drivers of local economies of river-side towns within the project study area.

G. The Corps' Feasibility Study Must Take Existing and Planned Flood Schemes into Account.

The Corps must study and evaluate the potential impacts of the proposed in-water barriers on existing and planned resiliency and adaptation projects. Not only would the in-water barriers take funding and political will away from local communities trying to implement smaller-scale resiliency and sea level rise adaptation projects, but the in-water barriers also run the risk of making those projects redundant or reducing their effectiveness.

In its evaluation of Alternative 1 (No Action), the Corps must catalogue and evaluate the efficacy of either the array of flood protection projects already being undertaken by the states of New York and New Jersey, and local municipalities within the study area. Some of the projects which the Corps must consider include, but are not limited to the Big U project in Lower Manhattan;²²⁶ the East Side Coastal Resiliency Project;²²⁷ New Jersey Coastal Resiliency Planning grants through the Department of Housing and Urban Development;²²⁸ and New York City Sponge Park pilot projects.²²⁹

The Corps has recognized that hundreds of existing resiliency and adaptation projects are being undertaken in New York City alone.²³⁰ The extent to which money, time, and/or effort is wasted on these projects, should they become moot if an in-water barrier is installed, must be accounted for in an economic analysis. The Corps must ensure that it properly and accurately

<https://www.riverkeeper.org/news-events/news/safeguard-drinking-water/report-calls-for-enhanced-drinking-water-protections-for-100000-people-who-rely-on-hudson-river/>.

²²⁵ See Riverkeeper, *Saving the River's Fish* (last accessed Nov. 3, 2018)

<https://www.riverkeeper.org/campaigns/river-ecology/saving-hudson-river-fish/>; Riverkeeper Blog, *A Brief History* (June 16, 2009) available at <https://www.riverkeeper.org/riverkeeper-mission/our-story/a-brief-history/>.

²²⁶ Architect's Newspaper, *New York City is getting serious about future superstorms with \$100 million to fund floodwater mitigation* (Sept. 2, 2015) available at <https://archpaper.com/2015/09/new-york-city-is-starting-to-get-serious-about-future-superstorms-with-100-million-to-fund-floodwater-mitigation/>.

²²⁷ N.Y. Env't. Report, *NYC Community Board Approves Flood Park on Manhattan's East Side* (Mar. 30, 2018) available at <http://www.nyenvironmentreport.com/nyc-community-board-approves-flood-park-on-manhattans-east-side/>.

²²⁸ N.J. Department of Environmental Protection, *Press Release: DEP Announces Competition for \$200,000 Flood-Resilience Planning Grants to Help Communities Impacted by Superstorm Sandy* (May 22, 2018) available at https://www.nj.gov/dep/newsrel/2018/18_0041.htm.

²²⁹ N.Y. Times, *New York's Next Nickname: The Big Sponge?* (Sept. 28, 2018,) available at <https://www.nytimes.com/2018/09/27/nyregion/new-york-flooding.html>.

²³⁰ Public Meeting Presentation at 10.

catalogues all of the existing on-shore resiliency and adaptation measures being undertaken throughout the project's study area.

H. The Corps Must Coordinate with Other Relevant State and Federal Agencies Regarding Existing and Planned Projects Sited in the Project Area.

The Corps is the lead federal agency for the preparation of a Tiered Environmental Impact Statement to meet the requirements of the NEPA and the NEPA implementing regulations promulgated by Council on Environmental Quality. Per the Corps' notice in the Federal Register,²³¹ other federal agencies it has invited to be Participating or Cooperating Agencies on this study include: the U.S. Coast Guard, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the National Park Service, and the Federal Emergency Management Agency. However, this list of federal agencies falls far short of including all necessary and relevant agencies with jurisdiction on these matters. At a minimum the Corps needs to additionally include the National Oceanic and Atmospheric Administration, the Federal Energy Regulatory Commission ("FERC"), Department of Housing and Urban Development, and the Department of Health as Participating or Cooperating Agencies at the federal level. The preparation of a Tiered EIS must also be coordinated with the States of New York and New Jersey, and local municipalities. The Corps, therefore, needs to ensure that the proper State and City agencies are participating, beyond the New York State Department of Environmental Conservation, including, but not limited to the New York State Department of State (specifically regarding Coastal Zone Management), the New York State Department of Health, the New York City Department of Environmental Protection, the New York City Department of Sanitation and the New York City Housing Authority.

For example, the Corps must coordinate with FERC because of Williams' proposed Northeast Supply Enhancement ("NESE") Pipeline Project. The NESE would install the "Raritan Bay Loop" pipeline, approximately 23.5 miles of 26-inch diameter natural gas pipeline underwater in New York Harbor, from New Jersey through Richmond and Queens Counties, to connect with the existing Rockaway Delivery Lateral in Queens County. NESE would supply an additional 400 million cubic feet of natural gas per day. Because we do not yet know exactly where proposed in-water barriers would be placed in the NY/NJ Harbor, it is impossible to address the specific areas of overlap between the two projects at this moment, but there is potential for them to be significant, and there must be regular coordination with FERC and monitoring of the two projects.²³²

The potential issues that must be studied by the Corps that relate to the NESE Pipeline include but are not limited to:

²³¹ 83 Fed. Reg. 6,169 (Feb. 13, 2018).

²³² Maps at different levels of detail of the proposed NESE Pipeline are available at https://williamscom2014.files.wordpress.com/2016/08/nese-project-overview-map_0816.pdf and http://northeastsupplyenhancement.com/wp-content/uploads/2017/06/2AX_Offshore_Waterbodies.pdf.

- Sediment plumes from construction (e.g., the predicted sediment plume of 100 mg/l TSS over ambient conditions will occur from sediment disturbing activities in the Raritan Bay Loop);
- Sediment loss;
- Issues related to the use of a subsea plough, including but not limited to, the ability to install the pipeline to the required depth;
- Turbidity monitoring during construction compliant with New York and New Jersey water quality standards, which must therefore involve the NYS DEC and NJS Department of Environmental Protection;
- Water column monitoring for chemical contaminants compliant with NYS water quality standards that also must include coordination with NYS DEC; and
- The Corps must study the effects of each of these issues on local and migratory marine flora and fauna, and birds. In conjunction with FERC, the Corps must also study what, if any effects or stresses operating the in-water barrier gates would have on the pipeline.

I. The Corps Must Consider a Reasonable Range of Alternatives in its Environmental Review.

Unfortunately, the six alternatives under review in the Feasibility Study do not constitute a reasonable range of alternatives as required under NEPA.²³³ The study treats the 3,000 miles of coastal and inland area within the NY/NJ HAT Feasibility Study area as a single storm surge threat, and the alternatives proposed are unreasonably broad as a result. The six alternatives vary greatly in structure type and location, leaving little opportunity or ability to compare the proposed alternatives. Further, the alternatives create disparate environmental impacts on unique and dissimilar ecologies and communities within the region. As “[t]he Hudson River estuary feels the ocean’s tidal pulse all the way to Troy [NY],”²³⁴ the alternatives proposed do not consider the vast and varying environmental conditions of the study area, which encompasses the most densely populated metropolitan region in the country.

Alternatives “are the heart of the [EIS].”²³⁵ An EIS must evaluate “the range of actions, alternatives, and impacts to be considered in and environmental impact statement . . . [including] similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography.”²³⁶ Within the EIS, the lead agency must “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal,” and provide a “detailed statement on . . . alternatives to the proposed action.”²³⁷ The lead agency “need only discuss reasonable, not all, alternatives,”²³⁸ and an alternative “is reasonable only if it will bring about the ends of the federal action.”²³⁹

²³³ 40 C.F.R. § 1502.14(a) (“requiring the agency to “[r]igorously explore and objectively evaluate *all reasonable alternatives*”) (emphasis added)

²³⁴ N.Y. Dep’t of Env’tl. Conserv., *The Hudson Estuary: A River That Flows Two Ways* (last accessed Nov. 3, 2018) <https://www.dec.ny.gov/lands/4923.html>.

²³⁵ 40 C.F.R. § 1502.14.

²³⁶ *Id.* § 1508.25.

²³⁷ 42 U.S.C. § 4332(2)(E).

²³⁸ *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 98-99 (D.C. Cir. 1990).

²³⁹ *Id.* at 195.

Here, the Corps treats the entire study area as a unit, yet offers no “site-specific limitation in the consideration of alternatives within the geographic alternatives proposed, a key factor in narrowing the scope of review required by the Army Corps in flood control measures.”²⁴⁰ In *Iseke v. City and County of Honolulu*, the Corps narrowed from eighteen site locations to nine alternatives for the relocation of a fire station. Surely the Corps could present more than four disconnected alternatives to achieve “CSRM Alternatives” for nearly 3,000 affected coastal and land miles in the most densely populated region in the country. Further, the likelihood that the four proposed alternatives will “bring about the same ends” presents an “implausib[ility] that . . . could not be ascribed to a difference in view or the product of agency expertise.”²⁴¹ The Corps must thus carefully contemplate—and make public—what the ultimate goals of each studied alternative will be, particularly if each will result in differing levels of coastal storm surge risk mitigation.

J. On-Shore Measures Are the Only Proposed Alternatives Currently Presented that Address Storm Surge, Sea Level Rise, and Preserve the Hudson River Ecosystem.

The Corps is currently evaluating six alternative storm surge-related plans, to be winnowed down to two or three within the next year and a half. One is the no action alternative, and four of the remaining five involve massive, in-water barriers, of various sizes shutting off the mouths of different waterways along the shores of New York and New Jersey. The proposed in-water barriers pose numerous threats to each of those waterways and the marine life within them. The most egregious is the five-mile barrier from Sandy Hook, New Jersey to Breezy Point on the Rockaway Peninsula (Alternative 2), which would close off the mouth of the Hudson River, actually a tidal estuary, stopping the ebb and flow of the water and permanently damaging the Hudson and the marine life within it. And, even at that scale, the in-water barrier would not protect our communities against sea level rise or deflection flooding.

On-shore measures—as contemplated in the Corps’ Alternatives 1 (No Action) and 5 (Perimeter Only Solutions)—have substantial benefits over the in-water barrier alternatives, including that: they can be implemented concurrently in locations found to be most optimal for each type of measure; can be built first in the communities and areas at greatest risk; can be modified as needed over time as sea level rises and storms intensify; cost a fraction of the construction price estimated for the in-water barrier alternatives; will not require massive amounts of money to maintain and operate; will operate comprehensively in conjunction with ongoing measures to make shorelines more adaptive; will not close off the tidal flow of the Hudson River Estuary, NY/NJ Harbor, and tributaries; and will not decimate ecosystems. Plus, developing on-shore measures provides meaningful points of engagement with shoreline and other affected communities.²⁴²

In contrast, the in-water barriers proposed in the Corps’ Alternatives 2, 3A, 3B and 4 are wracked with disadvantages when compared to on-shore measures, including: providing no protection until the entire barrier is constructed; providing no protection to a large area if there is

²⁴⁰ *Iseke v. City and County of Honolulu*, 2017 WL 6803423, at *3 (Sept. 20, 2017).

²⁴¹ *Motor Vehicle Mfrs. Ass’n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).

²⁴² See Riverkeeper NYC Council Testimony at 4.

a breach or failure of the barrier; being difficult and expensive to modify over time when sea level rises and storms intensify; costing hundreds of billions of dollars more than on-shore measures; having hefty annual maintenance and operation costs; having profound adverse environmental impacts on the tidal flow of the Hudson River Estuary, NY/NJ Harbor and tributaries including potential impacts that could decimate ecosystems; and failing to address flooding from sources other than coastal storm surge, such as from sea level rise, tidal flooding, and riverine flooding.

In 2013 New York City raised its reservations with an in-water storm surge barrier solution to combat storm surge flooding in its Economic Development Corporation 2013 report “A Stronger, More Resilient New York.”²⁴³ “In theory, one way to achieve the City’s goals for its coastline may be the construction of massive protective infrastructure, such as harbor-wide storm surge barriers at the entrances to New York Harbor,” the report said. “As attractive as the concept of a single “silver bullet” solution may be, though, a closer examination of this strategy strongly suggests that relying on such a solution would pose significant risks to the city that far outweigh its theoretical benefits.”²⁴⁴

The shoreline based measures in Alternative 5 are the only acceptable construction scenarios presented by the Corps. Under this proposal, coastal protection would rely on shoreline-based floodwalls and levees, including beaches, dunes and waterfront parks, combined with strategic retreat from some low lying areas. This system would protect our low-lying communities from both storm surge and flooding from tides, sea level rise and rainstorms like Irene and Lee, while leaving our rivers free to flow and thrive. Numerous community groups, elected officials and other stakeholders are already working on local, shoreline-based measures designed to prevent flooding—and also to provide benefits like open space and parkland.

In light of *all* of the potential adverse environmental impacts in-water barriers would have on the Hudson River Estuary, NY/NJ Harbor and tributaries, and the ecosystems supported therein, as discussed in these comments, on-shore measures (such as those proposed by the Corps’ Alternative 5) are the only feasible and environmentally acceptable alternative going forward.

K. The Corps Must Study Unevaluated “On-Shore” Alternatives.

One of the purposes of NEPA scoping is to engage state, local and tribal governments and the public in the early identification of concerns, potential impacts, relevant effects of past actions and possible alternative actions. Here, we raise three possible alternative actions which should be included in the Corps Feasibility Study for the NY/NJ Harbor and tributaries as either stand-alone alternatives to in-water barriers, or which can be applied in combination with one another, to address coastal storm surge, sea level rise flooding, tidal flooding, and riverine

²⁴³ N.Y. City Economic Dev. Corp., *A Stronger, More Resilient New York* at 50 (June 11, 2013) available at <https://www.nycedc.com/resource/stronger-more-resilient-new-york>; see also generally N.Y. City, *One New York - The Plan for a Strong and Just City* at 244 (Apr. 22, 2015) (discussing “coastal defense”) available at <http://www.nyc.gov/html/onenyc/downloads/pdf/publications/OneNYC.pdf>.

²⁴⁴ N.Y. City Economic Dev. Corp., *A Stronger, More Resilient New York* at 50 (June 11, 2013) available at <https://www.nycedc.com/resource/stronger-more-resilient-new-york>.

flooding: 1) reimagining land use, 2) building hardening, and 3) natural and nature-based features.

While the Corps has paid lip-service to some of these on-shore measures in its public meeting presentations,²⁴⁵ and has stated that these features will be incorporated into the in-water measures once an alternative is chosen as the “tentatively selected plan,” none of these on-shore measures is being evaluated individually as a proposed alternative under study by the Corps. We therefore recommend that the Corps study individually as separate proposed alternatives each of the three additional on-shore measures discussed herein, which will then additionally allow for their possible combination or integration into the tentatively selected alternative at a later date.

Each of these on-shore measures have the same substantial benefits over the in-water barrier alternatives as the Corps’ Alternatives 1 (No Action) and 5 (Perimeter Only Solutions), noted above but worth repeating again here: providing no protection until the entire barrier is constructed; providing no protection to a large area if there is a breach or failure of the barrier; being difficult and expensive to modify over time when sea level rises and storms intensify; costing hundreds of billions of dollars more than on-shore measures; having hefty annual maintenance and operation costs; having profound adverse environmental impacts on the tidal flow of the Hudson River Estuary, NY/NJ Harbor and tributaries including potential impacts that could decimate ecosystems; and failing to address flooding from sources other than coastal storm surge, such as from sea level rise, tidal flooding, and riverine flooding.²⁴⁶

Reimagining land use is the most obvious solution to reducing risk from coastal storm surge flooding, and other flooding events such as those caused by sea level rise, tides, and freshwater river flooding. The Federal Emergency Management Agency (“FEMA”) reimagines land use under its “Property Acquisition for Open Space” initiative.²⁴⁷ Under this initiative, the federal government “helps communities purchase flood-prone properties, remove the buildings, and maintain the land as open space.”²⁴⁸ Sometimes also called “buy-outs,”²⁴⁹ reimagining land use may not be appropriate in every region or locality, but it must be carefully considered by the Corps in its Feasibility Study as a viable and reasonable alternative. We recommend that the Corps consider an alternative in its study which includes strategies such as returning vulnerable developed areas to a more natural state by reimagining land uses in specific areas through voluntary buy-outs and restoration work.

The Corps has mentioned in its presentations the potential of adding building hardening and/or natural and nature-based features to the tentatively selected plan after it is chosen.²⁵⁰

²⁴⁵ See, e.g., Public Meeting Presentation at 28-29 (showing photographic examples of non-structural flood-proofing measures and natural and nature-based features).

²⁴⁶ See Riverkeeper NYC Council Testimony at 4.

²⁴⁷ See Fed. Emergency Mgmt. Agency, *Property Acquisitions for Open Space Frequently Asked Questions* available at https://www.fema.gov/media-library-data/1487973067729-d34bd451527229a45bad0ef5ac6ddf93/508_FIMA_Acq_FAQs_2_24_17_Final.pdf.

²⁴⁸ *Id.* at 1.

²⁴⁹ See Fed. Emergency Mgmt. Agency, *Press Release: For Communities Plagued by Repeated Flooding, Property Acquisition May Be the Answer* (May 28, 2014) available at <https://www.fema.gov/news-release/2014/05/28/communities-plagued-repeated-flooding-property-acquisition-may-be-answer>.

²⁵⁰ See Public Meeting Presentation at 28, 29.

These two on-shore measures should be evaluated separately as well, as reasonable alternatives which could provide protection against all types of flooding, including storm surge, sea level rise, tidal flooding and riverine flooding.

Further, natural and nature-based features should also be considered in conjunction with every proposed alternative the Corps is evaluating in this study. In the tentatively selected plan for the Jamaica Bay Reformulation Study, the Corps evaluated the positive impact of implementing green infrastructure and natural and nature-based features in its shoreline proposal for Mid-Rockaway.²⁵¹ Because the study was framed with one of its goals being to “[i]mprove coastal resilience by reducing erosion and risk caused frequent flooding through the enhancement of natural storm surge buffers, also known as natural and nature-based features,”²⁵² the Corps was able to evaluate the economic value under its cost-benefit analysis of the protection a wetland could give to on-shore sea walls, berms and levees in a functioning system of protection.

Recently, the U.S. Senate passed a particularly relevant provision in the Comprehensive Water Infrastructure Bill noting the Army Corps’ North Atlantic Coast Comprehensive Study—which inspired the NY/NJ HAT Feasibility Study—recommendation for more emphasis on nonstructural, nature-based systems to make communities safer and more resilient.²⁵³ The Corps should take this directive to heart and study the possibility of similarly utilizing natural and nature-based features as a component of its flood protection schemes in the NY/NJ Harbor region in a comprehensive wetland/seawall system.

CONCLUSION

Despite the 72 pages of comments Riverkeeper is submitting on the scoping for the NY/NJ HAT Feasibility Study here, there are numerous and varied considerations which the Corps must additionally study. Even looking solely at the footprint of the study area designated by the Corps, the scope and range of this project is enormous. Similarly, the ecological and environmental impacts of these proposals are vast and far reaching—possibly beyond comprehension. We hope that the Corps seriously considers these comments and the questions they raise in evaluating the in-water barrier proposals for the NY/NJ Harbor. Thank you for the opportunity to submit these comments.

Sincerely,

Paul Gallay
President and Hudson Riverkeeper
Riverkeeper, Inc.

John Lipscomb
Vice President for Advocacy and Patrol Boat Captain
Riverkeeper, Inc.

²⁵¹ Jamaica Bay Revised Draft EIS at xvi.

²⁵² *Id.* at iii.

²⁵³ Senator Cory Booker, *Press Release: Senate Passes Comprehensive Water Infrastructure Bill with Key Booker-Led Provisions* (Oct. 10, 2018) available at https://www.booker.senate.gov/?p=press_release&id=858 (“Alternative measures for aquatic ecosystem restoration that will require the Army Corps of Engineers to consider use of nature-based solutions. In the aftermath of Hurricane Sandy, the Army Corps’ North Atlantic Coast Comprehensive Study recommended more emphasis on nonstructural, nature-based systems to make communities safer and more resilient.”).

CC:

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Attachment A



March 26, 2018

Via electronic and certified mail

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Re: request to extend scoping comment period on the New York New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study from 30 days to 90 days

Dear Mr. Wisemiller and Ms. Brighton:

I am writing on behalf of Riverkeeper, Inc.—a member-supported watchdog organization dedicated to defending the Hudson River and its tributaries and protecting the drinking water supply of nine million New York City and Hudson Valley residents—to request that the U.S. Army Corps of Engineers extend the public comment period on scoping for the New York New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study (“NYNJ HAT”) from 30 days to 90 days, provide additional public meetings throughout the substantial project area, and make publicly available additional information necessary for meaningful public comment on this project.

As you know, the New York New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study will evaluate possible structural means of reducing or preventing onshore damage from coastal storm surge and sea level rise. The Army Corps’ “initial focused array of alternatives” presents a range of options, some of which entail construction of significant, permanent in-water barriers. Riverkeeper recognizes that such permanent barriers in

the water would have significant impacts on both the New York/New Jersey Harbor ecology, as well as on tidal flow throughout the 155-mile estuarine portion of the Hudson River. The River's health depends on tidal flow and mixing in numerous ways. Riverkeeper is concerned that fixed barriers would restrict or block the migratory runs of numerous species, some of which are federally endangered or being considered for listing.

The 30 Day Window for Public Scoping Comments is Insufficiently Brief

In its recent Federal Register notice, the agency explained it would provide a 30-day public comment period on scoping considerations for the Feasibility Study, to be addressed and evaluated in the forthcoming Draft Environmental Impact Statement ("DEIS") considering potential coastal storm risk management solutions for the New York New Jersey Harbor and Tributaries Coastal Storm Risk area.¹ The agency should extend this comment period from 30 days to 90 days for several reasons.

The 30 days provided in the Federal Register notice for scoping comments from the public does not provide enough time for the public to meaningfully comment on this project. The incredibly vast and far reaching extent of the Feasibility Study area cannot possibly be adequately reviewed in the mere 30 days to be provided after the federal and state agencies' NEPA Scoping Meetings. The Feasibility Study area "encompasses approximately 2,150 square miles" including parts of various New York and New Jersey counties.² The study area also extends up the Hudson River from New York Harbor throughout the entirety of the tidal and estuarine portions to the federal lock and dam at Troy, New York, as well as up the Passaic River to the Dundee Dam and up the Hackensack River to the Oradell Reservoir.³ The project's impacts could be felt by communities in Connecticut as well.

The agencies' proposed project will have numerous significant environmental impacts throughout the entirety of this widespread study area, with potentially different and unique impacts in each ecologically diverse portion. Given this incredibly widespread and diverse study area, 30 days is an inadequate amount of time for the public to effectively investigate and identify the broad scope of potential environmental impacts the agency must consider in the Draft EIS. Allowing additional time for public comment will also ensure that a range of stakeholders with diverse knowledge of different areas and holding an array of views and concerns on an issue are included in the public involvement process.

In contrast, the U.S. Coast Guard provided an extension to its comment period for its evaluation of a similarly widespread proposal by industry to establish a large number of new anchorages for commercial vessels in the Hudson River—43 berths in 10 locations from Yonkers to Kingston, comprising more than 2,400 acres.⁴ In that case, the extended comment window—ultimately extended twice, from 90 days to a total comment period of six months—provided the public with adequate time to understand the nature and impacts of the proposal, as well as prepare

¹ See *Notice of Intent To Prepare a Tiered Environmental Impact Statement for the New York New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study*, 83 Fed. Reg. 6169 (Feb. 13, 2018).

² *Id.*

³ *Id.*

⁴ See, e.g., *Anchorage Grounds, Hudson River; Yonkers, NY to Kingston, NY*, 81 Fed. Reg. 61639 (Sept. 7, 2016).

meaningful comments on the project. This extended time frame ensured that all interested and affected parties were not only aware of the proposed action, but were able to be meaningfully involved in the project development process. The NYNJ HAT Feasibility Study will potentially have an even more widespread impact than the anchorages proposal, and the comment period here should similarly give an adequate and appropriate amount of time necessary for the public to comprehend the complexity, expansiveness, and potentially significant impacts of this project.

This proposed project will have environmental impacts on every member of the public who lives in the study area (and resident plant and animal species as well). However, the federal and state agencies have not yet held any informational meetings about the proposed project with the public, nor have they announced the dates of the forthcoming NEPA Scoping Meetings, which the agencies have stated will be held in March and April 2018. The March/April window is quickly closing; thus, there will clearly be insufficient notice to the public ahead of the meetings, since March ends next week. Extending the comment period to 90 days starting after the last of numerous public meetings would consequently allow for increased public awareness and information concerning this proposed project to be disseminated to a wider audience, increasing meaningful public participation and involvement.

Public Meetings Must Be Held Throughout the Project's Entire Geographic Range

We additionally request the agencies consider holding more than two meetings on this project in a wide range of places, as the geographic locations of the NEPA Scoping Meetings will necessarily limit the members of the public who are able to attend. Any such meetings must also take into account public accessibility for the meetings, including access to public transport, timing and availability (such as holding some meetings in the evening and/or on weekends, not during business hours).

Further, holding only two scoping meetings for a proposed project that will potentially impact 2,150 square miles in at least two (and likely three) different states is not an adequate way to provide public access to information on this proposal, nor does it provide for adequate or meaningful public involvement. In order to conduct meaningful public participation, the agency should “gather input from a wide spectrum of stakeholder interests, resulting in a wide range of views and concerns and providing fair treatment, meaningful involvement and social inclusion for all people regardless of race, color, national origin, sexual orientation or income, with respect to the development, implementation, and decisions made through the public participation process.”⁵ This necessarily includes providing access for public involvement through the entire geographic range of the proposed project, and to diverse stakeholders throughout.

It is vital that local residents, community and environmental organizations, business leaders, and other federal agencies have an adequate opportunity to review and provide comments on the Feasibility Study, and to make their voices heard. It is essential that those who will be most directly impacted have a sufficient opportunity to provide their comments on the Feasibility Study scoping. Existing outreach by the agencies to potentially impacted communities across the entire project range has thus far been inadequate. Riverkeeper and its members urge the agencies

⁵ See U.S. Evtl. Protection Agency, *Public Participation Guide* (last visited Mar. 22, 2018) <https://www.epa.gov/international-cooperation/public-participation-guide-introduction-public-participation>.

to hold more than two informational meetings on this issue, and to ensure that such meetings are sited throughout the project's entire geographic range.

Insufficient Information for the Public to Meaningfully Comment on the Proposed Project

The Council on Environmental Quality implementing regulations for the National Environmental Policy Act require that the agencies “insure that environmental information is available to public . . . citizens before decisions are made and before actions are taken.”⁶ They further explain that such information provided to the public “must be of high quality.”⁷ However, the information provided to the public on this project is insufficient.

The information provided to the public thus far does not give the public the ability to provide meaningful comments on the proposed project. The agencies purport to solicit comments only on scoping for the Feasibility Study at this point in the process, despite presenting an “initial focused array of alternatives.”⁸ The agencies’ Fact Sheet and PowerPoint—the only information provided to the public on this project—offer only small, pixelated map-based renderings of potential project design alternatives, and do not adequately explain the project’s purpose and goals, nor its anticipated impacts. This meager information does not adequately apprise the public of the proposed project’s impacts on the Hudson River, stakeholders, or community members across its sweeping, 2,150 square mile range. Additionally, information provided at public meetings should necessarily address the specific impacts of the project in certain regions or geographical areas, as the widespread project will have vastly different impacts on each affected region, as different information is required where different regions will experience and different impacts from the proposed project. Information sessions should thus be tailored to the appropriate affected region.

Information necessary for the public to meaningfully comment on the “initial focused array of alternatives” must include specifics on the operation and implementation of each alternative, including, for instance, the frequency and duration of barrier closures, barrier heights, explanation of the agencies’ purported reliance on a risk-based assessment rather than a data-based assessment (as stated by Army Corps officials at the March 8, 2018, Hudson River Estuary Management Advisory Committee), and other essential information.

Without such information, the public cannot meaningfully comment on these alternatives, or the potential future environmental, social, and economic impacts of each alternative on stakeholders throughout the project area. Further, the agencies’ use of the “tiering” term to describe this project is unclear and does not align with its use as a term of art in the NEPA process.⁹ Without clarification from the agencies as to how NEPA tiering will fit in into the project development process, the public is unable to meaningfully comment on the scope of the project, or to understand what considerations have already been addressed in any higher tiered document. We

⁶ 40 C.F.R. § 1500.1(b).

⁷ *Id.*

⁸ See U.S. Army Corps of Eng’rs, *FACT SHEET - New York/New Jersey Harbor & Tributaries Focus Area Feasibility Study* (last visited Mar. 22, 2018) <http://www.nan.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/644997/fact-sheet-new-yorknew-jersey-harbor-tributaries-focus-area-feasibility-study/>.

⁹ See, e.g., 40 C.F.R. § 1502.20 (discussing tiering); *id.* at § 1508.28 (defining tiering).

request that the agencies provide a clarification of how the tiering process is being used for this project, as well as identify and direct the public to any higher tier NEPA document which is being referenced with regard to the current project.

Riverkeeper's Requests

For the above reasons, Riverkeeper requests that the agencies extend the window for the public to submit comments on the scoping for the Feasibility Study from 30 days to 90 days. Further, this 90-day comment period should begin after the last of many public information meetings. Additionally, we request that the agencies hold more than two public information meetings in a range of geographic locations throughout the project area, as this substantial project will have varied and widespread impacts throughout its 2,150 square mile range, including parts of both New York and New Jersey, and possibly also Connecticut. Finally, we request that the agencies provide additional information on the proposed project to the public sufficient to ensure meaningful involvement and comment throughout the project development process. The information provided must describe the various consequences and considerations of each potential project alternative tailored to each affected region.

Failing to make these changes will defeat NEPA's policy of "[e]ncourag[ing] and facilitat[ing] public involvement in decisions which affect the quality of the human environment"¹⁰ such as this substantial and far-reaching project.

Thank you for your consideration of these important issues essential to ensuring meaningful public involvement for the NYNJ HAT project.

Sincerely,



Paul Gallay
President and Hudson Riverkeeper

Enclosure(s): none

CC: Basil Seggos, Commissioner
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¹⁰ 40 C.F.R. § 1500.2(d); *see also id.* at § 1506.6 ("public involvement").

Attachment B



Maggie Coulter <mculter@riverkeeper.org>

NYNJ HAT Feasibility Study public comment period

1 message

Brighton, Nancy J CIV USARMY CENAN (US) <Nancy.J.Brighton@usace.army.mil> Mon, Apr 16, 2018 at 3:51 PM

To: Maggie Coulter <mculter@riverkeeper.org>

Cc: John Lipscomb <jlipscomb@riverkeeper.org>, Richard Webster <rwebster@riverkeeper.org>, Jessica Roff <jroff@riverkeeper.org>, "Basil.Seggos@dec.ny.gov" <Basil.Seggos@dec.ny.gov>, "Catherine.McCabe@dep.nj.gov" <Catherine.McCabe@dep.nj.gov>, "Wisemiller, Bryce W CIV CENAN CENAD (US)" <Bryce.W.Wisemiller@usace.army.mil>, Paul Gallay <pgallay@riverkeeper.org>, "Simon, Ellen B CIV USARMY CENAN (US)" <Ellen.B.Simon@usace.army.mil>, "Cackler, Olivia N CIV USARMY CENAN (US)" <Olivia.N.Cackler@usace.army.mil>, "Weppler, Peter M CIV USARMY CENAN (US)" <Peter.M.Weppler@usace.army.mil>

Good Afternoon -

This is to let you know that the District has received certified letter dated 26 March 2018 concerning the duration of the scoping period, recommendations for public meetings, etc.

We are in the process of responding to your letter. In the short term, the District, which has been delayed in setting up the public scoping meetings and setting a timeframe for scoping, will take your recommendations into consideration.

Thank you,

Nancy Brighton
Environmental Analysis Branch
US Army Corps of Engineers, New York District

Attachment C

Municipal Resolutions and Letters (as of November 2, 2018)

1. City of Beacon
2. City of Kingston
3. City of Peekskill
4. County of Putnam
5. County of Ulster
6. County of Ulster EMC
7. County of Westchester (letter)
8. Hudson River Drinking Water Intermunicipal Council: City of Poughkeepsie; Towns of Esopus, Hyde Park, Lloyd, Poughkeepsie, Rhinebeck; Village of Rhinebeck
9. Town of Cortlandt
10. Town of Lloyd
11. Town of Ossining and Village of Ossining (*combined resolution*)
12. Town of Poughkeepsie
13. Town of Rhinebeck
14. Town of Saugerties
15. Town of Stony Point
16. Village of Croton-on-Hudson
17. Village of Dobbs Ferry
18. Village of Hastings-on-Hudson
19. Village of Irvington
20. Village of Piermont
21. Village of Rhinebeck
22. Village of Sleepy Hollow
23. Village of Tarrytown

CITY OF BEACON



Iola C. Taylor
City Clerk
One Municipal Plaza, Suite One
Beacon, New York 12508

Telephone (845) 838-5003
Facsimile (845) 838-5012

I, IOLA C. TAYLOR, City Clerk of the City of Beacon, New York, do hereby certify that the attached is a true and accurate copy of Resolution No.150 of 2018 entitled

A RESOLUTION TO REQUEST AN EXTENSION OF THE SCOPING COMMENT PERIOD WITH ADDITIONAL PUBLIC INFORMATION AND SCOPING MEETINGS, FOR THE NY/NJ HARBOR & TRIBUTARIES (NYNJHAT) COASTAL STORM RISK MANAGEMENT FEASIBILITY STUDY; AND TO COMPLETE SPECIFIC STUDIES PRIOR TO THE WINNOWING OF PROPOSED ALTERNATIVES

adopted by the Beacon City Council at a regular meeting held on September 4, 2018. Council Member McCredo made the motion that the resolution be adopted. Council Member Grant seconded the motion. On roll call, Council Members Nelson, Rembert, McCredo, Grant, Mansfield, Kyriacou and Mayor Casale voted in favor (7). Motion carried.

WITNESS THERE I have set my hand and seal of the City of Beacon this 13th day of September, 2018.

Signed

Iola C. Taylor
Iola C. Taylor, City Clerk

SEAL



**CITY OF BEACON
CITY COUNCIL
RESOLUTION NO. 150 OF 2018**

A RESOLUTION TO REQUEST AN EXTENSION OF THE SCOPING COMMENT PERIOD WITH ADDITIONAL PUBLIC INFORMATION AND SCOPING MEETINGS, FOR THE NY/NJ HARBOR & TRIBUTARIES (NYNJHAT) COASTAL STORM RISK MANAGEMENT FEASIBILITY STUDY; AND TO COMPLETE SPECIFIC STUDIES PRIOR TO THE WINNOWING OF PROPOSED ALTERNATIVES

URGING, We, as representatives of **The City of Beacon in Dutchess County** urge Basil Seggos, Commissioner, New York State Department of Environmental Conservation (NYSDEC), Bryce Wisemiller, NY District Project Manager, U.S. Army Corps of Engineers (USACE) and Nancy J. Brighton, Chief, Watershed Section, Environmental Analysis Branch, Planning Division, U.S. Army Corps of Engineers to request an extension of the scoping comment period with additional public information and scoping meetings, for the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study; and to complete specific studies prior to the winnowing of proposed alternatives.

WHEREAS, The U.S. Army Corps of Engineers (USACE) initiated the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study, affecting more than 2,150 square miles, 25 NY and NJ counties and 16 million people. Communities along the shorelines of NYC, Long Island, NY Harbor, northern NJ, the Hudson River up to Troy, and western Connecticut are affected. The goal is to develop and implement measures to reduce the risk of coastal storm damage to communities, critical infrastructure, and important societal resources.

WHEREAS, USACE has proposed six alternatives:

- **Alternative 1:** “No Action,” meaning no new action by the Corps. Instead the region would move forward with numerous existing flood control projects already in the works.
- **Alternative 2:** Build two in-water barriers, from Sandy Hook to Breezy Point (5 miles) and across Long Island Sound near Throgs Neck Bridge (*see map at right*).
- **Alternative 3A:** Build in-water barriers in the Arthur Kill, Jamaica Bay, Verrazano Narrows, Pelham Bay, and Throgs Neck, and a levee or berm system along Brighton Beach and the Rockaways.
- **Alternative 3B:** Build in-water barriers in the Arthur Kill, Kill Van Kull, the Gowanus Canal, Pelham Bay, Throgs Neck, Newtown Creek, and Jamaica Bay. Build a levee and berm system and shoreline measures in East Harlem, the NJ upper bay and Hudson River, and the West Side of Manhattan.
- **Alternative 4:** Build in-water barriers in Pelham Bay, Jamaica Bay, Newtown Creek, the Gowanus Canal, and the Hackensack River. Build shoreline measures in East Harlem, the NJ Upper Bay and Hudson River, and the West Side of Manhattan.

- **Alternative 5:** Build only shoreline measures along the perimeter of coastal locations (dunes, berms and levees). Note that these shoreline protections are in addition to the wide array of shoreline flood control projects already planned or under way which are shown in Alternative

WHEREAS, USACE intends to narrow the six options down to one or two by this fall (2018). The one or two “tentatively selected plan(s)” will be the subject of a Draft Feasibility Report and Environmental Impact Statement this fall. USACE has opened a public comment period, ending September 20, to consider the “scope” of issues it should study in that preliminary environmental review.

WHEREAS, this short time frame and limited number of meetings is inadequate given the enormous scale of the project.

WHEREAS, several of these plans – specifically, the ones including giant in-water barriers throughout NY Harbor (Alternatives 2, 3A, 3B & 4) – threaten the very existence of the Hudson as a living river. These in-water barriers would disrupt the migrations of the river’s iconic species (striped bass, Atlantic sturgeon, herring, shad, eel) and restrict tidal exchange, essential in numerous ways: from moving sediment and flushing contaminants from the Harbor, to regulating nutrient distribution and adequate dissolved oxygen.

WHEREAS, In-water barriers would not protect against flooding from sea-level rise – only from storms. With gates that must be open for ships to pass, the in-water barriers would do nothing against sea-level rise. By contrast, shoreline measures (Alternatives 5 and 1 combined) can protect against flooding from both storms and sea level rise, and can be more easily heightened as projections evolve.

WHEREAS, Deflection or induced flooding in nearby unprotected shorelines may be a fatal flaw to these alternatives. Areas such as the Jersey shore, the south shore of Long Island, western Long Island Sound, and the Lower Bay of New York Harbor would be at risk. In-water barriers could hold back rainstorm flood waters, as we experienced during storms like Irene and Lee in 2011, from leaving the Hudson. This could cause fresh water flooding inland of the barriers.

WHEREAS, USACE estimates \$30 billion to \$50 billion to build the in-water barriers in Alternative 2, with annual maintenance likely costing billions, without even addressing sea level rise.

WHEREAS, Alternative 5 — shoreline and nature-based measures (dunes, dikes, floodwalls, and levees) — is estimated at \$2 billion to \$4 billion. It is the only alternative that addresses both storm surge and sea level rise, while leaving the river to flow freely.

WHEREAS, the economy and culture of the Hudson River Valley is intimately tied to the health of the Hudson River, including the migrations of its signature fish. Tourism generates more than \$5.3 billion annually.

WHEREAS, Non-federal sponsors of the study include New York State, represented by the NYSDEC and New Jersey, represented by the NJ Department of Environmental Protection. **NY and NJ thereby have the authority to withdraw from the study or to reject any construction alternative.**

NOW THEREFORE BE IT RESOLVED, that we, the elected representatives of **The City of Beacon** in **Dutchess County** in the Hudson Valley, cannot comment effectively, as is our legal right, without detailed information and data on the social, economic and environmental impacts of each alternative. The PowerPoint slides and the fact sheet provided to the public to date are completely inadequate. The Army Corps needs to publish comprehensive information about all the alternatives being considered, including the environmental impacts on the Hudson and the Harbor and to share with the public the complete list of existing studies it will consult in the preliminary assessments of the projects; and

BE IT FURTHER RESOLVED, the meetings recently posted were too few, announced too late, and were not advertised so that the public would actually be aware. The Army Corps and the other involved agencies need to provide numerous, comprehensive and well-advertised public meetings throughout the affected area, which includes Long Island Sound, New York Harbor, New Jersey coastal waters and the Hudson to Troy.

BE IT FURTHER RESOLVED, the short comment period, for a proposal with consequences that could last centuries, or millennia, is unacceptable. By contrast, the U.S. Coast Guard, in seeking public feedback on designating new anchorage grounds on the Hudson, initially offered a three-month comment period on an “advance notice of public rulemaking,” then extended that by an additional three months, which allowed members of the public time to become informed and voice their opinions. Therefore, we request an extension of the scoping comment period to at least 90 days.

BE IT FURTHER RESOLVED, only one of the alternatives is even acceptable so far. Alternative 5, described as “Perimeter Only,” is the only acceptable alternative the U.S. Army Corps has presented to date. Only “shoreline-based measures” should be employed. Our protection would rely on shoreline-based floodwalls and levees, including beaches, dunes and waterfront parks, combined with reimagined land use from some low-lying areas. It would protect our low-lying communities from both storm surge and flooding from rain storms, while leaving our rivers free to flow and thrive.

BE IT FURTHER RESOLVED, in its cost-benefit analysis of the current array of alternatives, the USACE should include an evaluation of the value of ecosystem services; and the cost of shoreline measures that are essential to protect against flooding from sea level rise, even for alternatives that include harbor wide barriers.

BE IT FURTHER RESOLVED, the full range of impacts must be considered before the six alternatives are narrowed. Before any alternative is eliminated from consideration, the potential impacts of each alternative should be studied in relation to the following:

- Tidal range / regime and flow velocity.
- Migration of all native fish species.

- Abundance of all native and currently existing fish species.
- Abundance and distribution of all mollusk species throughout the study area.
- Current and potential commercial and recreational fisheries.
- Endangered, threatened and special-concern fish and wildlife species (both federally and state designated) in the New York Bight and in the Hackensack River, Passaic River, Raritan River, Meadowlands, Jamaica Bay and Long Island Sound.
- Vegetation (subaquatic and intertidal).
- Birds.
- Habitat for fish, birds and other wildlife.
- Sedimentation rates, scour and elevation in the rivers, bays and harbor.
- Changes in contamination levels both in the water and in river and harbor sediments.
- Rate at which PCBs and other contaminants will be transported from the rivers and harbor to the sea.
- Water quality in the harbor, rivers and bays.
- Dissolved oxygen levels throughout the study area.
- Salinity throughout the study area.
- Water temperature throughout the study area.
- Nutrient concentrations throughout the study area.
- Frequency of algae blooms throughout the study area.
- The degree and cost of wastewater treatment required to comply with the Clean Water Act, in light of reduced tidal exchange / flushing.
- Induced coastal flooding or deflection of storm surge to areas adjacent to any barrier alternatives.
- Back-flooding inland of any barriers due to heavy rain events.
- Commercial shipping.
- Recreational boating.
- Cost to state taxpayers for future operation and maintenance of ship and tide gates in any barriers.

Resolution No. <u>150</u> of 2018		Date: <u>September 4, 2018</u>					
<input type="checkbox"/> Amendments						<input type="checkbox"/> 2/3 Required.	
<input type="checkbox"/> Not on roll call.		<input type="checkbox"/> On roll call				<input type="checkbox"/> 3/4 Required	
Motion	Second	Council Member	Yes	No	Abstain	Reason	Absent
		Terry Nelson	x				
x		Jodi McCredo	x				
		George Mansfield	x				
		Lee Kyriacou	x				
		John Rembert	x				
	x	Amber Grant	x				
		Mayor Randy J. Casale	x				
		Motion Carried	x				

RESOLUTION 165 OF 2018

MEMORIALIZING RESOLUTION OF THE COMMON COUNCIL OF THE CITY OF KINGSTON, NEW YORK, IN OPPOSITION TO PROPOSED PLANS FOR COASTAL STORM RISK MANAGEMENT WITHOUT SUFFICIENT STUDY

WHEREAS, from July 9 through July 11, 2018, the U.S. Army Corps of Engineers (US ACOE) held public meetings for the first and only time regarding its “New York/New Jersey Harbor and Tributaries (NYNJ HATS) Coastal Storm Risk Management” (CSRSM) Feasibility Study which includes the Hudson River Estuary as part of a three-year study which began in July 2016; and

WHEREAS, the public comment period has been extended to September 20, 2018; and

WHEREAS, the City of Kingston is located 90 miles north of the Battery in New York City and has tidal waterfront on the Hudson and its tributary the Rondout Creek; and

WHEREAS, the Hudson River is a Superfund site due to contamination with PCBs; and

WHEREAS, four of the ACOE’s proposed alternative plans (2, 3A, 3B and 4) involve outer and inner harbor barriers that almost entirely block either the Hudson River or major New York Harbor tributaries during storm events and would alter river and tributary flow patterns at all times; and

WHEREAS, two of the ACOE’s alternatives propose barriers (2 and 3A) that would entirely close off the harbor and river from the Atlantic during storm events and would alter river and tributary flow patterns at times; and

WHEREAS, the proposed barriers could impede the estuary’s tidal flow, contaminant and sediment transport, and migration of fish, and impede the tidal “respiration” of the river; and

WHEREAS, over time, the frequent deployment of barriers have the potential to:

- 1) significantly restrict migrations of striped bass, Atlantic sturgeon, herring, shad, eel and other species essential to the Hudson estuary,
- 2) prevent the ocean tide from flushing NY Harbor, and
- 3) inhibit inland rainstorm flood waters like those of Irene and Lee in 2011 from leaving the Hudson; and

WHEREAS, open tidal exchange is essential to move sediment and flush contaminants and if tidal exchange is restricted, the harbor could require much more dredging to maintain shipping channels. Sewage and other contaminants could flush to the ocean more slowly, resulting in more pollution for our already contaminated harbor and river; and

WHEREAS, proposed alternative #5 – described as “Perimeter-only” and relying entirely on shoreline-based floodwalls and levees - is the only scenario presented so far that may protect low-lying communities from storm surge from storms like Irene, Lee and Sandy, while leaving our rivers to continue to flow naturally; and

WHEREAS, the proposed plans with in-water barriers do not account for climate change and do nothing to help communities adapt to sea level rise; and

WHEREAS, insufficient scientific data is available to fully understand the consequences of altering Hudson River flow with permanent barriers; and

WHEREAS, Scenic Hudson, Riverkeeper, and many others have voiced their concern and opposition to storm risk management approaches that could severely compromise the health of the Hudson River and its tributaries; and

WHEREAS, City of Kingston is a Climate Smart Community and has completed plans and studies which acknowledge the importance of and/or gives recommendations on how to plan for sea-level rise: Hudson Riverport: Brownfield Opportunities Areas Studies (Adopted 2015); Kingston Climate Action Plan (2012); Kingston Comprehensive Plan (Adopted 2016); Natural Resources Inventory (Draft June 2018); Planning for Rising Waters: Final Report of the City of Kingston Tidal Waterfront (Sept 2013); and Cornell University School of Landscape Architecture: Climate Adaptive Design Studios (2016-2018).

NOW THEREFORE BE IT RESOLVED BY THE COMMON COUNCIL OF THE CITY OF KINGSTON, NEW YORK, AS FOLLOWS:

SECTION 1. That the Common Council of the City of Kingston does hereby register its strongest possible opposition to proposed plans 2 and 3A, and asks that they be removed from further consideration; and be it further

SECTION 2. That the Common Council of the City of Kingston does hereby register its support for further studies to ensure that shoreline-based measures, including non-structural measures and natural and nature-based features (NNBF), such as Alternative 5, described as "Perimeter Only", would in fact protect New York Harbor and the Hudson Valley from flooding; and be it further.

SECTION 3. That further planning to manage the risk of coastal storm damage take into account the impact of climate change and its impact on seal level rise; and be it further

SECTION 4. That in its cost-benefit analysis of the current array of alternatives, the USACE should include an evaluation of the value of ecosystem services;

SECTION 5. That the full range of impacts must be considered before any alternative is advanced. The potential impacts should be studied in relation to include, but not be limited to:

Tidal range / regime and flow velocity

Migration of all native fish species

Abundance of all native and currently existing fish species

Abundance and distribution of all mollusk species throughout the study area

Current and potential commercial and recreational fisheries

Endangered, threatened and special-concern fish and wildlife species (both federally and state designated) in the Hudson River, New York Bight and in the Hackensack River, Passaic River, Raritan River, Meadowlands, Jamaica Bay and Long Island Sound.

Vegetation (subaquatic and intertidal)

Birds

Habitat for fish, birds and other wildlife

Sedimentation rates, scour and elevation in the rivers, bays and harbor

Changes in contamination levels both in the water and in river and harbor sediments

Rate at which PCBs and other contaminants will be transported from the rivers and harbor to the sea

Water quality in the harbor, rivers and bays

Dissolved oxygen levels throughout the study area.

Salinity throughout the study area

Water temperature throughout the study area

Nutrient concentrations throughout the study area
Frequency of algae blooms throughout the study area
The degree and cost of wastewater treatment required to comply with the Clean Water Act, in light of reduced tidal exchange / flushing
Induced coastal flooding or deflection of storm surge to areas adjacent to any barrier alternatives
Back-flooding inland of any barriers due to heavy rain events
Commercial shipping
Recreational boating
Cost to state taxpayers for future operation and maintenance of ship and tide gates in any barriers

SECTION 6. This resolution shall be distributed to Nancy J. Brighton, Chief, Watershed Section, US ACOE, Senator Chuck Schumer, Senator Kristen Gillebrand, Congressman John Faso, Governor Andrew Cuomo, Secretary of State Rossana Rosado, Senator George Amedore, and Assemblyman Kevin Cahill

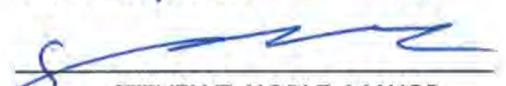
Submitted to the Mayor this 13th

day of September 2018


CARLY WINNIE, CITY CLERK

Approved by the Mayor this 13th

day of September 2018


STEVEN T. NOBLE, MAYOR

Adopted by Council on September 12, 2018

**RESOLUTION REQUESTING AN EXTENSION OF THE COMMENTING PERIOD
FOR THE NY/NJ HARBOR & TRIBUTARIES COASTAL STORM RISK
MANAGEMENT FEASIBILITY STUDY AND TO COMPLETE SPECIFIC STUDIES
PRIOR TO CONSIDERING PROPOSED ALTERNATIVES.**

WHEREAS, the United States Army Corps of Engineers (USACE) initiated the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study, affecting more than 2,150 square miles, 25 NY and NJ counties and 16 million people; and

WHEREAS, communities along shorelines of NYC, Long Island, NY Harbor, northern NJ, the Hudson River up to Troy, and western Connecticut are affected; and

WHEREAS, the goal is to develop and implement measures to reduce the risk of coastal storm damage to communities, critical infrastructure and important societal resources; and

WHEREAS, USACE has proposed six Options to achieve its goal:

1. "No Action," meaning no new action by the Corps. Instead the region would move forward with numerous existing flood control projects already in the works.
2. Build two in-water barriers, from Sandy Hook to breezy Point (5 miles) and across Long Island Sound near the Throgs Neck Bridge.
- 3A. Build in-water barriers in the Arthur Kill, Jamaica Bay, Verrazano Narrows, Pelham Bay and Throgs Neck, and a levee or berm system along Brighton Beach and the Rockaways.
- 3B. Build in-water barriers in the Arthur Kill, Kill Van Kull, the Gowanus Canal, Pelham Bay, Throgs Neck, Newtown Creek and Jamaica Bay. Build a levee and berm system and shoreline measures in East Harlem, the NJ upper bay and Hudson River, and the West Side of Manhattan.
4. Build in-water barriers in Pelham Bay, Jamaica Bay, Newtown Creek, the Gowanus Canal and the Hackensack River. Build shoreline measures in East Harlem, the NJ Upper Bay and Hudson River, and the West Side of Manhattan.
5. Build only shoreline measures along the perimeter of coastal locations (dunes, berms and levees). Note that these shoreline protections are in addition to the wide array of shoreline flood control projects already planned or underway which are shown in these alternatives; and

JS

WHEREAS, USACE intends to narrow the six options down to one or two by the fall of 2018, which will be the subject of a Draft Feasibility Report and Environmental Impact Statement this fall; and

WHEREAS, USACE has opened a public comment period, ending September 20, 2018, to consider the “scope” of issues it should study in the preliminary environmental review; and

WHEREAS, this short timeframe for public comment and limited number of meetings is inadequate to provide sufficient information to those communities affected, given the enormous scale of this project; and

WHEREAS, several of the plans, specifically those including giant in-water barriers throughout NY Harbor (options 2, 3A, 3B & 4), threaten the very existence of the Hudson as a living river, causing disruptions in migrations of the river’s iconic species and restrictions of tidal exchange which is essential in moving sediment and flushing contaminants from the harbor, and regulating nutrient distribution and adequate dissolved oxygen; and

WHEREAS, in-water barriers would have gates that must be open for ships to pass and would not protect against flooding from sea-level rise, only from storms; and

WHEREAS, shoreline measures offered in Options 5 & 1 combined can protect against flooding from both storms and sea level rise, and can be more easily heightened as projections evolve; and

WHEREAS, deflection or induced flooding in nearby unprotected shorelines may be a fatal flaw to these options, putting at risk areas such as the Jersey shore, the south shore of Long island, western Long Island Sound, and the Lower Bay of New York Harbor; and

WHEREAS, in-water barriers could hold back rainstorm flood waters from leaving the Hudson River, as experienced during 2011 storms Irene and Lee. This could cause fresh water flowing inland of the barriers; and

WHEREAS, USACE estimates \$30 billion to \$50 billion to build the in-water barriers in option 2, with annual maintenance likely costing billions, without even addressing sea level rise; and

WHEREAS, Option 5 is estimated to cost \$2 billion to \$4 billion and provides shoreline and nature-based measures such as dunes, dikes, floodwalls and levees, to address both storm surge and sea level rise, while leaving the river to flow freely; and

WHEREAS, the economy and culture of the Hudson River Valley is intimately tied to the health of the Hudson River, including migrations of its signature fish, providing tourism that generates more than \$5.3 billion annually; and

WHEREAS, non-federal sponsors of the study include New York State, represented by the NYSDEC and New Jersey, represented by the NJ Department of Environmental Protection, allowing both NY and NJ to have the authority to withdraw from this study or reject any construction alternatives.

NOW, THEREFORE, BE IT

RESOLVED, that we, the elected representatives of the City of Peekskill in Westchester County in the Hudson Valley, cannot comment effectively, as is our legal right, without detailed information and data on the social, economic and environmental impacts of each option being considered. The PowerPoint slides and the fact sheet provided to the public to date are inadequate; and be it further

RESOLVED, the Common Council of the City of Peekskill urge the Army Corps to publish comprehensive information about all options being considered, including the environmental impacts on the Hudson River and the Harbor and to share with the public the complete list of existing studies it will consult in the preliminary assessments of the projects; and be it further

RESOLVED, the meetings recently posted were too few, announced too late, and were not advertised so that the public would actually be aware. The Common Council of the City of Peekskill asks that the Army Corps and the other involved agencies provide numerous, comprehensive and well-advertised public meetings throughout the affected area; and be it further

RESOLVED, the short comment period, for a proposal with consequences that could last centuries, or millennia, is insufficient. By contrast, the United States Coast Guard, in seeking public feedback on designating new anchorage grounds on the Hudson River initially offered a three-month comment period on an "advance notice of public rulemaking," then extended that period by an additional three months, which allowed members of the public sufficient time to become informed and voice their opinions. Therefore, the Common Council of the City of Peekskill request an extension of the scoping comment period to at least 90 additional days; and be it further

RESOLVED, based upon the information to date, Option 5, described as “Perimeter only,” is deemed by the Common Council of the City of Peekskill to be the only acceptable alternative that the Army Corps has presented. This Option relies on shoreline-based floodwalls and levees, including beaches, dunes and waterfront parks, combined with reimagined land use from some low lying areas. This Option would protect our low-lying community from both storm surge and flooding from rain storms, while leaving our rivers free to flow and thrive; and be it further

RESOLVED, in its cost benefit analysis of the current array of alternatives, the Common Council of the City of Peekskill urges the USACE to include an evaluation of the value of ecosystem services and the cost of shoreline measures that are essential to protect against flooding from sea level rise, even for Options that include harbor wide barriers; and be it further

RESOLVED, that the Common Council of the City of Peekskill request that the full range of impacts be considered before the six options are narrowed and any option is eliminated from consideration, including the potential impacts in relation to the following:

- Tidal range/ regime and flow velocity.
- Migration of all native fish species.
- Abundance of all native and currently existing fish species.
- Abundance and distribution of all mollusk species throughout the study area.
- Current and potential commercial and recreational fisheries.
- Endangered, threatened and special-concern fish and wildlife species (both federally and state designated) in the New York Bight and in the Hackensack River, Passaic River, Raritan River, Meadowlands, Jamaica Bar and Long Island Sound.
- Vegetation (subaquatic and intertidal).
- Birds.
- Habitat for fish, birds and other wildlife.
- Sedimentation rates, scour and elevation in the rivers, bays and harbor.
- Changes in contamination levels both in the water and in river and harbor sediments.
- Rate at which PCBs and other contaminants will be transported from the rivers and harbor to the sea.
- Water quality in the harbor, rivers and bays.
- Dissolved oxygen levels throughout the study area.

- Salinity throughout the study area.
- Water temperature throughout the study area.
- Nutrient concentrations throughout the study area.
- Frequency of algae blooms throughout the study area.
- The degree and cost of wastewater treatment required to comply with the Clean Water Act, in light of reduces tidal exchange/flushing.
- Induced coastal flooding or deflection of storm surge to areas adjacent to any barrier alternatives.
- Back-flooding inland of any barriers due to heavy rain events.
- Commercial shipping.
- Recreational boating.
- Cost to state taxpayers for future operation and maintenance of ship and tide gates in any barriers;

and be it further

RESOLVED, that the Common Council of the City of Peekskill urge Basil Seggos, Commissioner, New York State Department of Environmental Conservation, Bryce Wisemiller, New York District Project Manager, United States Army Corps of Engineers and Nancy J. Brighton, Chief, Watershed Section, Environmental Analysis Branch, Planning Division, United States Army Corps of Engineers to request an extension of the scoping comment period and to provide the public with additional information and scoping meetings for the NY/NJ Harbor & Tributaries Coastal Storm Risk Management Feasibility Study; and be it further

RESOLVED, that the Common Council of the City of Peekskill urge Basil Seggos, Commissioner, New York State Department of Environmental Conservation, Bryce Wisemiller, New York District Project Manager, United States Army Corps of Engineers and Nancy J. Brighton, Chief, Watershed Section, Environmental Analysis Branch, Planning Division, United States Army Corps of Engineers to complete specific studies prior to narrowing down the six Options to one or two that will be the subject of the Draft Feasibility Report and Environmental Impact Statement in the Fall of 2018; and be it further

RESOLVED, that the Common Council of the City of Peekskill request these extensions and additional information to allow the City to effectively comment on how any Option considered will affect the social, economic and environmental of the City of Peekskill.

Adopted: September 12, 2018

CERTIFIED COPY
 09-13-18 DATE

 CITY CLERK AND REGISTRAR

PUTNAM COUNTY LEGISLATURE

Resolution #202

Introduced by Legislator: Barbara Scuccimarra on behalf of the Health, Social, Educational & Environmental Committee at a Regular Meeting held on September 4, 2018.

page 1

APPROVAL/REQUESTS TO NYSDEC AND USACE REGARDING PUBLIC COMMENT, PUBLIC INFORMATION, AND PUBLIC SCOPING MEETINGS CONCERNING PROPOSED STORM SURGE BARRIERS

WHEREAS, in response to Superstorm Sandy, the U.S. Army Corps of Engineers (USACE) initiated a coastal storm risk management study for the NY/NJ Harbor & Tributaries Focus Area, with a goal to develop and implement measures to reduce the risk of coastal storm damage to communities, critical infrastructure, and important societal resources; and

WHEREAS, the non-federal sponsors of the study include New York State, represented by the NYS Department of Environmental Conservation (NYSDEC), and New Jersey, represented by the NJ Department of Environmental Protection; and

WHEREAS, the USACE is currently considering six different alternatives, ranging from no action alternative, to constructing massive in-water barriers to shoreline and nature-based measures; and

WHEREAS, several of these plans – specifically, the ones including giant in-water barriers throughout New York Harbor (Alternatives. 2, 3A, 3B & 4) – could potentially threaten the very existence of the Hudson as a living river; and

WHEREAS, barrier projects throughout the harbor would reportedly cost up to \$60 billion to build, and \$100 million to \$2.5 billion to maintain every year, without even addressing sea level rise, thereby raising questions about fiscal responsibility and a failure to address sea-level rise; and

WHEREAS, the USACE reportedly plans to narrow down the six alternatives to one or two, which are to be announced in a draft report due fall 2018, without a thorough review of the environmental impacts of each plan, and without meaningful public input; and

WHEREAS, while a seventy-day public comment period is now open through September 20, the USACE has only held five public meetings, on three days, to inform the public and consider the full range, or “scope” of the issue; and

WHEREAS, such a limited number of meetings in such a short timeframe is inadequate given the enormous scale of the project, and it fails to provide a meaningful opportunity for public involvement, leaving out a large number of communities that may be drastically affected by the selected alternative; now therefore be it

Vote:

State Of New York

ss:

County of Putnam

I hereby certify that the above is a true and exact copy of a resolution passed by the Putnam County Legislature while in session on September 4, 2018.

Dated: September 6, 2018

Signed: _____

Diane Schonfeld
Clerk Of The Legislature Of Putnam County

PUTNAM COUNTY LEGISLATURE

Resolution #202

Introduced by Legislator: Barbara Scuccimarra on behalf of the Health, Social, Educational & Environmental Committee at a Regular Meeting held on September 4, 2018.

page 2

RESOLVED, that the Putnam County Legislature does hereby request that the scoping comment period be extended from the current seventy (70) days to at least ninety (90) days; and be it further

RESOLVED, that the Putnam County Legislature does hereby request that more information on the proposed storm surge barriers be shared with the public, including those studies reviewed, or that will be reviewed, by USACE to evaluate alternatives; and be it further

RESOLVED, that the Putnam County Legislature does hereby request additional public scoping meetings across New York City, Long Island, and the Hudson Valley; and be it further

RESOLVED, that copies of this resolution shall be delivered to NYSDEC Commissioner Basil Seggos; USACE New York District Project Manager Bryce Wisemiller; and Nancy J. Brighton, Chief, Watershed Section, Environmental Analysis Branch, Planning Division, USACE.

BY ROLL CALL VOTE: EIGHT AYES. ONE NAY – LEGISLATOR NACERINO. MOTION CARRIES.



Vote:

State Of New York

ss:

County of Putnam

I hereby certify that the above is a true and exact copy of a resolution passed by the Putnam County Legislature while in session on September 4, 2018.

Dated: September 6, 2018

Signed: *Diane Schonfeld*

Diane Schonfeld
Clerk Of The Legislature Of Putnam County

ULSTER COUNTY LEGISLATURE

KENNETH J. RONK, JR.
Chair

JAMES F. MALONEY
Vice Chair

MARY BETH MAIO
Majority Leader

HECTOR S. RODRIGUEZ
Minority Leader



P.O. Box 1800
KINGSTON, NEW YORK 12402
Telephone: 845 340-3900
FAX: 845 340-3651

VICTORIA A. FABELLA
Clerk

NICHOLAS A. PASCALE
Counsel

KYLE BARNETT
Counsel

CHRISTOPHER RAGUCCI
Minority Counsel

September 10, 2018

Hon. Nancy J. Brighton, Chief
Watershed Section, Environmental Analysis Branch
US Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

Dear Chief Brighton,

We, the below signed members of the Ulster County Legislature, write to respectfully request an extension of ninety (90) days to hold additional informational meetings and accept public comment on the US Army Corps of Engineers (USACE) Coastal Storm Risk Management study for New York Harbor and the Hudson Valley. The plans the USACE selects to be the subject of a Draft Feasibility Report and Environmental Impact Statement will affect thousands of square miles of shoreline from northern New Jersey to Troy in New York, and millions of people, many right here in Ulster County. While we appreciate the recent announcement that the deadline for comment has been extended by thirty (30) days, we believe more time is necessary for communities to fully understand the proposals and their effects.

The Hudson River Coastal Towns of Esopus, Saugerties, Lloyd and City of Kingston in Ulster County each have Local Waterfront Revitalization Plans (LWRPs) for land use, passive and active types of recreation and preservation of natural waterfront resources aimed at increasing recreational boating, and promoting responsible waterfront uses. We believe that, of the six alternatives currently proposed, Alternative Number 5 is the only scenario presented that is in keeping with the towns' LWRPs and offers the best opportunity to protect these communities from storm surges caused by storms like Irene, Lee and Sandy, while leaving our rivers to continue to flow naturally.

Alternatives 2, 3A, 3B and 4 all present significant risks to the Hudson River and tributary flow patterns, contaminant and sediment transport, migration of essential fish populations and tidal exchange of the river. Open tidal exchange is crucial to move sediment and flush contaminants and, if restricted, could require much more dredging to maintain shipping channels. Sewage and other contaminants could potentially flush to the ocean more slowly, resulting in more pollution for our already contaminated harbor and river. All due time must be given to communities to evaluate USACE's proposals and offer comments and concerns.

The U.S. Coast Guard, in seeking public feedback on designating new anchorage grounds on the Hudson, initially offered a three-month comment period on an "advance notice of public rulemaking." After receiving

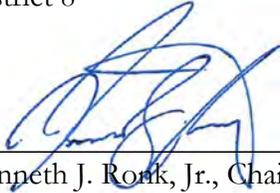
many requests for a reconsideration, including one from this Legislature, the comment period was extended by an additional three months. It is our hope that you will similarly respond to the requests you have been receiving seeking additional public informational meetings and extension of the comment period to allow potentially affected communities the opportunity to thoroughly review the alternatives and evaluate the potential impacts.

We appreciate your time and consideration.

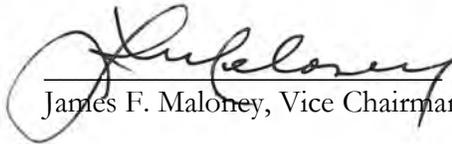
Sincerely,



Laura Petit, Legislator
District 8



Kenneth J. Runk, Jr., Chairman



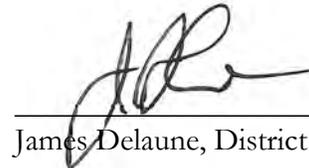
James F. Maloney, Vice Chairman



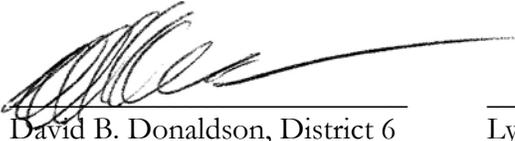
Lynn Archer, District 21



Tracey Bartels, District 16



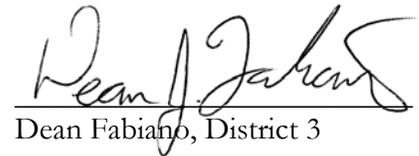
James Delaune, District 17



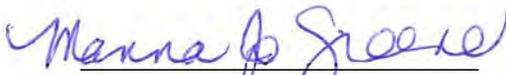
David B. Donaldson, District 6



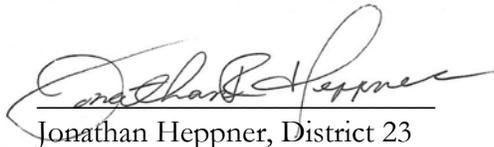
Lynn Eckert, District 5



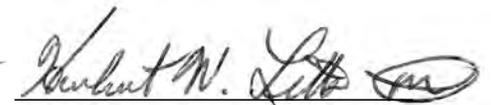
Dean Fabiano, District 3



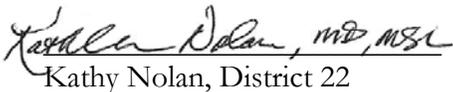
Manna Jo Greene, District 19



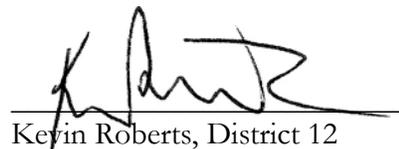
Jonathan Heppner, District 23



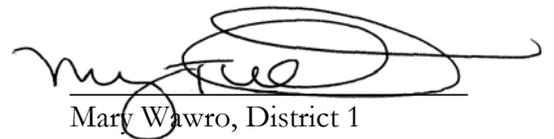
Herbert Litts, III, District 9



Kathy Nolan, District 22



Kevin Roberts, District 12



Mary Wawro, District 1



Brian Woltman, District 7

Cc: Senator Charles Schumer, Senator Kristen Gillibrand, Congressman John Faso, Governor Andrew Cuomo, NYS Secretary of State Rossana Rosado, NYS Senator George Amedore, NYS Assemblyman Kevin Cahill

COUNTY OF ULSTER

P.O. BOX 1800
KINGSTON, NEW YORK 12402



ENVIRONMENTAL MANAGEMENT COUNCIL

Dave Haldeman, Chair

Phone: 845-338-7287

Fax: 845-338-7682

Via Email

Date: September 6, 2018

Nancy J. Brighton
Chief, Watershed Section
Environmental Analysis Branch, Planning Division
U.S. Army Corps of Engineers, New York District
26 Federal Plaza, Room 2151
New York, NY 10279-0090

Re: New York-New Jersey Harbor and Tributaries Coastal Storms Risk Management Feasibility Study.

Dear Ms. Brighton,

I am writing on behalf of the Ulster County Environmental Management Council (EMC) to express the Council's views regarding the *New York-New Jersey Harbor and Tributaries Coastal Storms Risk Management Feasibility Study*.

The EMC, appointed by the Ulster County Executive and confirmed by the Ulster County Legislature, is comprised of members of Ulster County town-based environmental councils. The purpose of the EMC is to advise the Ulster County Legislature and local governments on present and proposed methods of using, protecting and conserving the environment for the benefit of all the people of Ulster County. Ulster County shares 40 miles of shoreline with the Hudson River.

While the EMC recognizes the importance of managing the risk of coastal-storm damage in New York Harbor and its tributaries, it has concerns regarding both the process of public input and the environmental, economic and social effects of some of the six options proposed by the Army Corps of Engineers' *New York – New Jersey Harbor and Tributaries (NYNJHAT) Coastal Storm*

Risk Management Feasibility Study. Proposals for storm barriers may impact Ulster County's tidal waterfronts along the Hudson River, Rondout Creek and Esopus Creek. The Hudson River and its tributaries in Ulster County directly impact the county's economy, especially that of its waterfront municipalities of Marlborough, Lloyd, Esopus, Kingston, Ulster and Saugerties. Any changes to these waterways may impact public health, the environment and the county's economy.

The Hudson River is part of Ulster County's heritage, natural beauty, and economic viability. Much of Ulster County's economy derives from a healthy and beautiful natural environment. Many businesses rely on the Hudson River directly, including for water transportation, waterfront recreation and commerce. The towns of Lloyd and Esopus use the Hudson for drinking water. Freight is shipped by rail on the banks of the Hudson. Ulster County is a tourist and recreational destination for millions of New York City and state residents and visitors from across the country and around the world. At the same time, the Mid-Hudson Valley is a complex geography, including one of the historically most polluted but also one of the most economically crucial rivers in our country--the Hudson--along which reside millions of people of mixed socio-economic and cultural heritages. The Hudson is simultaneously a Superfund site and an American Heritage River. The Indian Point nuclear power facility is situated along its banks and, even when decommissioned in 2020-2021, the facility will remain a source of potential nuclear contamination. Complexity is inevitable here and must be considered and addressed.

1. We believe that adequate environmental studies on the effects of all these proposals (including the proposal the no action alternative) have not been carried out, and note that they will still need review when done. While at this time, the EMC lacks sufficient information about the proposals under consideration, we are concerned that several of the Army Corps' proposals call for construction of massive, in-water barriers that have the potential to critically harm the Hudson River Estuary. It is crucial that any proposal for in-water, storm-surge barriers along the New York coastline take into considerations effects on the Hudson River's tidal flow, which must move freely in order to ensure that sediment and contaminants are not trapped and that the migration of fish is not blocked. While we believe that shoreline-based perimeter strategies, such as wetlands, shallows, dunes, dikes and levees, may be the best solution, we await rigorous environmental impact studies and look forward to considering all options from an environmental lens. ***The EMC respectfully requests that the Army Corps of Engineers contract for extensive, rigorous, reliable in-depth scientific environmental reviews of all proposed options, evaluating environmental, economic, and other impacts before selecting any one of them.***

2. In addition, we understand and agree that: (a) selecting an affordable proposal is crucial; however, we are concerned that costs considerations not outweigh environmental and public health considerations; (b) large populated metropolitan counties down river are tremendously at-risk, including economic risk; however up-river communities must be adequately considered as well; and (c) superstorms are the immediate risk to public safety; however, we also recognize that permanent inundation caused by sea level rise present an existential threat for many New York communities, including all Ulster County communities with tidal waterfront. ***The EMC respectfully requests that: (a) a decision not be made primarily on cost, but that environmental impacts be equally and fully considered; (b) a decision not be made based primarily on the needs and impacts of down-river communities, but that all up-river communities and the life***

of the Hudson as a totality also be adequately considered and addressed; and (c) not only superstorms but also the threat of sea level rise be addressed in selecting a proposal.

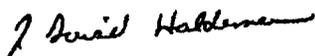
3. Such entities as the NYS Department of Environmental Conservation, Scenic Hudson, Riverkeeper, and others, represent “deep knowledge” of the local effects of--and successful interventions for--storm events, surges, floods and sea level rise. By working closely with them, New York State’s own experience will be included in the decision-making process. ***The EMC respectfully requests that the Army Corps of Engineers utilize the extraordinary knowledge of local agencies and stakeholders in selecting a proposal so that our communities’ concerns can be addressed.***

4. The Ulster County EMC is concerned that the Army Corps’ selection process may fail to make detailed information available to the public and lacks adequate opportunities for public participation. We understand that the “3-by-3-by-3” criterion for feasibility studies is the reason that HATS is on such a tight schedule; nonetheless, public input must be fully informed by rigorous and reliable studies with an adequate process for public comment. Recently, in this process Army Corps of Engineers provided the public with only a brief overview and a series of alternatives from which the agency would choose one to pursue. The alternatives list was insufficient in that it included no alternatives for up-river estuary communities regarding storm surges and no suggestions for a mix of alternatives to be pursued. ***We request adequate study information and data on which the public may then comment, as well as additional public meetings to be held as early in the review period as possible to provide much-needed details about the proposals and the results of the studies. These public meetings should be structured to allow for input from interested groups, stakeholders and the general public, and timed to allow for broad comment by the public and other stakeholders. They should not be one-way meetings in which the Army Corps of Engineers does most of the talking and the public is required to remain largely passive; the public must be an active part of the decision-making that will so impact our communities.***

It is crucial that, without dragging our feet, we collectively make decisions about a solution with the greatest level of research and skillful visioning. Given the possible multi-billion dollar cost of this project, it must be the very best it can be, and address the greatest number of threats (both super storms and sea level rise), human needs, environmental problems, and economic concerns. Let’s take the time needed and do the studies required to make the best decision with full input from knowledgeable organizations, interested groups, all stakeholders and the general public.

Yours truly,

J. David Haldeman



Dave Haldeman, Chair
Ulster County Environmental Management Council

George Latimer
County Executive

August 15, 2018

Bryce W. Wisemiller
Project Manager
U.S. Army Corps of Engineers, New York District
Programs and Project Management Division, Civil Works Programs Branch
26 Federal Plaza, Room 2127
New York, NY 10279-0090

**Re: U.S. Army Corps of Engineers -- New York/New Jersey Harbor & Tributaries Focus Area
Feasibility Study**

Dear Mr. Wisemiller:

As the Westchester County Executive, representing almost 1 million people who live in the study area, I am deeply concerned about both the process and the potential impacts of the proposals developed as part of the New York-New Jersey Harbor and Tributaries Feasibility Study. While I recognize the importance of the study's goals, to reduce the risk of coastal storm damage; contribute to the resilience of communities, critical infrastructure, and the environment; and to enhance public health and safety, I do not believe the public has been given sufficient time or information to comment on a study of this magnitude and potential impacts. Therefore, I urge the U.S. Army Corps of Engineers to: (1) extend the public comment period to at least 90 days; (2) provide additional information concerning the project, including more detail on the alternatives presented and some description of how the alternatives were developed; and (3) hold additional public hearings, including one in Westchester County.

Many communities in Westchester County have experienced coastal storm and flooding damage and have already taken significant actions to protect their communities, residents, environment, critical infrastructure, and improve their resiliency to impacts associated with a changing climate. I urge you to first prioritize ways to work cooperatively with these communities to support and build on the actions they already have underway. The federal government designated the Hudson River as an American Heritage River, and New York State has an extensive, ongoing Hudson River Estuary Program that has undertaken many studies and administers programs to help Hudson River municipalities address these issues. Many of these programs are encouraging coastal municipalities to reimagine their communities in exciting new ways, not only increasing resilience and reducing risk but providing additional amenities and spurring economic activity. The U.S. Army Corps of Engineers should consider ways to support and work with these well researched and publicly supported programs and actions rather than constructing physical barriers that will impact the tidal flows to this unique and irreplaceable river and estuary.

George Latimer
County Executive

I also question how a cost benefit analysis will be applied in this study. With such a large and diverse study area, there may be some benefits to very densely populated areas, but at a significant cost to less dense, upstream communities. The potential impacts to Hudson River and Sound Shore communities are very significant and should be considered directly, not weighed against the impacts in other communities. A detailed analysis of potential opportunity costs and social equity issues associated with the alternatives should be incorporated into the environmental factors analyzed.

Instead of a focus on building massive man-made structures to control our environment, I urge the federal government to focus on taking immediate and meaningful actions to reduce the human impact on climate change. If our efforts were focused on prevention, it could negate the need to consider these large scale, costly construction projects with such significant environmental consequences. Although we cannot prevent all damage from coastal storms and flooding, we can take significant actions to reduce risk without such potentially devastating environmental impacts and consequences.

Thank you for your consideration of these comments and requests. If you need any further information, please contact Peter McCartt (914-995-2905, PMcCartt@WestchesterGov.com)

Sincerely,



George Latimer
Westchester County Executive

cc: U.S. Senator Charles Schumer
U.S. Senator Kirsten Gillibrand
U.S Representative Nita Lowey
U.S. Representative Eliot Engel
U.S. Representative Sean Patrick Maloney

Hudson River Drinking Water Intermunicipal Council

Town of Esopus, Town of Hyde Park, Town of Lloyd, City of Poughkeepsie,
Town of Poughkeepsie, Town of Rhinebeck, Village of Rhinebeck

October 25, 2018

Via electronic and U.S. mail

Bryce W. Wisemiller, Project Manager
Programs and Project Management Division, Civil Works Programs Branch
U.S. Army Corps of Engineers, New York District
26 Federal Plaza, Room 2127
New York, NY 10279-0090
(917) 790-8307
Bryce.W.Wisemiller@usace.army.mil

Nancy J. Brighton, Watershed Section Chief
Planning Division, Environmental Analysis Branch
U.S. Army Corps of Engineers, New York District
26 Federal Plaza, New York, Room 2151
New York, NY 10279-0090
(917) 790-8703
Nancy.J.Brighton@usace.army.mil

Re: Comments on Scoping of New York New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study

Dear Mr. Wisemiller and Ms. Brighton:

On behalf of the Hudson River Drinking Water Intermunicipal Council, I write to request environmental studies be completed in advance of any action or decision made as part of the New York - New Jersey Harbor and Tributaries ("NYNJHAT") Coastal Storm Risk Management Feasibility Study, including the selection of a tentatively selected plan or plans from the array of six alternatives under consideration. We also request additional public outreach.

The Hudson River Drinking Water Intermunicipal Council ("Council") was established by an intermunicipal agreement, and is made up of elected representatives from each of the seven municipalities that rely on the Hudson River for drinking water: City of Poughkeepsie, Village of Rhinebeck and the towns of Esopus, Hyde Park, Lloyd, Poughkeepsie and Rhinebeck. In all, more than 100,000 people rely on the Hudson River for drinking water. The Council's goal is source water protection to ensure that the Hudson River is a safe source of drinking water for our communities for generations to come. The health of the Hudson River is a matter of public health for our communities.

1. Environmental studies be completed in advance of any action or decision

The NYNJHAT study area encompasses 2,150 square miles, including the entire reach of the Hudson where our communities draw drinking water, and significant areas of the Hudson and its tributaries that are defined by the Department of Health-delineated Source Water Assessment area for our drinking water supplies.

We are concerned about the significant environmental impacts and other consequences that could result from the alternatives outlined by the U.S. Army Corps of Engineers (“USACE”), particularly the four that include in-water barriers throughout New York Harbor (Alternatives 2, 3A, 3B and 4). Our specific concerns are associated with potential changes to water quality from these proposed alternatives, and we write to request specific studies to evaluate the potential effects of any alternative over the life of any structures to be built.

In its cost-benefit analysis of the current array of alternatives, the USACE should include an evaluation of the value of ecosystem services, including the value of ecosystem services associated with Hudson River water quality, which affects the cost of water treatment. Further, we request that the full range of impacts be considered before the six alternatives are narrowed. Before any alternative is eliminated from consideration, the potential impacts of each alternative should be studied, including specifically in relation to water quality in the mid Hudson, where our drinking water intakes are located. Study of potential impacts should include, but may not be limited to:

- Water quality in the Hudson River, including dissolved oxygen, salinity, temperature and nutrients.
- Frequency and severity of algae blooms throughout the Hudson River.
- Tidal range / regime and flow velocity.
- Sedimentation rates, scour and elevation in the Hudson River.
- Changes in contamination levels both in the water and river sediments.
- Rate at which PCBs and other contaminants will be transported from the rivers to the sea.
- The degree and cost of wastewater treatment required to comply with the Clean Water Act, in light of reduced tidal exchange / flushing.

2. Public outreach

USACE recently announced an extension of public comment to November 5. Thank you for extending the public comment period. While necessary, the extension of public comment period is insufficient to meet the needs for public outreach, given the extensive and long-range impacts of the project.

The USACE has hosted five public sessions on three days in three locations, in New York City, Newark and Poughkeepsie, and it has announced two additional meetings in Brooklyn and Westchester County. The meeting in Poughkeepsie was announced with just 12 days’ notice, and no members of our Council were able to attend. We request that additional public meetings be scheduled throughout the Hudson River region that could be affected by the proposed alternatives, including at least one additional meeting in the mid-Hudson region.

The Council on Environmental Quality implementing regulations for the National Environmental Policy Act require agencies to make “high quality” environmental information available to the public “before

decisions are made and before actions are taken.” The limited information provided to date, for such a consequential decision as the narrowing of alternatives, is insufficient for our Council to meaningfully comment. There is insufficient information to evaluate the potential specific impacts on water quality in the mid Hudson, our primary concern.

Thank you for your consideration and your service.

Sincerely,



Gary Bassett

Chair

Hudson River Drinking Water Intermunicipal Council

CC: Basil Seggos, Commissioner
New York State Department of Environmental Conservation
625 Broadway, 14th Floor
Albany, NY 12233-1010



TOWN OF OSSINING VILLAGE OF OSSINING

MUNICIPAL BUILDING

16 Croton Avenue

Ossining, NY 10562

Phone (914) 762-8428

Fax (914) 941-0627

RESOLUTION IN OPPOSITION TO PROPOSED PLANS FOR COASTAL STORM RISK MANAGEMENT WITHOUT SUFFICIENT STUDY OR COMMUNITY PARTICIPATION

WHEREAS, from July 9 through July 11, 2018, the U.S. Army Corps of Engineers (USACOE) held public meetings for the first and only time regarding its "Coastal Storm Risk Management" study (CSRM) for New York Harbor and the Hudson Valley; and

WHEREAS, four of the ACOE's proposed alternative plans (2, 3A, 3B and 4) involve outer and inner harbor barriers that almost entirely block either the Hudson River or major New York Harbor tributaries during storm events and would alter river and tributary flow patterns at all times; and

WHEREAS, two of the ACOE's alternatives propose barriers (2 and 3A) that would entirely close off the harbor and river from the Atlantic during storm events and would alter river and tributary flow patterns at all times; and

WHEREAS, the proposed barriers could impede the estuary's tidal flow, contaminant and sediment transport, and migration of fish, and impede the tidal "respiration" of the river; and

WHEREAS, over time, the barriers have the potential to 1) significantly restrict migrations of striped bass, Atlantic sturgeon, herring, shad, eel and other species essential to the Hudson estuary, 2) prevent the ocean tide from flushing NY Harbor, and 3) inhibit rainstorm flood waters like those during Irene and Lee in 2011 from leaving the Hudson.; and

WHEREAS, open tidal exchange is essential to move sediment and flush contaminants and if tidal exchange is restricted, the harbor could require much more dredging to maintain shipping channels. Sewage and other contaminants could flush to the ocean more slowly, resulting in more pollution for our already contaminated harbor and river; and

WHEREAS, proposed alternative #5 – described as "Perimeter-only" and relying entirely on shoreline-based floodwalls and levees - is the only scenario presented so far that may protect low-lying communities from storm surge from storms like Irene, Lee and Sandy, while leaving our rivers to continue to flow naturally; and

WHEREAS, the proposed plans within-water barriers do not account for climate change and do nothing to help communities adapt to sea level rise; and

WHEREAS, insufficient scientific data is available to fully understand the consequences of altering Hudson River flow with permanent barriers; and

WHEREAS, the public comment period has been set for only five weeks during peak summer vacation times when many residents are away and not easily informed about this major set of proposals; and

WHEREAS, Scenic Hudson, Riverkeeper, and many others have voiced their concern and opposition to storm risk management approaches that could severely compromise the health of the Hudson River and its tributaries; and

WHEREAS, the Town of Ossining is a riverfront town that repeatedly acknowledges the importance of the Hudson River to our community, including the views, passive recreational uses, active boating uses, and view corridors enjoyed by thousands; and

BE IT RESOLVED that the Town Board of the Town of Ossining does hereby register its strongest possible opposition to proposed plans 2 and 3A, and asks that they be removed from further consideration; and be it further

RESOLVED, that the Town Board of the Town of Ossining does hereby register its support for further studies to ensure that shoreline-based measures such as Alternative 5, described as "Perimeter Only", would in fact protect New York Harbor and the Hudson Valley from flooding; and be it further.

RESOLVED, that further planning to manage the risk of coastal storm damage takes into account the impact of climate change and its impact on sea level rise; and be it further

RESOLVED, that the public comment period be extended by 90 days to allow for full public understanding and response to the US ACOE proposals; and be it further

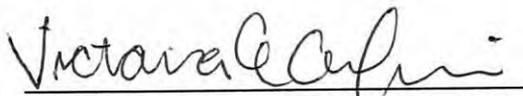
RESOLVED, that this resolution be distributed to Nancy J. Brighton, Chief, Watershed Section, US ACOE, Senator Chuck Schumer, Senator Kirsten Gillibrand, Congresswoman Nita Lowey, Governor Cuomo, Secretary of State Rosanna Rosado NYS State Senator David Carlucci, and Assemblywoman Sandy Galef.

STATE OF NEW YORK ()
COUNTY OF WESTCHESTER (ss)
TOWN OF OSSINING ()

I, Victoria Cafarelli, Interim Town Clerk of the Town of Ossining, Westchester County, New York, DO HEREBY CERTIFY, that I have compared the foregoing with the original resolution adopted by the Town Board at a meeting held on the 7th day of August, 2018 and that the foregoing is a true and correct copy of the original thereof. I DO FURTHER CERTIFY that Supervisor Dana Levenberg, Councilmembers Elizabeth R. Feldman, and Karen D'Attore were present at such meeting and Councilmembers Northern Wilcher, Jr. and Jackie G. Shaw were absent.

IN WITNESS WHEREOF, I have hereunto set my hand and the seal of the TOWN OF OSSINING THIS 8th day of August, 2018.




Victoria Cafarelli, Interim Town Clerk

RESOLUTION

NUMBER 232-18

RE: (RESOLUTION IN OPPOSITION TO ARMY CORPS OF ENGINEERS NEW YORK/NEW JERSEY HARBOR AND TRIBUTARIES FOCUS AREA FEASIBILITY STUDY FOR COASTAL STORM RISK MANAGEMENT WITHOUT SUFFICIENT STUDY OR COMMUNITY PARTICIPATION)

WHEREAS, from July 9 through July 11, 2018, the U.S. Army Corps of Engineers (US ACOE) held public meetings for the first and only time regarding its “Coastal Storm Risk Management” study (CSRM) for New York Harbor and the Hudson Valley; and

WHEREAS, four of the ACOE’s proposed alternative plans (2, 3A, 3B and 4) involve outer and inner harbor barriers that may potentially block either the Hudson River or major New York Harbor tributaries during storm events altering river and tributary flow patterns; and

WHEREAS, two of the ACOE’s alternatives propose barriers (2 and 3A) would entirely close off the harbor and river from the Atlantic during storm events thereby altering river and tributary flow patterns, impeding the estuary’s tidal flow, contaminant and sediment transport, migration of fish, impede the tidal “respiration” of the river;

WHEREAS, over time, the barriers have the potential to significantly restrict migrations of striped bass, Atlantic sturgeon, herring, shad, eel and other species essential to the Hudson estuary, prevent the ocean tide from flushing NY Harbor, and inhibit rainstorm flood waters like those during Irene and Lee in 2011 from leaving the Hudson.; and

WHEREAS, open tidal exchange is essential to move sediment and flush contaminants and if tidal exchange is restricted, the harbor could require much more dredging to maintain shipping channels. Sewage and other contaminants could flush to the ocean more slowly, resulting in more pollution for our already contaminated harbor and river; and

WHEREAS, proposed alternative #5 – described as “Perimeter-only” and relying entirely on shoreline-based floodwalls and levees - is the only scenario presented so far that may protect low-lying communities from storm surge from storms like Irene, Lee and Sandy, while leaving our rivers to continue to flow naturally; and

WHEREAS, the proposed plans with in-water barriers do not account for climate change and do nothing to help communities adapt to sea level rise; and insufficient scientific data is available to fully understand the consequences of altering Hudson River flow with permanent barriers; and

WHEREAS, the public comment period has been set for only five weeks during peak summer vacation times when many residents are away and not easily informed about this major set of proposals; and

WHEREAS, Scenic Hudson, Riverkeeper, Historic Hudson River Towns and many others have voiced their concern and opposition to storm risk management approaches that could severely compromise the health of the Hudson River and its tributaries; and

WHEREAS, The Town of Cortlandt completed an award-winning Sustainable Master Plan in 2016 that repeatedly acknowledges the importance of the Hudson River to the Town of Cortlandt including economic viability, passive recreational uses, active boating uses, and view corridors enjoyed by thousands;

NOW THEREFORE BE IT RESOLVED that the Town Board of the Town of Cortlandt does hereby register its strong opposition to the proposed alternatives that may impact the tidal flow of the Hudson River.

BE IT FURTHER RESOLVED, that the Town Board of the Town of Cortlandt hereby register its support for further studies to ensure that all proposed alternative measures are fully evaluated in accordance with National Environmental Protection Act, the Federal Coastal Zone Management, and include more shoreline-based measures such as Alternative 5, described as "Perimeter Only", be evaluated

BE IT FURTHER RESOLVED, that the Town Board of the Town of Cortlandt hereby request that the public comment period be extended by 90 days to allow for full public understanding and response to the US ACOE proposals; and be it further

BE IT FURTHER RESOLVED, that this Resolution be distributed to Nancy J. Brighton, Chief, Watershed Section, US ACOE, Senator Chuck Schumer, Congresswoman Nita Lowey, Governor Andrew Cuomo, and Secretary of State Rossana Rosado.

**BY ORDER OF THE TOWN BOARD
OF THE TOWN OF CORTLANDT
Laroue Rose Shatzkin
Town Clerk**

**Adopted on Sept. 17, 2018
at a Special Town Board Meeting
Held at the Town Hall**

STATE OF NEW YORK)
 §
COUNTY OF ULSTER)

I, ROSARIA PEPLOW, Town Clerk of the Town of Lloyd, Ulster County, New York, DO HEREBY CERTIFY THAT:

I have compared the annexed extract of Minutes of the meeting of the Town Board of said Town of Lloyd, Ulster County, New York, including the Resolution contained herein, held on the 5th day of September, 2018 with the original thereof on file in my office, and the same is a true and correct transcript therefrom and the whole of said original so far as the same relates to the subject matters therein referred to.

I, FURTHER CERTIFY, that all members of said Board had due notice of said meeting.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the said Town this 6th day of September, 2018.


ROSARIA SCHIAVONE PEPLOW,
Town Clerk
Town of Lloyd, Ulster County, New York

(SEAL)

At the September 5, 2018 Town of Lloyd Town Board Meeting the following resolution was adopted:

A. RESOLUTION made by Mazzetti, seconded by Guerriero

WHEREAS, The U.S. Army Corps of Engineers (USACE) initiated the **NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk** Management Feasibility Study, affecting more than 2,150 square miles, 25 NY and NJ counties and 16 million people. Communities along the shorelines of NYC, Long Island, NY Harbor, northern NJ, the Hudson River up to Troy, and western Connecticut are affected. The goal is to develop and implement measures to reduce the risk of coastal storm damage to communities, critical infrastructure, and important societal resources.

WHEREAS, USACE has proposed six alternatives:

- **Alternative 1:** “No Action,” meaning no new action by the Corps. Instead the region would move forward with numerous existing flood control projects already in the works.
- **Alternative 2:** Build two in-water barriers, from Sandy Hook to Breezy Point (5 miles) and across Long Island Sound near Throgs Neck Bridge (*see map at right*).
- **Alternative 3A:** Build in-water barriers in the Arthur Kill, Jamaica Bay, Verrazano Narrows, Pelham Bay, and Throgs Neck, and a levee or berm system along Brighton Beach and the Rockaways.
- **Alternative 3B:** Build in-water barriers in the Arthur Kill, Kill Van Kull, the Gowanus Canal, Pelham Bay, Throgs Neck, Newtown Creek, and Jamaica Bay. Build a levee and berm system and shoreline measures in East Harlem, the NJ upper bay and Hudson River, and the West Side of Manhattan.
- **Alternative 4:** Build in-water barriers in Pelham Bay, Jamaica Bay, Newtown Creek, the Gowanus Canal, and the Hackensack River. Build shoreline measures in East Harlem, the NJ Upper Bay and Hudson River, and the West Side of Manhattan.
- **Alternative 5:** Build only shoreline measures along the perimeter of coastal locations (dunes, berms and levees). Note that these shoreline protections are in addition to the wide array of shoreline flood control projects already planned or under way which are shown in Alternative

WHEREAS, USACE intends to narrow the six options down to one or two by this fall (2018). The one or two “tentatively selected plan(s)” will be the subject of a Draft Feasibility Report and Environmental Impact Statement this fall. USACE has opened a public comment period, ending September 20, to consider the “scope” of issues it should study in that preliminary environmental review.

WHEREAS, This short time frame and limited number of meetings is inadequate

given the enormous scale of the project.

WHEREAS, Several of these plans – specifically, the ones including giant in-water barriers throughout NY Harbor (Alternatives 2, 3A, 3B & 4) – threaten the very existence of the Hudson as a living river. These in-water barriers would disrupt the migrations of the river’s iconic species (striped bass, Atlantic sturgeon, herring, shad, eel) and restrict tidal exchange, essential in numerous ways: from moving sediment and flushing contaminants from the Harbor, to regulating nutrient distribution and adequate dissolved oxygen.

WHEREAS, In-water barriers would not protect against flooding from sea-level rise – only from storms. With gates that must be open for ships to pass, the in-water barriers would do nothing against sea-level rise. By contrast, shoreline measures (Alternatives 5 and 1 combined) can protect against flooding from both storms and sea level rise, and can be more easily heightened as projections evolve.

WHEREAS, Deflection or induced flooding in nearby unprotected shorelines may be a fatal flaw to these alternatives. Areas such as the Jersey shore, the south shore of Long Island, western Long Island Sound, and the Lower Bay of New York Harbor would be at risk. In-water barriers could hold back rainstorm flood waters, as we experienced during storms like Irene and Lee in 2011, from leaving the Hudson. This could cause fresh water flooding inland of the barriers.

WHEREAS, USACE estimates \$30 billion to \$50 billion to build the in-water barriers in Alternative 2, with annual maintenance likely costing billions, without even addressing sea level rise.

WHEREAS, Alternative 5 — shoreline and nature-based measures (dunes, dikes, floodwalls, and levees) — is estimated at \$2 billion to \$4 billion. It is the only alternative that addresses both storm surge and sea level rise, while leaving the river to flow freely.

WHEREAS, The economy and culture of the Hudson River Valley is intimately tied to the health of the Hudson River, including the migrations of its signature fish. Tourism generates more than \$5.3 billion annually.

WHEREAS, Non-federal sponsors of the study include New York State, represented by the NYSDEC and New Jersey, represented by the NJ Department of Environmental Protection. **NY and NJ thereby have the authority to withdraw from the study or to reject any construction alternative.**

NOW THEREFORE BE IT RESOLVED, That we, the elected representatives of **Town of Lloyd in Ulster County** in the Hudson Valley, cannot comment effectively, as is our legal right, without detailed information and data on the social, economic and environmental impacts of each alternative. The PowerPoint slides and the fact sheet provided to the public to date are completely inadequate. The Army Corps needs to publish comprehensive information about all the alternatives being considered, including the environmental impacts on the Hudson and the Harbor and to share with the public the complete list of existing studies it will consult in the preliminary assessments of the projects; and

BE IT FURTHER RESOLVED, The meetings recently posted were too few, announced too late, and were not advertised so that the public would actually be aware. The Army Corps and the other involved agencies need to provide numerous,

comprehensive and well-advertised public meetings throughout the affected area, which includes Long Island Sound, New York Harbor, New Jersey coastal waters and the Hudson to Troy.

BE IT FURTHER RESOLVED, The short comment period, for a proposal with consequences that could last centuries, or millennia, is unacceptable. By contrast, the U.S. Coast Guard, in seeking public feedback on designating new anchorage grounds on the Hudson, initially offered a three-month comment period on an "advance notice of public rulemaking," then extended that by an additional three months, which allowed members of the public time to become informed and voice their opinions. Therefore, we request an extension of the scoping comment period to at least 90 days.

BE IT FURTHER RESOLVED, Only one of the alternatives is even acceptable so far. Alternative 5, described as "Perimeter Only," is the only acceptable alternative the U.S. Army Corps has presented to date. Only "shoreline-based measures" should be employed. Our protection would rely on shoreline-based floodwalls and levees, including beaches, dunes and waterfront parks, combined with reimagined land use from some low lying areas. It would protect our low-lying communities from both storm surge and flooding from rain storms, while leaving our rivers free to flow and thrive.

BE IT FURTHER RESOLVED, In its cost-benefit analysis of the current array of alternatives, the USACE should include an evaluation of the value of ecosystem services; and the cost of shoreline measures that are essential to protect against flooding from sea level rise, even for alternatives that include harbor wide barriers.

BE IT FURTHER RESOLVED, The full range of impacts must be considered before the six alternatives are narrowed. Before any alternative is eliminated from consideration, the potential impacts of each alternative should be studied in relation to the following: Tidal range / regime and flow velocity. Migration of all native fish species.

Roll call: Winslow, aye; Mazzetti, aye; Guerrero, aye; Hansut, aye; Auchmoody, aye.

Five ayes carried.

STATE OF NEW YORK }
 } SS:
COUNTY OF DUTCHESS }

I, Felicia Salvatore, Town Clerk of the Town of Poughkeepsie, New York, do hereby certify that the attached Town Board Resolution, 9:5 # 9 of 2018, is in fact a true and correct copy of the original on file in my office located at 1 Overocker Road, Poughkeepsie, NY 12603 and that the same is a true and correct transcript of said original and of the whole thereof,

I DO WITNESS My Hand and the Official Seal of the Town of Poughkeepsie, New York, this 6th Day of September, 2018.





FELICIA SALVATORE, Town Clerk
Town of Poughkeepsie

RESOLUTION 9:5 - # 9 OF 2018

WHEREAS, the Town of Poughkeepsie, because it is located on the Hudson River, is potentially at risk of suffering coastal storm damage, and

WHEREAS, the US Army Corp of Engineers is developing a Coastal Storm Risk Management Feasibility Study, which Study is to be used to develop preferred methods to prevent and mitigate coastal storm damage, and

WHEREAS, this Board finds that the allowed time for public review and comment on the Study is short, and that additional information is required, now therefore,

BE IT RESOLVED, that the Town Board of the Town of Poughkeepsie adopts the Resolution annexed hereto as Exhibit A requesting an extension of the public scoping comment period and the scheduling of additional public meetings and comment sessions regarding coastal storm damage prevention

Dated: September 5th 2018
 Moved: Michael Cifone
 Seconded: Matt Woolever

Motion passes/ fails: Ayes 6 Nays 0

JEN/aap
 t-8/23/2018
 m-9/5/2018

		AYE	NAY	ABSTAIN
<u>PRESENT</u> /ABSENT	Councilman Renihan	✓		
<u>PRESENT</u> /ABSENT	Councilman Carlos	<u>Absent</u>		
<u>PRESENT</u> /ABSENT	Councilwoman Lopez			
<u>PRESENT</u> /ABSENT	Councilman Cifone	✓		
<u>PRESENT</u> /ABSENT	Councilman Woolever	✓		
<u>PRESENT</u> /ABSENT	Councilwoman Shershin	✓		
<u>PRESENT</u> /ABSENT	Supervisor Baisley	✓		

Exhibit A

RESOLUTION 9:5 - # 9 OF 2018

WHEREAS, we, as representatives of Town of Poughkeepsie in Dutchess County urge Basil Seggos, Commissioner, New York State Department of Environmental Conservation (NYSDEC), Bryce Wisemiller, NY District Project Manager, U.S. Army Corps of Engineers (USACE) and Nancy J. Brighton, Chief, Watershed Section, Environmental Analysis Branch, Planning Division, U.S. Army Corps of Engineers to request an extension of the scoping comment period with additional public information and scoping meetings, for the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study; and to complete specific studies prior to the winnowing of proposed alternatives.

WHEREAS, The U.S. Army Corps of Engineers (USACE) initiated the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study, affecting more than 2,150 square miles, 25 NY and NJ counties and 16 million people. Communities along the shorelines of NYC, Long Island, NY Harbor, northern NJ, the Hudson River up to Troy, and western Connecticut are affected. The goal is to develop and implement measures to reduce the risk of coastal storm damage to communities, critical infrastructure, and important societal resources.

WHEREAS, USACE has proposed six alternatives:

- Alternative 1: "No Action," meaning no new action by the Corps. Instead the region would move forward with numerous existing flood control projects already in the works.

- Alternative 2: Build two in-water barriers, from Sandy Hook to Breezy Point (5 miles) and across Long Island Sound near Throgs Neck Bridge (*see map at right*).

- Alternative 3A: Build in-water barriers in the Arthur Kill, Jamaica Bay, Verrazano Narrows, Pelham Bay, and Throgs Neck, and a levee or berm system along Brighton Beach and the Rockaways.

- Alternative 3B: Build in-water barriers in the Arthur Kill, Kill Van Kull, the Gowanus Canal, Pelham Bay, Throgs Neck, Newtown Creek, and Jamaica Bay. Build a levee and berm system and shoreline measures in East Harlem, the NJ upper bay and Hudson River, and the West Side of Manhattan.

- Alternative 4: Build in-water barriers in Pelham Bay, Jamaica Bay, Newtown Creek, the Gowanus Canal, and the Hackensack River. Build shoreline measures in East Harlem, the NJ Upper Bay and Hudson River, and the West Side of Manhattan.

- Alternative 5: Build only shoreline measures along the perimeter of coastal locations (dunes, berms and levees). Note that these shoreline protections are in addition to the wide array of shoreline flood control projects already planned or under way which are shown in Alternative

WHEREAS, USACE intends to narrow the six options down to one or two by this fall (2018). The one or two “tentatively selected plan(s)” will be the subject of a Draft Feasibility Report and Environmental Impact Statement this fall. USACE has opened a public comment period, ending September 20, to consider the “scope” of issues it should study in that preliminary environmental review.

WHEREAS, This short time frame and limited number of meetings is inadequate given the enormous scale of the project.

WHEREAS, Several of these plans – specifically, the ones including giant in-water barriers throughout NY Harbor (Alternatives 2, 3A, 3B & 4) – threaten the very existence of the Hudson as a living river. These in-water barriers would disrupt the migrations of the river’s iconic species (striped bass, Atlantic sturgeon, herring, shad, and eel) and restrict tidal exchange, essential in numerous ways: from moving sediment and flushing contaminants from the Harbor, to regulating nutrient distribution and adequate dissolved oxygen.

WHEREAS, In-water barriers would not protect against flooding from sea-level rise – only from storms. With gates that must be open for ships to pass, the in-water barriers would do nothing against sea-level rise. By contrast, shoreline measures (Alternatives 5 and 1 combined) can protect against flooding from both storms and sea level rise, and can be more easily heightened as projections evolve.

WHEREAS, Deflection or induced flooding in nearby unprotected shorelines may be a fatal flaw to these alternatives. Areas such as the Jersey shore, the south shore of Long Island, western Long Island Sound, and the Lower Bay of New York Harbor would be at risk. In-water barriers could hold back rainstorm flood waters, as we experienced during storms like Irene and Lee in 2011, from leaving the Hudson. This could cause fresh water flooding inland of the barriers.

WHEREAS, Alternative 5 — shoreline and nature-based measures (dunes, dikes, floodwalls, and levees) — is estimated at \$2 billion to \$4 billion. It is the only alternative that addresses both storm surge and sea level rise, while leaving the river to flow freely.

WHEREAS, The economy and culture of the Hudson River Valley is intimately tied to the health of the Hudson River, including the migrations of its signature fish. Tourism generates more than \$5.3 billion annually.

WHEREAS, Non-federal sponsors of the study include New York State, represented by the NYSDEC and New Jersey, represented by the NJ Department of Environmental Protection. NY and NJ thereby have the authority to withdraw from the study or to reject any construction alternative.

NOW THEREFORE BE IT RESOLVED, That we, the elected representatives of Town of Poughkeepsie in Dutchess County in the Hudson Valley, cannot comment effectively, as is our legal right, without detailed information and data on the social, economic and environmental impacts of each alternative. The Army Corps needs to publish comprehensive information about all the alternatives being considered, including the environmental impacts on the Hudson and the Harbor and to share with the public the complete list of existing studies it will consult in the preliminary assessments of the projects; and

BE IT FURTHER RESOLVED, The meetings recently posted were too few, announced too late, and were not advertised so that the public would actually be aware. The Army Corps and the other involved agencies need to provide numerous, comprehensive and well-advertised public meetings throughout the affected area, which includes Long Island Sound, New York Harbor, New Jersey coastal waters and the Hudson to Troy.

BE IT FURTHER RESOLVED, The short comment period, for a proposal with consequences that could last centuries, or millennia, is unacceptable. By contrast, the U.S. Coast Guard, in seeking public feedback on designating new anchorage grounds on the Hudson, initially offered a three-month comment period on an "advance notice of public rulemaking," then extended that by an additional three months, which allowed members of the public time to become informed and voice their opinions. Therefore, we request an extension of the scoping comment period to at least 90 days.

BE IT FURTHER RESOLVED, Only one of the alternatives is even acceptable so far. Alternative 5, described as "Perimeter Only," is the only acceptable alternative the U.S. Army Corps has presented to date. Only "shoreline-based measures" should be employed. Our protection would rely on shoreline-based floodwalls and levees, including beaches, dunes and waterfront parks, combined with reimagined land use from some low lying areas. It would protect our low-lying communities from both storm surge and flooding from rain storms, while leaving our rivers free to flow and thrive.

BE IT FURTHER RESOLVED, The full range of impacts must be considered before the six alternatives are narrowed. Before any alternative is eliminated from consideration, the potential impacts of each alternative should be studied in relation to the following:

- Tidal range / regime and flow velocity.
- Migration of all native fish species.
- Abundance of all native and currently existing fish species.
- Current and potential commercial and recreational fisheries.
- Endangered, threatened and special-concern fish and wildlife species (both federally and state designated) in the New York Bight and in the Hackensack River, Passaic River, Raritan River, Meadowlands, Jamaica Bay and Long Island Sound.

- Vegetation (subaquatic and intertidal).
- Birds.
- Habitat for fish, birds and other wildlife.
- Changes in contamination levels both in the water and in river and harbor sediments.
- Rate at which PCBs and other contaminants will be transported from the rivers and harbor to the sea.
- Water quality in the harbor, rivers and bays.
- Dissolved oxygen levels throughout the study area.
- Induced coastal flooding or deflection of storm surge to areas adjacent to any barrier alternatives.
- Back-flooding inland of any barriers due to heavy rain events.
- Commercial shipping.
- Recreational boating.
- Cost to state taxpayers for future operation and maintenance of ship and tide gates in any barriers.

Dated: September 5th 2018

Moved: Michael Cifone

Seconded: Matt Woolever

Motion passes/ fails: Ayes 6 Nays 0

JEN/aap
t-8/23/2018
m-9/5/2018

		AYE	NAY	ABSTAIN
<u>PRESENT</u> /ABSENT	Councilman Renihan	✓	_____	_____
<u>PRESENT</u> /ABSENT	Councilman Carlos	<u>Absent</u>	_____	_____
<u>PRESENT</u> /ABSENT	Councilwoman Lopez	✓	_____	_____
<u>PRESENT</u> /ABSENT	Councilman Cifone	✓	_____	_____
<u>PRESENT</u> /ABSENT	Councilman Woolever	✓	_____	_____
<u>PRESENT</u> /ABSENT	Councilwoman Shershin	✓	_____	_____
<u>PRESENT</u> /ABSENT	Supervisor Baisley	✓	_____	_____

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TOWN OF RHINEBECK

RESOLUTION 2018197

REQUESTING AN EXTENSION OF THE SCOPING COMMENT PERIOD WITH ADDITIONAL PUBLIC INFORMATION AND SCOPING MEETINGS, FOR THE NY/NJ HARBOR & TRIBUTARIES COASTAL STORM RISK MANAGEMENT FEASIBILITY STUDY

WHEREAS, the U.S. Army Corps of Engineers (USACE) initiated the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study, affecting more than 2,150 square miles, 25 NY and NJ counties and 16 million people. Communities along the shorelines of NYC, Long Island, NY Harbor, northern NJ, the Hudson River up to Troy, and western Connecticut are affected. The goal is to develop and implement measures to reduce the risk of coastal storm damage to communities, critical infrastructure, and important societal resources; and

WHEREAS, USACE has proposed six alternatives:

- Alternative 1: “ No Action.” (Relying on the existing array of flood control projects already in the works.)
- Alternative 2: Build two in-water barriers, from Sandy Hook to Breezy Point (5 miles) and across Long Island Sound near the Throgs Neck Bridge.
- Alternative 3A: Build in-water barriers in Arthur Kill, Jamaica Bay, Verrazano Narrows, Pelham Bay, and Throgs Neck, and a levee or berm system along Brighton Beach and the Rockaways.
- Alternative 3B: Build in-water barriers in Arthur Kill, Kill Van Kull, the Gowanus Canal, Pelham Bay, Throgs Neck, Newtown Creek, and Jamaica Bay, and a levee and berm system and shoreline measures in East Harlem, the NJ upper bay and Hudson River, and the West Side of Manhattan.
- Alternative 4: Build in-water barriers in Pelham Bay, Jamaica Bay, Newtown Creek, the Gowanus Canal, and the Hackensack River and shoreline measures in East Harlem, the NJ Upper Bay and Hudson River, and the West Side of Manhattan.
- Alternative 5: Build only shoreline measures along the perimeter of coastal locations (dunes, berms, and levees); and

WHEREAS, USACE intends to narrow the six options down to one or two by this fall (2018). The one or two “tentatively selected plan(s)” will be the subject of a Draft Feasibility Report and Environmental Impact Statement this fall. USACE has opened a 40-day public

comment period, ending August 20, to consider the “scope” of issues it should study in that preliminary environmental review; and

WHEREAS, this short time frame and limited number of meetings is inadequate given the enormous scale of the project; and

WHEREAS, several of these plans – specifically, the ones including giant in-water barriers throughout New York Harbor (Alternatives 2, 3A, 3B & 4) – threaten the very existence of the Hudson as a living river. These in-water barriers would restrict the migrations of iconic species (striped bass, Atlantic sturgeon, herring, shad, eel) and tidal exchange essential to moving sediment and flushing contaminants from the Harbor, resulting in higher concentrations of contamination and sewage; and

WHEREAS, in-water barriers would not protect against flooding from sea-level rise – only from storms. With gates that must be open for ships to pass, the in-water barriers would do nothing against sea-level rise. By contrast, shoreline measures (Alternative 5) can protect against flooding from both storms and sea level rise, and can be more easily heightened and modified; and

WHEREAS, deflection or induced flooding in nearby unprotected shorelines may be a fatal flaw to these alternatives. Areas such as the Jersey shore, the south shore of Long Island, western Long Island Sound, and the Lower Bay of New York Harbor would be at risk. In-water barriers could restrict rainstorm flood waters, common during hurricanes like Irene and Lee in 2011, from leaving the Hudson; and

WHEREAS, USACE estimates \$30 billion to \$50 billion to build the in-water barriers in Alternative 2, with annual maintenance likely costing billions, without even addressing sea level rise; and

WHEREAS, Alternative 5 — shoreline and nature-based measures (dunes, dikes, floodwalls, and levees) — is estimated at \$2 billion to \$4 billion. It is the only alternative that addresses both storm surge and sea level rise, while leaving the river to flow freely; and

WHEREAS, the economy and culture of the Hudson River Valley is intimately tied to the health of the Hudson River, including the migrations of its signature fish. Tourism generates more than \$5.3 billion annually; and

WHEREAS, non-federal sponsors of the study include New York State, represented by the NYSDEC and New Jersey, represented by the NJ Department of Environmental Protection. NY and NJ thereby have the authority to withdraw from the study or to reject any construction alternative; now, therefore be it

RESOLVED, that we, the elected representatives of the Town of Rhinebeck in Dutchess County in the Hudson Valley, cannot comment effectively, as is our legal right, without detailed information and data on the social, economic and environmental impacts of each alternative. The PowerPoint slides and the fact sheet provided to the public to date are completely inadequate. The Army Corps needs to publish comprehensive information about all the alternatives being considered, including the environmental impacts on the Hudson and the Harbor and to share with the public the complete list of existing studies it will consult in the preliminary assessments of the projects; and, be it further

RESOLVED, that the meetings recently posted were too few, announced too late, and were not advertised so that the public would actually be aware. The Army Corps and the other involved agencies need to provide numerous, comprehensive and well advertised public meetings throughout the affected area, which includes Long Island Sound, New York Harbor, New Jersey coastal waters and the Hudson to Troy; and, be it further

RESOLVED, that a 40-day comment period, for a proposal with consequences that could last centuries, or millennia, is unacceptable. By contrast, the U.S. Coast Guard, in seeking public feedback on designating new anchorage grounds on the Hudson, initially offered a three-month comment period on an “advance notice of public rulemaking,” then extended that by an additional three months, which allowed members of the public time to become informed and voice their opinions. Therefore, we request an extension of the scoping comment period to at least 90 days; and, be it further

RESOLVED, that only one of the alternatives is even acceptable so far. Alternative 5, described as “Perimeter Only,” is the only acceptable alternative the U.S. Army Corps has presented to date. Only “shoreline-based measures” should be employed. Our protection would rely on shoreline-based floodwalls and levees, including beaches, dunes and waterfront parks, combined with strategic retreat from some low lying areas. It would protect our low-lying communities from both storm surge and flooding from rain storms, while leaving our rivers free to flow and thrive; and, be it further

RESOLVED, that in its cost-benefit analysis of the current array of alternatives, the USACE should include an evaluation of the value of ecosystem services; and the cost of shoreline measures that are essential to protect against flooding from sea level rise, even for alternatives that include harbor wide barriers; and, be it further

RESOLVED, that the full range of impacts must be considered before the six alternatives are narrowed. Before any alternative is eliminated from consideration, the potential impacts of each alternative should be studied in relation to the following:

- Tidal range / regime and flow velocity.
- Migration of all native fish species.
- Abundance of all native and currently existing fish species.
- Abundance and distribution of all mollusk species throughout the study area.

- Current and potential commercial and recreational fisheries.
- Endangered, threatened and special-concern fish and wildlife species (both federally and state designated) in the New York Bight and in the Hackensack River, Passaic River, Raritan River, Meadowlands, Jamaica Bay and Long Island Sound.
- Vegetation (subaquatic and intertidal).
- Birds.
- Habitat for fish, birds and other wildlife.
- Sedimentation rates, scour and elevation in the rivers, bays and harbor.
- Changes in contamination levels both in the water and in river and harbor sediments.
- Rate at which PCBs and other contaminants will be transported from the rivers and harbor to the sea.
- Water quality in the harbor, rivers and bays.
- Dissolved oxygen levels throughout the study area.
- Salinity throughout the study area.
- Water temperature throughout the study area.
- Nutrient concentrations throughout the study area.
- Frequency of algae blooms throughout the study area.
- The degree and cost of wastewater treatment required to comply with the Clean Water Act, in light of reduced tidal exchange / flushing.
- Induced coastal flooding or deflection of storm surge to areas adjacent to any barrier alternatives.
- Back-flooding inland of any barriers due to heavy rain events.
- Commercial shipping.
- Recreational boating.
- Cost to state taxpayers for future operation and maintenance of ship and tide gates in any barriers; and, be it further

RESOLVED, that we, as representatives of the Town of Rhinebeck in Dutchess County urge Basil Seggos, Commissioner, New York State Department of Environmental Conservation (NYSDEC), Bryce Wisemiller, NY District Project Manager, U.S. Army Corps of Engineers (USACE) and Nancy J. Brighton, Chief, Watershed Section, Environmental Analysis Branch, Planning Division, U.S. Army Corps of Engineers to request an extension of the scoping comment period with additional public information and scoping meetings, for the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study; and to complete specific studies prior to the winnowing of proposed alternatives.

Motion by: Supervisor Spinzia
Second by: Councilperson Roberts

Voice Vote:	Aye	No
Supervisor Spinzia	X	
Deputy Supervisor Scherr	X	
Councilperson Kearney	X	
Councilperson Roberts	X	
Councilperson Walker	X	

This certifies that the foregoing is a true copy of a resolution offered and adopted at a meeting of the Rhinebeck Town Board on August 13, 2018.

Jon Gauthier

 JON GAUTHIER, RHINEBECK TOWN CLERK

TOWN OF SAUGERTIES

REQUESTING AN EXTENSION FOR COMMENTS FROM 30 TO 45 DAYS ON THE SCOPING OF THE US ARMY CORPS OF ENGINEERS' NEW YORK-NEW JERSEY HARBOR & TRIBUTARIES FEASIBILITY STUDY

Whereas, the U. S. Army Corps of Engineers (ACE), working in conjunction with the New York State Department of Environmental Conservation and others, is hosting scoping meetings in compliance with the National Environmental Policy Act to provide the public with the opportunity to offer input on the range of issues to be addressed in a New York-New Jersey Harbor & Tributaries Feasibility Study and Environmental Impact Statement on protections against storm surges in the New York-New Jersey metropolitan region, which includes the Hudson River Estuary and its communities,

Whereas, all of the meetings have been completed or are being completed at this time, in New York City, New Jersey and Poughkeepsie, New York, with a 30-day comment period scheduled to end on August 20, 2018,

Whereas, these sessions have only broadly outlined plans for barriers, gates and other obstructions to massive flooding that was experienced in this region with Hurricane Sandy in 2012, none of which have addressed estuarial impacts in a meaningful manner for Saugerties and other upriver communities,

Whereas, ACE has already received numerous calls for widening the scoping sessions to include additional meetings in communities affected by potential storm surges in this region, and on extending the public comment period to at least 45 days,

Whereas, these requests are eminently laudable considering the complexity of the issues raised in the ACE study, the limited amount of information provided to accompany the presentations, the complex and substantial questions raised by those attending the sessions, and the wide impact that storm surge events might create for the region,

Resolved, the Town Board of the Town of Saugerties joins with other communities in requesting an extension of the comment period under scoping from 30 to 45 days following an additional series of scoping meetings so that affected communities, residents, and involved agencies and organizations can best consider and comment on the issues raised in the Scoping period,

This resolution was submitted to a vote and the vote was thereon as follows:

YEAS 5 NAYS 0 ABSENT 0 ABSTENTION 0

Fred Costello Jr., Supervisor

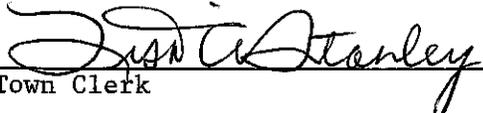
Leeanne Thornton, Councilwoman

Paul Andreassen, Councilman

Mike Maclsaac, Councilman

John Schoonmaker IV, Councilman

Town Board resolution on this 11th day of July 2018.


Town Clerk

A meeting of the Town Board of the Town of Stony Point was convened on August 14, 2018, at 7:00 p.m.

The following resolution was duly offered by Supervisor Monaghan,
Seconded by Councilman Basile and unanimously carried by a voice vote
Of those board members present; to wit

RESOLUTION 2018/34

RESOLUTION IN OPPOSITION TO PROPOSED PLANS FOR COASTAL STORM RISK MANAGEMENT WITHOUT SUFFICIENT STUDY OR COMMUNITY PARTICIPATION

WHEREAS, from July 9 through July 11, 2018, the U.S. Army Corps of Engineers (US ACOE) held public meetings for the first and only time regarding it “Coastal Storm Risk Management” study (CSRМ) for New York Harbor and the Hudson Valley; and

WHEREAS, four of the ACOE’s proposed alternative plans (2, 3A, 3B and 4) involve outer and inner harbor barriers that almost entirely block either the Hudson River or major New York Harbor tributaries during storm events and would alter river and tributary flow patterns at all times; and

WHEREAS, two of the ACOE’s alternatives propose barriers (2 and 3A) that would entirely close off the harbor and river from the Atlantic during storm events and would alter river and tributary flow patterns at all times; and

WHEREAS, the proposed barriers could impede the estuary’s tidal flow, contaminant and sediment transport, and migration of fish, and impede the tidal “respiration” of the river; and

WHEREAS, over time, the barriers have the potential to 1) significantly restrict migrations of striped bass, Atlantic sturgeon, herring, shad, eel and other species essential to the Hudson estuary, 2) prevent the ocean tide from flushing NY Harbor, and 3) inhibit rainstorm flood waters like those during Irene and Lee in 2011 from leaving the Hudson.; and

WHEREAS, open tidal exchange is essential to move sediment and flush contaminants and if tidal exchange is restricted, the harbor could require much more dredging to maintain shipping channels. Sewage and other contaminants could flush to the ocean more slowly, resulting in more pollution for our already contaminated harbor and river; and

WHEREAS, proposed alternative #5 – described as “Perimeter-only” and relying entirely on shoreline-based floodwalls and levees - is the only scenario presented so far that may protect low-lying communities from storm surge from storms like Irene, Lee and Sandy, while leaving our rivers to continue to flow naturally; and

WHEREAS, the proposed plans with in-water barriers do not account for climate change and do nothing to help communities adapt to sea level rise; and

WHEREAS, insufficient scientific data is available to fully understand the consequences of altering Hudson River flow with permanent barriers; and

WHEREAS, the public comment period has been set for only five weeks during peak summer vacation times when many residents are away and not easily informed about this major set of proposals; and

WHEREAS, Scenic Hudson, Riverkeeper, and many others have voiced their concern and opposition to storm risk management approaches that could severely compromise the health of the Hudson River and its tributaries; and

BE IT RESOLVED, that the Town Board of the Town of Stony Point of does hereby register its strongest possible opposition to proposed plans 2 and 3A, and asks that they be removed from further consideration; and be it further

RESOLVED, that the Town Board of the Town of Stony Point does hereby register its support for further studies to ensure that shoreline-based measures such as Alternative 5, described as “Perimeter Only”, would in fact protect New York Harbor and the Hudson Valley from flooding; and be it further.

RESOLVED, that further planning to manage the risk of coastal storm damage take into account the impact of climate change and its impact on seal level rise; and be it further

RESOLVED, that the public comment period be extended by 90 days to allow for full public understanding and response to the US ACOE proposals; and be it further

RESOLVED, that this resolution be distributed to Nancy J. Brighton, Chief, Watershed Section, US ACOE, Senator Chuck Schumer, Senator Kristen Gillebrand, Congresswoman Nita Lowey, Congressman Eliot Engel, Governor Cuomo, Secretary of State Rossana Rosado Senator Andrea Stewart –Cousins, Assemblyman Thomas Abinanti

On motion of TRUSTEE GALLELLI, seconded by TRUSTEE MURTAUGH, the following resolution was adopted unanimously by the Board of Trustees of the Village of Croton-on-Hudson, New York; with a 4-0 vote.

WHEREAS, We, as representatives of the Village of Croton-on-Hudson in Westchester County, urge Basil Seggos, Commissioner, New York State Department of Environmental Conservation (NYSDEC), Bryce Wisemiller, NY District Project Manager, U.S. Army Corps of Engineers (USACE) and Nancy J. Brighton, Chief, Watershed Section, Environmental Analysis Branch, Planning Division, U.S. Army Corps of Engineers to request an extension of the scoping comment period with additional public information and scoping meetings, for the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study; and to complete specific studies prior to the winnowing of proposed alternatives; and

WHEREAS, The U.S. Army Corps of Engineers (USACE) initiated the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study, affecting more than 2,150 square miles, 25 NY and NJ counties and 16 million people. Communities along the shorelines of NYC, Long Island, NY Harbor, northern NJ, the Hudson River up to Troy, and western Connecticut are affected. The goal is to develop and implement measures to reduce the risk of coastal storm damage to communities, critical infrastructure, and important societal resources; and

WHEREAS, USACE has proposed six alternatives:

- **Alternative 1:** “No Action,” meaning no new action by the Corps. Instead the region would move forward with numerous existing flood control projects already in the works.
- **Alternative 2:** Build two in-water barriers, from Sandy Hook to Breezy Point (5 miles) and across Long Island Sound near Throgs Neck Bridge.
- **Alternative 3A:** Build in-water barriers in the Arthur Kill, Jamaica Bay, Verrazano Narrows, Pelham Bay, and Throgs Neck, and a levee or berm system along Brighton Beach and the Rockaways.
- **Alternative 3B:** Build in-water barriers in the Arthur Kill, Kill Van Kull, the Gowanus Canal, Pelham Bay, Throgs Neck, Newtown Creek, and Jamaica Bay. Build a levee and berm system and shoreline measures in East Harlem, the NJ upper bay and Hudson River, and the West Side of Manhattan.
- **Alternative 4:** Build in-water barriers in Pelham Bay, Jamaica Bay, Newtown Creek, the Gowanus Canal, and the Hackensack River. Build shoreline measures in East Harlem, the NJ Upper Bay and Hudson River, and the West Side of Manhattan.
- **Alternative 5:** Build only shoreline measures along the perimeter of coastal locations (dunes, berms and levees). Note that these shoreline protections are in

addition to the wide array of shoreline flood control projects already planned or under way which are shown in Alternative; and

WHEREAS, USACE intends to narrow the six options down to one or two by this fall (2018). The one or two “tentatively selected plan(s)” will be the subject of a Draft Feasibility Report and Environmental Impact Statement this fall. USACE has opened a public comment period, ending September 20, to consider the “scope” of issues it should study in that preliminary environmental review; and

WHEREAS, This short time frame and limited number of meetings is inadequate given the enormous scale of the project; and

WHEREAS, without the inclusion of the Coastal Zone Management program in the list of policies to be considered, local jurisdictions with a Local Waterfront Revitalization Program (LWRP) cannot perform a consistency review to ensure the proposed plans meet local requirements, and

WHEREAS, Several of these plans – specifically, the ones including giant in-water barriers throughout NY Harbor (Alternatives 2, 3A, 3B & 4) – threaten the very existence of the Hudson as a living river. These in-water barriers would disrupt the migrations of the river’s iconic species (striped bass, Atlantic sturgeon, herring, shad, eel) and restrict tidal exchange, essential in numerous ways: from moving sediment and flushing contaminants from the Harbor, to regulating nutrient distribution and adequate dissolved oxygen; and

WHEREAS, In-water barriers would not protect against flooding from sea-level rise – only from storms. With gates that must be open for ships to pass, the in-water barriers would do nothing against sea-level rise. By contrast, shoreline measures (Alternatives 5 and 1 combined) can protect against flooding from both storms and sea level rise, and can be more easily heightened as projections evolve; and

WHEREAS, Deflection or induced flooding in nearby unprotected shorelines may be a fatal flaw to these alternatives. Areas such as the Jersey shore, the south shore of Long Island, western Long Island Sound, and the Lower Bay of New York Harbor would be at risk. In-water barriers could hold back rainstorm flood waters, as we experienced during storms like Irene and Lee in 2011, from leaving the Hudson. This could cause fresh water flooding inland of the barriers; and

WHEREAS, USACE estimates \$30 billion to \$50 billion to build the in-water barriers in Alternative 2, with annual maintenance likely costing billions, without even addressing sea level rise; and

WHEREAS, Alternative 5 — shoreline and nature-based measures (dunes, dikes, floodwalls, and levees) — is estimated at \$2 billion to \$4 billion. It is the only alternative that addresses both storm surge and sea level rise, while leaving the river to flow freely; and

WHEREAS, The economy and culture of the Hudson River Valley is intimately tied to the health of the Hudson River, including the migrations of its signature fish. Tourism generates more than \$5.3 billion annually; and

WHEREAS, Non-federal sponsors of the study include New York State, represented by the NYSDEC and New Jersey, represented by the NJ Department of Environmental Protection. NY and NJ thereby have the authority to withdraw from the study or to reject any construction alternative;

NOW THEREFORE BE IT RESOLVED: That we, the elected representatives of the Village of Croton-on-Hudson in Westchester County in the Hudson Valley, cannot comment effectively, as is our legal right, without detailed information and data on the social, economic and environmental impacts of each alternative. The PowerPoint slides and the fact sheet provided to the public to date are completely inadequate. The Army Corps needs to publish comprehensive information about all the alternatives being considered, including the environmental impacts on the Hudson and the Harbor and to share with the public the complete list of existing studies it will consult in the preliminary assessments of the projects; and

BE IT FURTHER RESOLVED: The meetings recently posted were too few, announced too late, and were not advertised so that the public would actually be aware. The Army Corps and the other involved agencies need to provide numerous, comprehensive and well advertised public meetings throughout the affected area, which includes Long Island Sound, New York Harbor, New Jersey coastal waters and the Hudson to Troy; and

BE IT FURTHER RESOLVED: The short comment period, for a proposal with consequences that could last centuries, or millennia, is unacceptable. By contrast, the U.S. Coast Guard, in seeking public feedback on designating new anchorage grounds on the Hudson, initially offered a three-month comment period on an “advance notice of public rulemaking,” then extended that by an additional three months, which allowed members of the public time to become informed and voice their opinions. Therefore, we request an extension of the scoping comment period to at least 90 days; and

BE IT FURTHER RESOLVED: Only one of the alternatives is even acceptable so far. Alternative 5, described as “Perimeter Only,” is the only acceptable

alternative the U.S. Army Corps has presented to date. Only “shoreline-based measures” should be employed. Our protection would rely on shoreline-based floodwalls and levees, including beaches, dunes and waterfront parks, combined with reimagined land use from some low-lying areas. It would protect our low-lying communities from both storm surge and flooding from rain storms, while leaving our rivers free to flow and thrive; and

BE IT FURTHER RESOLVED: In its cost-benefit analysis of the current array of alternatives, the USACE should include an evaluation of the value of ecosystem services; and the cost of shoreline measures that are essential to protect against flooding from sea level rise, even for alternatives that include harbor wide barriers; and

BE IT FURTHER RESOLVED: That the Coastal Zone Management program (CZM) should be included in the list of federal acts and policies that need to be considered as part of the study, as without its inclusion, those local jurisdictions with a Local Waterfront Revitalization Program (LWRP) cannot perform a consistency review to ensure the proposed plans meet local requirements; and

BE IT FURTHER RESOLVED: The full range of impacts must be considered before the six alternatives are narrowed. Before any alternative is eliminated from consideration, the potential impacts of each alternative should be studied in relation to the following:

- Tidal range / regime and flow velocity.
- Migration of all native fish species.
- Abundance of all native and currently existing fish species.
- Abundance and distribution of all mollusk species throughout the study area.
- Current and potential commercial and recreational fisheries.
- Endangered, threatened and special-concern fish and wildlife species (both federally and state designated) in the New York Bight and in the Hackensack River, Passaic River, Raritan River, Meadowlands, Jamaica Bay and Long Island Sound.
- Vegetation (subaquatic and intertidal).
- Birds.
- Habitat for fish, birds and other wildlife.
- Sedimentation rates, scour and elevation in the rivers, bays and harbor.
- Changes in contamination levels both in the water and in river and harbor sediments.
- Rate at which PCBs and other contaminants will be transported from the rivers and harbor to the sea.
- Water quality in the harbor, rivers and bays.
- Dissolved oxygen levels throughout the study area.

- Salinity throughout the study area.
- Water temperature throughout the study area.
- Nutrient concentrations throughout the study area.
- Frequency of algae blooms throughout the study area.
- The degree and cost of wastewater treatment required to comply with the Clean Water Act, in light of reduced tidal exchange / flushing.
- Induced coastal flooding or deflection of storm surge to areas adjacent to any barrier alternatives.
- Back-flooding inland of any barriers due to heavy rain events.
- Commercial shipping.
- Recreational boating.
- Cost to state taxpayers for future operation and maintenance of ship and tide gates in any barriers.

BE IT FUTHER RESOLVED: that the Board of Trustees directs the Village Clerk to distribute this resolution to Nancy J. Brighton, Chief, Watershed Section, US ACOE, Senator Chuck Schumer, Senator Kirsten Gillibrand, Congresswoman Nita Lowey, Governor Andrew Cuomo, Secretary of State Rossana Rosado, State Senator Terrence Murphy and State Assemblywoman Sandra Galef.

Dated: August 20, 2018

State of New York)
 ss:
 County of Westchester)

I, Pauline DiSanto, Clerk of the Village of Croton-on-Hudson, in the County of Westchester, State of New York, do hereby certify that the annexed resolution is a copy of an original on file in my office and has been duly adopted at a regular meeting of the Board of Trustees of said Village held on August 20, 2018.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of the said Village this 23rd day of October, 2018.



 Village Clerk

(Seal)



VILLAGE OF DOBBS FERRY
112 Main Street
Dobbs Ferry, New York 10522
TEL: (914) 231-8500 • FAX: (914) 693-3470

RESOLUTION 17-2018

RESOLUTION OF THE BOARD OF TRUSTEES OF THE VILLAGE OF DOBBS FERRY RESOLUTION IN OPPOSITION TO PROPOSED PLANS FOR COASTAL STORM RISK MANAGEMENT WITHOUT SUFFICIENT STUDY OR COMMUNITY PARTICIPATION

- WHEREAS from July 9 through July 11, 2018, the U.S. Army Corps of Engineers (US ACOE) held public meetings for the first and only time regarding its “Coastal Storm Risk Management” study (CSRM) for New York Harbor and the Hudson Valley; and
- WHEREAS four of the ACOE’s proposed alternative plans (2, 3A, 3B and 4) involve outer and inner harbor barriers that almost entirely block either the Hudson River or major New York Harbor tributaries during storm events and would alter river and tributary flow patterns at all times; and
- WHEREAS two of the ACOE’s alternatives propose barriers (2 and 3A) that would entirely close off the harbor and river from the Atlantic during storm events and would alter river and tributary flow patterns at all times; and
- WHEREAS the proposed barriers could impede the estuary’s tidal flow, contaminant and sediment transport, and migration of fish, and impede the tidal “respiration” of the river; and
- WHEREAS over time, the barriers have the potential to 1) significantly restrict migrations of striped bass, Atlantic sturgeon, herring, shad, eel and other species essential to the Hudson estuary, 2) prevent the ocean tide from flushing NY Harbor, and 3) inhibit rainstorm flood waters like those during Irene and Lee in 2011 from leaving the Hudson.; and
- WHEREAS open tidal exchange is essential to move sediment and flush contaminants and if tidal exchange is restricted, the harbor could require much more dredging to maintain shipping channels. Sewage and other contaminants could flush to the ocean more slowly, resulting in more pollution for our already contaminated harbor and river; and
- WHEREAS proposed alternative #5 – described as “Perimeter-only” and relying entirely on shoreline-based floodwalls and levees - is the only scenario presented so far that may

protect low-lying communities from storm surge from storms like Irene, Lee and Sandy, while leaving our rivers to continue to flow naturally; and

WHEREAS, the proposed plans with in-water barriers do not account for climate change and do nothing to help communities adapt to sea level rise; and

WHEREAS, insufficient scientific data is available to fully understand the consequences of altering Hudson River flow with permanent barriers; and

WHEREAS, the public comment period has been set for only five weeks during peak summer vacation times when many residents are away and not easily informed about this major set of proposals; and

WHEREAS Scenic Hudson, Riverkeeper, and many others have voiced their concern and opposition to storm risk management approaches that could severely compromise the health of the Hudson River and its tributaries; and

WHEREAS Village of Dobbs Ferry has completed a Vision Plan in 2010 that repeatedly acknowledges the importance of the Hudson River to the Village of Dobbs Ferry, including the views, passive recreational uses, active boating uses, and view corridors enjoyed by thousands; and

BE IT RESOLVED that the Board of Trustees of the Village of Dobbs Ferry does hereby register its strongest possible opposition to proposed plans 2 and 3A, and asks that they be removed from further consideration; and be it further

RESOLVED that the Board of Trustees of the Village of Dobbs Ferry does hereby register its support for further studies to ensure that shoreline-based measures such as Alternative 5, described as “Perimeter Only”, would in fact protect New York Harbor and the Hudson Valley from flooding; and be it further.

RESOLVED that further planning to manage the risk of coastal storm damage take into account the impact of climate change and its impact on seal level rise; and be it further

RESOLVED that the public comment period be extended by 90 days to allow for full public understanding and response to the US ACOE proposals; and be it further

RESOLVED that this resolution be distributed to Nancy J. Brighton, Chief, Watershed Section, US ACOE, Senator Chuck Schumer, Senator Kristen Gillibrand, Congresswoman Nita Lowey, Congressman Eliot Engel, Governor Cuomo, Secretary of State Rossana Rosado Senator Andrea Stewart –Cousins, Assemblyman Thomas Abinanti

Motion by: Trustee Taylor Seconded by: Trustee Knell

MAYOR McLOUGHLIN	<input checked="" type="checkbox"/> AYE	<input type="checkbox"/> NAY	<input type="checkbox"/> ABSTAIN	<input type="checkbox"/> RECUSE	<input type="checkbox"/> ABSENT/EXCUSED
DEPUTY MAYOR CASSELL	<input checked="" type="checkbox"/> AYE	<input type="checkbox"/> NAY	<input type="checkbox"/> ABSTAIN	<input type="checkbox"/> RECUSE	<input type="checkbox"/> ABSENT/EXCUSED
TRUSTEE DAROCZY	<input type="checkbox"/> AYE	<input type="checkbox"/> NAY	<input type="checkbox"/> ABSTAIN	<input type="checkbox"/> RECUSE	<input checked="" type="checkbox"/> ABSENT/EXCUSED
TRUSTEE KNELL	<input checked="" type="checkbox"/> AYE	<input type="checkbox"/> NAY	<input type="checkbox"/> ABSTAIN	<input type="checkbox"/> RECUSE	<input type="checkbox"/> ABSENT/EXCUSED
TRUSTEE ROSSILLO	<input type="checkbox"/> AYE	<input type="checkbox"/> NAY	<input type="checkbox"/> ABSTAIN	<input type="checkbox"/> RECUSE	<input checked="" type="checkbox"/> ABSENT/EXCUSED
TRUSTEE SULLIVAN	<input checked="" type="checkbox"/> AYE	<input type="checkbox"/> NAY	<input type="checkbox"/> ABSTAIN	<input type="checkbox"/> RECUSE	<input type="checkbox"/> ABSENT/EXCUSED
TRUSTEE TAYLOR	<input checked="" type="checkbox"/> AYE	<input type="checkbox"/> NAY	<input type="checkbox"/> ABSTAIN	<input type="checkbox"/> RECUSE	<input type="checkbox"/> ABSENT/EXCUSED
VOTE TOTALS	<input type="text" value="5"/> AYE	<input type="text" value="0"/> NAY	<input type="text" value="0"/> ABSTAIN	<input type="text" value="0"/> RECUSE	<input type="text" value="2"/> ABSENT/EXCUSED
RESULT:	MOTION: PASSES				

I hereby attest that the above Resolution was approved by the Board of Trustees at its August 14, 2018 meeting, and that I have been authorized to sign this Resolution by decision of the Board of Trustees.


 Elizabeth A. Dreaper
 Village Clerk

August 14, 2018
 Date



VILLAGE OF HASTINGS-ON-HUDSON

Municipal Building
7 Maple Avenue
Hastings-on-Hudson, New York 10706

RESOLUTION

On motion of Trustee Armacost, seconded by Trustee Leaf the following Resolution was duly adopted upon roll call vote:

60:18 RESOLUTION IN OPPOSITION TO PROPOSED PLANS FOR COASTAL STORM RISK MANAGEMENT WITHOUT SUFFICIENT STUDY OR COMMUNITY PARTICIPATION

- WHEREAS,** from July 9 through July 11, 2018, the U.S. Army Corps of Engineers (US ACOE) held public meetings for the first and only time regarding its “Coastal Storm Risk Management” study (CSRM) for New York Harbor and the Hudson Valley; and
- WHEREAS,** four of the ACOE’s proposed alternative plans (2, 3A, 3B and 4) involve outer and inner harbor barriers that almost entirely block either the Hudson River or major New York Harbor tributaries during storm events and would alter river and tributary flow patterns at all times; and
- WHEREAS,** two of the ACOE’s alternatives propose barriers (2 and 3A) that would entirely close off the harbor and river from the Atlantic during storm events and would alter river and tributary flow patterns at all times; and
- WHEREAS,** the proposed barriers could impede the estuary’s tidal flow, contaminant and sediment transport, and migration of fish, and impede the tidal “respiration” of the river; and
- WHEREAS,** over time, the barriers have the potential to 1) significantly restrict migrations of striped bass, Atlantic sturgeon, herring, shad, eel and other species essential to the Hudson estuary, 2) prevent the ocean tide from flushing NY Harbor, and 3) inhibit rainstorm flood waters like those during Irene and Lee in 2011 from leaving the Hudson.; and
- WHEREAS,** open tidal exchange is essential to move sediment and flush contaminants and if tidal exchange is restricted, the harbor could require much more dredging to maintain shipping channels. Sewage and other contaminants could flush to the ocean more slowly, resulting in more pollution for our already contaminated harbor and river; and
- WHEREAS,** proposed alternative #5 – described as “Perimeter-only” and relying entirely on shoreline-based floodwalls and levees - is the only scenario presented so far that may protect low-lying communities from storm surge from storms like Irene, Lee and Sandy, while leaving our rivers to continue to flow naturally; and

WHEREAS, the proposed plans with in-water barriers do not account for climate change and do nothing to help communities adapt to sea level rise; and

WHEREAS, insufficient scientific data is available to fully understand the consequences of altering Hudson River flow with permanent barriers; and

WHEREAS, the public comment period has been set for only five weeks during peak summer vacation times when many residents are away and not easily informed about this major set of proposals; and

WHEREAS, Scenic Hudson, Riverkeeper, and many others have voiced their concern and opposition to storm risk management approaches that could severely compromise the health of the Hudson River and its tributaries; and

WHEREAS, Village of Hastings-on-Hudson has completed a Comprehensive Plan in 2011 that repeatedly acknowledges the importance of the Hudson River to Hastings-on-Hudson, including the views, passive recreational uses, active boating uses, and view corridors enjoyed by thousands; and

BE IT RESOLVED that the Board of Trustees of the Village of Hastings-on-Hudson does hereby register its strongest possible concern regarding proposed plans 2 and 3A; and be it further

RESOLVED that the Board of Trustees of the Village of Hastings-on-Hudson does hereby also register its concern regarding proposed plans 3B and 4; and be it further

RESOLVED that the Board of Trustees of the Village of Hastings-on-Hudson does hereby register its support for further studies to ensure that shoreline-based measures such as Alternative 5, described as “Perimeter Only”, would in fact protect New York Harbor and the Hudson Valley from flooding; and be it further

RESOLVED that further planning to manage the risk of coastal storm damage take into account the impact of climate change and its impact on sea level rise; and be it further

RESOLVED that the public comment period be extended by 90 days to allow for full public understanding and response to the US ACOE proposals; and be it further

RESOLVED that this resolution be distributed to Nancy J. Brighton, Chief, Watershed Section, US ACOE, Senator Chuck Schumer, Senator Kristen Gillebrand, Congresswoman Nita Lowey, Congressman Eliot Engel, Governor Cuomo, Secretary of State Rossano Rosado Senator Andrea Stewart – Cousins, Assemblyman Thomas Abinanti

ROLL CALL VOTE

AYE

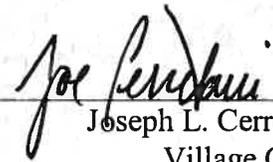
NAY

Trustee Nicola Armacost	X	
Trustee Marc Leaf	X	
Trustee Daniel Lemons	X	
Trustee Georgia Lopez		(Absent)
Mayor Peter Swiderski	X	

CERTIFICATION

I, Joseph L. Cerretani, Village Clerk of Hastings-on-Hudson, do hereby certify that I have compared the foregoing copy of the Resolution adopted at a Regular Meeting of the Board of Trustees on August 7, 2018 with the original now remaining on file at this office and that the same is a correct transcript therefrom and of the whole of said original.

IN WITNESS WHEREOF, I have hereunto set my hand and the official seal of the Village of Hastings-on-Hudson this 8th day of August, 2018.



Joseph L. Cerretani
Village Clerk

RESOLUTION 2018-138

RESOLUTION TO REQUEST AN EXTENDED COMMENT PERIOD FOR THE NY/NJ HARBOR & TRIBUTARIES (NYNJHAT) COASTAL STORM RISK MANAGEMENT FEASIBILITY STUDY

Mayor Smith offered the following resolution, which was seconded by Trustee Gilliland and adopted:

WHEREAS, we, as representatives of the Village of Irvington in Westchester County urge Basil Seggos, Commissioner, New York State Department of Environmental Conservation (NYSDEC), Bryce Wisemiller, NY District Project Manager, U.S. Army Corps of Engineers (USACE) and Nancy J. Brighton, Chief, Watershed Section, Environmental Analysis Branch, Planning Division, U.S. Army Corps of Engineers to request an extension of the scoping comment period with additional public information and scoping meetings, for the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study; and to complete specific studies prior to the winnowing of proposed alternatives.

WHEREAS, The U.S. Army Corps of Engineers (USACE) initiated the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study, affecting more than 2,150 square miles, 25 NY and NJ counties and 16 million people. Communities along the shorelines of NYC, Long Island, NY Harbor, northern NJ, the Hudson River up to Troy, and western Connecticut are affected. The goal is to develop and implement measures to reduce the risk of coastal storm damage to communities, critical infrastructure, and important societal resources.

WHEREAS, USACE has proposed six alternatives:

- **Alternative 1:** “No Action,” meaning no new action by the Corps. Instead the region would move forward with numerous existing flood control projects already in the works.
- **Alternative 2:** Build two in-water barriers, from Sandy Hook to Breezy Point (5 miles) and across Long Island Sound near Throgs Neck Bridge (*see map at right*).
- **Alternative 3A:** Build in-water barriers in the Arthur Kill, Jamaica Bay, Verrazano Narrows, Pelham Bay, and Throgs Neck, and a levee or berm system along Brighton Beach and the Rockaways.
- **Alternative 3B:** Build in-water barriers in the Arthur Kill, Kill Van Kull, the Gowanus Canal, Pelham Bay, Throgs Neck, Newtown Creek, and Jamaica Bay. Build a levee and berm system and shoreline measures in East Harlem, the NJ upper bay and Hudson River, and the West Side of Manhattan.
- **Alternative 4:** Build in-water barriers in Pelham Bay, Jamaica Bay, Newtown Creek, the Gowanus Canal, and the Hackensack River. Build shoreline measures in East Harlem, the NJ Upper Bay and Hudson River, and the West Side of Manhattan.

- **Alternative 5:** Build only shoreline measures along the perimeter of coastal locations (dunes, berms and levees). Note that these shoreline protections are in addition to the wide array of shoreline flood control projects already planned or under way which are shown in Alternative

WHEREAS, USACE intends to narrow the six options down to one or two by this fall (2018). The one or two “tentatively selected plan(s)” will be the subject of a Draft Feasibility Report and Environmental Impact Statement this fall. USACE has opened a public comment period, ending September 20, to consider the “scope” of issues it should study in that preliminary environmental review.

WHEREAS, this short time frame and limited number of meetings is inadequate given the enormous scale of the project.

WHEREAS, several of these plans – specifically, the ones including giant in-water barriers throughout NY Harbor (Alternatives 2, 3A, 3B & 4) – threaten the very existence of the Hudson as a living river.

These in-water barriers would disrupt the migrations of the river’s iconic species (striped bass, Atlantic sturgeon, herring, shad, eel) and restrict tidal exchange, essential in numerous ways: from moving sediment and flushing contaminants from the Harbor, to regulating nutrient distribution and adequate dissolved oxygen.

WHEREAS, in-water barriers would not protect against flooding from sea-level rise – only from storms. With gates that must be open for ships to pass, the in-water barriers would do nothing against sea-level rise. By contrast, shoreline measures (Alternatives 5 and 1 combined) can protect against flooding from both storms and sea level rise, and can be more easily heightened as projections evolve.

WHEREAS, deflection or induced flooding in nearby unprotected shorelines may be a fatal flaw to these alternatives. Areas such as the Jersey shore, the south shore of Long Island, western Long Island Sound, and the Lower Bay of New York Harbor would be at risk. In-water barriers could hold back rainstorm flood waters, as we experienced during storms like Irene and Lee in 2011, from leaving the Hudson. This could cause fresh water flooding inland of the barriers.

WHEREAS, USACE estimates \$30 billion to \$50 billion to build the in-water barriers in Alternative 2, with annual maintenance likely costing billions, without even addressing sea level rise.

WHEREAS, Alternative 5 — shoreline and nature-based measures (dunes, dikes, floodwalls, and levees) — is estimated at \$2 billion to \$4 billion. It is the only alternative that addresses both storm surge and sea level rise, while leaving the river to flow freely.

WHEREAS, the economy and culture of the Hudson River Valley is intimately tied to the health of the Hudson River, including the migrations of its signature fish. Tourism generates more than \$5.3 billion annually.

WHEREAS, Non-federal sponsors of the study include New York State, represented by the NYSDEC and New Jersey, represented by the NJ Department of Environmental Protection. **NY and NJ thereby have the authority to withdraw from the study or to reject any construction alternative.**

NOW THEREFORE BE IT RESOLVED, that we, the elected representatives of the Village of Irvington in Westchester County in the Hudson Valley, cannot comment effectively, as is our legal right, without detailed information and data on the social, economic and environmental impacts of each alternative. The PowerPoint slides and the fact sheet provided to the public to date are completely inadequate. The Army Corps needs to publish comprehensive information about all the alternatives being considered, including the environmental impacts on the Hudson and the Harbor and to share with the public the complete list of existing studies it will consult in the preliminary assessments of the projects; and

BE IT FURTHER RESOLVED, the meetings recently posted were too few, announced too late, and were not advertised so that the public would actually be aware. The Army Corps and the other involved agencies need to provide numerous, comprehensive and well advertised public meetings throughout the affected area, which includes Long Island Sound, New York Harbor, New Jersey coastal waters and the Hudson to Troy.

BE IT FURTHER RESOLVED, the short comment period, for a proposal with consequences that could last centuries, or millennia, is unacceptable. By contrast, the U.S. Coast Guard, in seeking public feedback on designating new anchorage grounds on the Hudson, initially offered a three-month comment period on an “advance notice of public rulemaking,” then extended that by an additional three months, which allowed members of the public time to become informed and voice their opinions. Therefore, we request an extension of the scoping comment period to at least 90 days.

BE IT FURTHER RESOLVED, only one of the alternatives is even acceptable so far. Alternative 5, described as “Perimeter Only,” is the only acceptable alternative the U.S. Army Corps has presented to date. Only “shoreline-based measures” should be employed. Our protection would rely on shoreline-based floodwalls and levees, including beaches, dunes and waterfront parks, combined with reimagined land use from some low lying areas. It would protect our low-lying communities from both storm surge and flooding from rain storms, while leaving our rivers free to flow and thrive.

BE IT FURTHER RESOLVED, in its cost-benefit analysis of the current array of alternatives, the USACE should include an evaluation of the value of ecosystem services; and the cost of shoreline measures that are essential to protect against flooding from sea level rise, even for alternatives that include harbor wide barriers.

BE IT FURTHER RESOLVED, the full range of impacts must be considered before the six alternatives are narrowed. Before any alternative is eliminated from consideration, the potential impacts of each alternative should be studied in relation to the following:

- Tidal range / regime and flow velocity.
- Migration of all native fish species.

- Abundance of all native and currently existing fish species.
- Abundance and distribution of all mollusk species throughout the study area.
- Current and potential commercial and recreational fisheries.
- Endangered, threatened and special-concern fish and wildlife species (both federally and state designated) in the New York Bight and in the Hackensack River, Passaic River, Raritan River, Meadowlands, Jamaica Bay and Long Island Sound.
- Vegetation (subaquatic and intertidal).
- Birds.
- Habitat for fish, birds and other wildlife.
- Sedimentation rates, scour and elevation in the rivers, bays and harbor.
- Changes in contamination levels both in the water and in river and harbor sediments.
- Rate at which PCBs and other contaminants will be transported from the rivers and harbor to the sea.
- Water quality in the harbor, rivers and bays.
- Dissolved oxygen levels throughout the study area.
- Salinity throughout the study area.
- Water temperature throughout the study area.
- Nutrient concentrations throughout the study area.
- Frequency of algae blooms throughout the study area.
- The degree and cost of wastewater treatment required to comply with the Clean Water Act, in light of reduced tidal exchange /flushing.
- Induced coastal flooding or deflection of storm surge to areas adjacent to any barrier alternatives.
- Back-flooding inland of any barriers due to heavy rain events.
- Commercial shipping.
- Recreational boating.
- Cost to state taxpayers for future operation and maintenance of ship and tide gates in any barriers.

STATE OF NEW YORK

}

COUNTY OF WESTCHESTER

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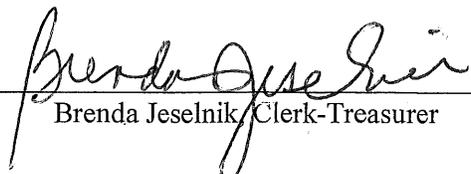
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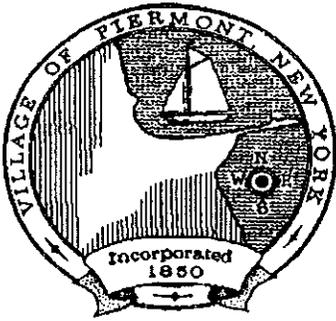
ss:

I, Brenda Jeselnik, Clerk-Treasurer of the Village of Irvington, County of Westchester, State of New York do hereby certify that I have compared the foregoing copy of this Resolution with the original on file in my office, and that the same is a true and correct transcript of said original Resolution and of the whole thereof, as duly adopted by said Village Board of Trustees at a meeting duly called and held at the Village of Irvington on September 17, 2018 by the required and necessary vote of the members to approve Resolution.

WITNESS my hand and the official seal of the Village of Irvington, NY, this 18th day of September 2018.



 Brenda Jeselnik, Clerk-Treasurer



INCORPORATED VILLAGE OF PIERMONT

**478 PIERMONT AVENUE * PIERMONT, NEW YORK 10968 * (845) 359-1258
FAX (845) 359-0466**

RESOLUTION NO: 0807-18

VILLAGE OF PIERMONT

RESOLUTION IN OPPOSITION TO PROPOSED PLANS FOR COASTAL STORM RISK MANAGEMENT WITHOUT SUFFICIENT STUDY OR COMMUNITY PARTICIPATION

WHEREAS, from July 9 through July 11, 2018, the U.S. Army Corps of Engineers (US ACOE) held public meetings for the first and only time regarding its “Coastal Storm Risk Management” study (CSRM) for New York Harbor and the Hudson Valley; and

WHEREAS, four of the ACOE’s proposed alternative plans (2, 3A, 3B and 4) involve outer and inner harbor barriers that almost entirely block either the Hudson River or major New York Harbor tributaries during storm events and would alter river and tributary flow patterns at all times; and

WHEREAS, two of the ACOE’s alternatives propose barriers (2 and 3A) that would entirely close off the harbor and river from the Atlantic during storm events and would alter river and tributary flow patterns at all times; and

WHEREAS, the proposed barriers could impede the estuary’s tidal flow, contaminant and sediment transport, and migration of fish, and impede the tidal “respiration” of the river; and

WHEREAS, over time, the barriers have the potential to 1) significantly restrict migrations of striped bass, Atlantic sturgeon, herring, shad, eel and other species essential to the Hudson estuary, 2) prevent the ocean tide from flushing NY Harbor, and 3) inhibit rainstorm flood waters like those during Irene and Lee in 2011 from leaving the Hudson.; and

WHEREAS, open tidal exchange is essential to move sediment and flush contaminants and if tidal exchange is restricted, the harbor could require much more dredging to maintain shipping channels. Sewage and other contaminants could flush to the ocean more slowly, resulting in more pollution for our already contaminated harbor and river; and

**MAYOR BRUCE TUCKER
TRUSTEES MARK BLOMQUIST, IVANYA ALPERT, ROB BURNS AND NATE MITCHELL
VILLAGE CLERK-TREASURER JENNIFER DEYORGI VILLAGE ATTORNEY WALTER SEVASTIAN**

WHEREAS, proposed alternative #5 – described as “Perimeter-only” and relying entirely on shoreline-based floodwalls and levees - is the only scenario presented so far that may protect low-lying communities from storm surge from storms like Irene, Lee and Sandy, while leaving our rivers to continue to flow naturally; and

WHEREAS, the proposed plans with in-water barriers do not account for climate change and do nothing to help communities adapt to sea level rise; and

WHEREAS, insufficient scientific data is available to fully understand the consequences of altering Hudson River flow with permanent barriers; and

WHEREAS, the public comment period has been set for only five weeks during peak summer vacation times when many residents are away and not easily informed about this major set of proposals; and

WHEREAS, Scenic Hudson, Riverkeeper, and many others have voiced their concern and opposition to storm risk management approaches that could severely compromise the health of the Hudson River and its tributaries; and

BE IT RESOLVED that the Board of Trustees of the Village of Piermont does hereby register its strongest possible opposition to proposed plans 2 and 3A, and asks that they be removed from further consideration; and be it further

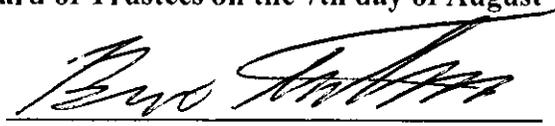
RESOLVED that the Board of Trustees of the Village of Piermont does hereby register its support for further studies to ensure that shoreline-based measures such as Alternative 5, described as “Perimeter Only”, would in fact protect New York Harbor and the Hudson Valley from flooding; and be it further.

RESOLVED that further planning to manage the risk of coastal storm damage take into account the impact of climate change and its impact on seal level rise; and be it further

RESOLVED that the public comment period be extended by 90 days to allow for full public understanding and response to the US ACOE proposals; and be it further

RESOLVED that this resolution be distributed to Nancy J. Brighton, Chief, Watershed Section, US ACOE, Senator Chuck Schumer, Senator Kristen Gillebrand, Congresswoman Nita Lowey, Congressman Eliot Engel, Governor Cuomo, Secretary of State Rossana Rosado Senator Andrea Stewart –Cousins, Assemblyman Thomas Abinanti

ADOPTED by the Village of Piermont Board of Trustees on the 7th day of August 2018.



Bruce Tucker, Mayor

SEAL



VILLAGE OF RHINEBECK

Storm Surge Proposal

URGING, We, as representatives of **The Village of Rhinebeck in Dutchess County** urge Basil Seggos, Commissioner, New York State Department of Environmental Conservation (NYSDEC), Bryce Wisemiller, NY District Project Manager, U.S. Army Corps of Engineers (USACE) and Nancy J. Brighton, Chief, Watershed Section, Environmental Analysis Branch, Planning Division, U.S. Army Corps of Engineers to request an extension of the scoping comment period with additional public information and scoping meetings, for the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study; and to complete specific studies prior to the winnowing of proposed alternatives.

WHEREAS, The U.S. Army Corps of Engineers (USACE) initiated the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study, affecting more than 2,150 square miles, 25 NY and NJ counties and 16 million people. Communities along the shorelines of NYC, Long Island, NY Harbor, northern NJ, the Hudson River up to Troy, and western Connecticut are affected. The goal is to develop and implement measures to reduce the risk of coastal storm damage to communities, critical infrastructure, and important societal resources.

WHEREAS, USACE has proposed six alternatives:

- **Alternative 1:** “No Action,” meaning no new action by the Corps. Instead the region would move forward with numerous existing flood control projects already in the works.
- **Alternative 2:** Build two in-water barriers, from Sandy Hook to Breezy Point (5 miles) and across Long Island Sound near Throgs Neck Bridge.
- **Alternative 3A:** Build in-water barriers in the Arthur Kill, Jamaica Bay, Verrazano Narrows, Pelham Bay, and Throgs Neck, and a levee or berm system along Brighton Beach and the Rockaways.
- **Alternative 3B:** Build in-water barriers in the Arthur Kill, Kill Van Kull, the Gowanus Canal, Pelham Bay, Throgs Neck, Newtown Creek, and Jamaica Bay. Build a levee and berm system and shoreline measures in East Harlem, the NJ upper bay and Hudson River, and the West Side of Manhattan.
- **Alternative 4:** Build in-water barriers in Pelham Bay, Jamaica Bay, Newtown Creek, the Gowanus Canal, and the Hackensack River. Build shoreline measures in East Harlem, the NJ Upper Bay and Hudson River, and the West Side of Manhattan.
- **Alternative 5:** Build only shoreline measures along the perimeter of coastal locations (dunes, berms and levees). Note that these shoreline protections are in addition to the wide array of shoreline flood control projects already planned or under way which are shown in Alternative

WHEREAS, USACE intends to narrow the six options down to one or two by this fall (2018). The one or two “tentatively selected plan(s)” will be the subject of a Draft Feasibility Report and Environmental Impact Statement this fall. USACE has opened a public comment period, ending September 20, to consider the “scope” of issues it should study in that preliminary environmental review.

WHEREAS, This short time frame and limited number of meetings is inadequate given the enormous scale of the project.

WHEREAS, Several of these plans – specifically, the ones including giant in-water barriers throughout NY Harbor (Alternatives 2, 3A, 3B & 4) – threaten the very existence of the Hudson as a living river. These in-water barriers would disrupt the migrations of the river’s iconic species (striped bass, Atlantic sturgeon, herring, shad, eel) and restrict tidal exchange, essential in numerous ways: from moving

sediment and flushing contaminants from the Harbor, to regulating nutrient distribution and adequate dissolved oxygen.

WHEREAS, In-water barriers would not protect against flooding from sea-level rise – only from storms. With gates that must be open for ships to pass, the in-water barriers would do nothing against sea-level rise. By contrast, shoreline measures (Alternatives 5 and 1 combined) can protect against flooding from both storms and sea level rise, and can be more easily heightened as projections evolve.

WHEREAS, Deflection or induced flooding in nearby unprotected shorelines may be a fatal flaw to these alternatives. Areas such as the Jersey shore, the south shore of Long Island, western Long Island Sound, and the Lower Bay of New York Harbor would be at risk. In-water barriers could hold back rainstorm flood waters, as we experienced during storms like Irene and Lee in 2011, from leaving the Hudson. This could cause fresh water flooding inland of the barriers.

WHEREAS, USACE estimates \$30 billion to \$50 billion to build the in-water barriers in Alternative 2, with annual maintenance likely costing billions, without even addressing sea level rise.

WHEREAS, Alternative 5 — shoreline and nature-based measures (dunes, dikes, floodwalls, and levees) — is estimated at \$2 billion to \$4 billion. It is the only alternative that addresses both storm surge and sea level rise, while leaving the river to flow freely.

WHEREAS, The economy and culture of the Hudson River Valley is intimately tied to the health of the Hudson River, including the migrations of its signature fish. Tourism generates more than \$5.3 billion annually.

WHEREAS, Non-federal sponsors of the study include New York State, represented by the NYSDEC and New Jersey, represented by the NJ Department of Environmental Protection. **NY and NJ thereby have the authority to withdraw from the study or to reject any construction alternative.**

NOW THEREFORE BE IT RESOLVED, That we, the elected representatives of **Village of Rhinebeck in Dutchess** in the Hudson Valley, cannot comment effectively, as is our legal right, without detailed information and data on the social, economic and environmental impacts of each alternative. The PowerPoint slides and the fact sheet provided to the public to date are completely inadequate. The Army Corps needs to publish comprehensive information about all the alternatives being considered, including the environmental impacts on the Hudson and the Harbor and to share with the public the complete list of existing studies it will consult in the preliminary assessments of the projects; and

BE IT FURTHER RESOLVED, The meetings recently posted were too few, announced too late, and were not advertised so that the public would actually be aware. The Army Corps and the other involved agencies need to provide numerous, comprehensive and well advertised public meetings throughout the affected area, which includes Long Island Sound, New York Harbor, New Jersey coastal waters and the Hudson to Troy.

BE IT FURTHER RESOLVED, The short comment period, for a proposal with consequences that could last centuries, or millennia, is unacceptable. By contrast, the U.S. Coast Guard, in seeking public feedback on designating new anchorage grounds on the Hudson, initially offered a three-month comment period on an “advance notice of public rulemaking,” then extended that by an additional three months, which allowed members of the public time to become informed and voice their opinions. Therefore, we request an extension of the scoping comment period to at least 90 days.

BE IT FURTHER RESOLVED, Only one of the alternatives is even acceptable so far. Alternative 5, described as “Perimeter Only,” is the only acceptable alternative the U.S. Army Corps has presented to date. Only “shoreline-based measures” should be employed. Our protection would rely on shoreline-based

floodwalls and levees, including beaches, dunes and waterfront parks, combined with reimagined land use from some low lying areas. It would protect our low-lying communities from both storm surge and flooding from rain storms, while leaving our rivers free to flow and thrive.

BE IT FURTHER RESOLVED, In its cost-benefit analysis of the current array of alternatives, the USACE should include an evaluation of the value of ecosystem services; and the cost of shoreline measures that are essential to protect against flooding from sea level rise, even for alternatives that include harbor wide barriers.

BE IT FURTHER RESOLVED, The full range of impacts must be considered before the six alternatives are narrowed. Before any alternative is eliminated from consideration, the potential impacts of each alternative should be studied in relation to the following:

- Tidal range / regime and flow velocity.
- Migration of all native fish species.
- Abundance of all native and currently existing fish species.
- Abundance and distribution of all mollusk species throughout the study area.
- Current and potential commercial and recreational fisheries.
- Endangered, threatened and special-concern fish and wildlife species (both federally and state designated) in the New York Bight and in the Hackensack River, Passaic River, Raritan River, Meadowlands, Jamaica Bay and Long Island Sound.
- Vegetation (subaquatic and intertidal).
- Birds.
- Habitat for fish, birds and other wildlife.
- Sedimentation rates, scour and elevation in the rivers, bays and harbor.
- Changes in contamination levels both in the water and in river and harbor sediments.
- Rate at which PCBs and other contaminants will be transported from the rivers and harbor to the sea.
- Water quality in the harbor, rivers and bays.
- Dissolved oxygen levels throughout the study area.
- Salinity throughout the study area.
- Water temperature throughout the study area.
- Nutrient concentrations throughout the study area.
- Frequency of algae blooms throughout the study area.
- The degree and cost of wastewater treatment required to comply with the Clean Water Act, in light of reduced tidal exchange / flushing.
- Induced coastal flooding or deflection of storm surge to areas adjacent to any barrier alternatives.
- Back-flooding inland of any barriers due to heavy rain events.
- Commercial shipping.
- Recreational boating.
- Cost to state taxpayers for future operation and maintenance of ship and tide gates in any barriers.

Respectfully,



Gary Bassett
Mayor

Meeting Date: 10/30/2018
Resolution #: 10/110/2018

**RESOLUTION OF THE SLEEPY HOLLOW VILLAGE BOARD
REQUESTING MORE STUDIES TO BE DONE RELATED
TO STORM WATER BARRIERS IN THE HUDSON RIVER**

WHEREAS, The U.S. Army Corps of Engineers (USACE) initiated the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study, affecting more than 2,150 square miles, 25 NY and NJ counties and 16 million people, with the goal of developing and implementing measures to reduce the risk of coastal storm damage to communities, critical infrastructure, and important societal resources; and

WHEREAS, Communities along the shorelines of NYC, Long Island, NY Harbor, northern NJ, western Connecticut, and the Hudson River up to Troy that encompasses the Village of Sleepy Hollow are affected; and

WHEREAS, USACE has proposed six alternatives:

- **Alternative 1:** “No Action,” meaning no new action by the Corps. Instead the region would move forward with numerous existing flood control projects already in the works.
- **Alternative 2:** Build two in-water barriers, from Sandy Hook to Breezy Point (5 miles) and across Long Island Sound near Throgs Neck Bridge.
- **Alternative 3A:** Build multiple in-water barriers in the Arthur Kill, Jamaica Bay, Verrazano Narrows, Pelham Bay, and Throgs Neck, and a levee or berm system along Brighton Beach and the Rockaways.
- **Alternative 3B:** Build multiple in-water barriers in the Arthur Kill, Kill Van Kull, the Gowanus Canal, Pelham Bay, Newtown Creek, and Jamaica Bay. Build a levee and berm system and shoreline measures in East Harlem, the NJ upper bay and Hudson River, and the West Side of Manhattan.
- **Alternative 4:** Build multiple in-water barriers in Pelham Bay, Jamaica Bay, Newtown Creek, the Gowanus Canal, and the Hackensack River. Build shoreline measures in East Harlem, the NJ Upper Bay and Hudson River, and the West Side of Manhattan.
- **Alternative 5:** Build only shoreline measures along the perimeter of coastal locations (dunes, berms and levees). Note that these shoreline protections would be in addition to the wide array of shoreline flood control projects already planned or under way as referenced in Alternative 1; and

WHEREAS, USACE intends to narrow the six options down to one or two by this fall (2018); and

WHEREAS, The one or two “tentatively selected plan(s)” will be the subject of a Draft Feasibility Report and Environmental Impact Statement to be issued this fall; and

WHEREAS, USACE has opened a public comment period that was to end on September 20, 2018, but has now been extended and will end November 5, 2018 to consider the “scope” of issues it should study in its preliminary environmental review; and

WHEREAS, The limited number of public meetings scheduled to inform the public is inadequate to date given the enormous scale of the project; and

WHEREAS, Several of these plans – specifically, the ones including giant in-water barriers throughout NY Harbor (Alternatives 2, 3A, 3B & 4) – threaten the very existence of the Hudson as a living river; would disrupt the migrations of the river’s iconic species (striped bass, Atlantic sturgeon, herring, shad, eel); and restrict tidal exchange, essential in numerous ways: from moving sediment and flushing contaminants from the Harbor, to regulating nutrient distribution and adequate dissolved oxygen; and

WHEREAS, In-water barriers would not protect against flooding from sea-level rise – only from storms because gates must be left open for ships to pass; and

WHEREAS, By contrast, shoreline measures (Alternatives 5 and 1 *combined*) can protect against flooding from both storms and sea level rise, and can be more easily heightened as sea level projections evolve; and

WHEREAS, USACE estimates \$30 billion to \$50 billion to build the in-water barriers in Alternative 2, with annual maintenance likely costing billions, without even addressing sea level rise; and

WHEREAS, Alternative 5 — shoreline and nature-based measures (dunes, dikes, floodwalls, and levees) — is estimated at \$2 billion to \$4 billion, and is the only alternative that addresses both storm surge and sea level rise, while leaving the river to flow freely; and

WHEREAS, The economy and culture of the Hudson River Valley is intimately tied to the health of the Hudson River, including the migrations of its signature fish. And tourism generates more than \$5.3 billion annually; and

WHEREAS, Non-federal sponsors of the study include New York State, represented by the NYSDEC and New Jersey, represented by the NJ Department of Environmental Protection, and **NY and NJ thereby have the authority to withdraw from the study or to reject any construction alternative.**

NOW THEREFORE BE IT RESOLVED, That we, the elected representatives of The Village of Sleepy Hollow, in The County of Westchester, in the Hudson Valley, cannot comment effectively, as is our legal right, without additional detailed information and data on the social, economic and environmental impacts of each alternative - considered in conjunction with already existing and approved shoreline projects. The Army Corps needs to publish comprehensive information about all the alternatives being considered, including the environmental impacts on the Hudson and the Harbor and to share with

the public the complete list of existing studies it will consult in the preliminary assessments of the projects; and

BE IT FURTHER RESOLVED, The meetings posted were too few, have been announced too late, and were not advertised so that the public would actually be aware. The Army Corps and the other involved agencies need to provide a greater number of comprehensive *and well advertised* public meetings throughout the affected area, and most particularly within the rivertowns that include Sleepy Hollow; and

BE IT FURTHER RESOLVED, In its cost-benefit analysis of the current array of alternatives, the USACE should include an evaluation for each alternative of the cost of shoreline measures that are essential to protect against flooding from sea level rise; and

BE IT FURTHER RESOLVED, The full range of impacts, including but not limited to, impacts on tidal flow, fish migration, wildlife habitat, water quality, commercial shipping, recreational boating, induced coastal flooding or deflection of storm surge to areas adjacent to any barrier alternatives, as well as cost to state taxpayers for future operation and maintenance of ship and tide gates must be considered before any alternative is advanced; and

BE IT FURTHER RESOLVED, The Board of Trustees of the Village of Sleepy Hollow in the County of Westchester urge Basil Seggos, Commissioner, New York State Department of Environmental Conservation (NYSDEC), Bryce Wisemiller, NY District Project Manager, U.S. Army Corps of Engineers (USACE) and Nancy J. Brighton, Chief, Watershed Section, Environmental Analysis Branch, Planning Division, U.S. Army Corps of Engineers to allow a further extension of the scoping comment period for the NY/NJ Harbor & Tributaries (NYNJHAT) Coastal Storm Risk Management Feasibility Study, with additional public information and scoping meetings, and to complete and make public additional specific studies before any alternative is advanced.

Moved: Scaglione

Seconded: Gebler

Vote: 6-0

Absent: Trustee Leavy

Board of Trustees
Village of Tarrytown
Regular Meeting No. 19
August 20, 2018
8:00 p.m.

PRESENT: Mayor Fixell presiding; Trustees: Brown, Butler, Hoyt, McGee and McGovern;
Village Administrator Slingerland; Village Treasurer Hart; Village Attorney Silverberg and
Village Clerk Booth

ABSENT: Trustee Zollo

RESOLUTION IN OPPOSITION TO PROPOSED PLANS FOR COASTAL STORM RISK
MANAGEMENT WITHOUT SUFFICIENT STUDY OR COMMUNITY PARTICIPATION

Trustee McGovern moved, seconded by Trustee Butler, and unanimously carried, that the
following resolution be approved: Approved: 6-0

WHEREAS, from July 9 through July 11, 2018, the U.S. Army Corps of Engineers (US ACOE)
held public meetings for the first and only time regarding its "Coastal Storm Risk Management"
study (CSRM) for New York Harbor and the Hudson Valley; and

WHEREAS, four of the ACOE's proposed alternative plans (2, 3A, 3B and 4) involve outer and
inner harbor barriers that almost entirely block either the Hudson River or major New York
Harbor tributaries during storm events and would alter river and tributary flow patterns at all
times; and

WHEREAS, Scenic Hudson, Riverkeeper and many others have voiced their concern and
opposition to storm risk management approaches that could severely compromise the health of
the Hudson River and its tributaries; and

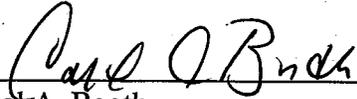
WHEREAS, the Village of Tarrytown's Comprehensive Plan and Draft LWRP acknowledge the
importance of the Hudson River to the community, including the views, passive recreational
uses, active boating uses, and view corridors enjoyed by thousands, and because of the drastic
impacts that would be caused by the Army Corps' proposed measures, the Village would like to
have more time to review and comment on them.

NOW, THEREFORE, BE IT RESOLVED that the Board of Trustees of the Village of
Tarrytown does hereby register its concern with regard to these plans, and asks that the public
comment period be extended by 90 days to allow for full public understanding and response to
the US ACOE proposals related to this topic; and

BE IT FURTHER RESOLVED that this resolution be distributed to Nancy J Brighton, Chief,
Watershed Section, US ACOE, Senator Chuck Schumer, Senator Kristen Gillibrand,

Congresswoman Nita Lowey, Congressman Eliot Engel, Governor Andrew Cuomo, Secretary of State Rossana Rosado, Senator Andrea Stewart-Cousins, and Assemblyman Thomas Abinanti.

I, Carol A. Booth, the undersigned Village Clerk, do hereby certify that the above is a true and correct excerpt of the minutes of the August 20, 2018 Board of Trustees Regular Meeting.



Carol A. Booth
Village Clerk

Dated: August 30, 2018

Official Seal

Attachment D

Storm Surge Barriers Press Coverage

“This is New York in the not-so-distant future”

New York Magazine (9/5/2016)

<http://nymag.com/intelligencer/2016/09/new-york-future-flooding-climate-change.html?gtm=top>

“Riverkeeper accuses Army Corps of fast-tracking storm surge barrier proposals”

MidHudson News (7/6/2018)

https://www.midhudsonnews.com/News/2018/July/06/Rivkpr_ACE_barriers-06Jul18.html

“Proposed NYC storm barriers could hurt the Hudson: Riverkeeper”

Patch (7/6/2018)

<https://patch.com/new-york/ossining/proposed-nyc-storm-barriers-could-hurt-hudson-riverkeeper>

“Ocean storm gates for NYC called threat to Hudson River”

Times Union (7/6/2018)

<https://www.timesunion.com/business/article/Ocean-storm-gates-for-NYC-called-threat-to-Hudson-13054431.php>

“Environmental group not pleased with NYC flood prevention plans”

WCBS 880 Radio (7/6/2018)

<https://wcb880.radio.com/articles/news/environmental-group-not-pleased-nyc-flood-prevention-plans>

“Plan to protect NYC from flooding sparks concerns”

News 12 Westchester (7/7/2018)

<http://westchester.news12.com/story/38593930/plan-to-protect-nyc-from-flooding-sparks-concerns>

“Huge barrier proposed for New York Bay to protect against storm surge raises environmental concerns”

Hudson Valley One/New Paltz Times (7/9/2018)

<https://hudsonvalleyone.com/2018/07/09/nyc-bay-barrier/>

“Army Corps proposes giant hurricane barrier across New York Bay”

WNYC News (7/9/2018)

<https://www.wnyc.org/story/army-corps-proposes-giant-hurricane-barrier-across-new-york-bay/>

“Army Corps of Engineers proposes swinging sea gates for New York Harbor”

Architects Newspaper (7/10/2018)

<https://archpaper.com/2018/07/army-corps-of-engineers-closing-new-york-harbor-swinging-sea-gate/>

“Army Corps proposes concrete and steel barrier wall to combat NYC floods”

Curbed New York (7/10/2018)

<https://ny.curbed.com/2018/7/10/17553828/army-corps-new-york-harbor-flood-barriers-proposal>

“Hudson River advocates worry about proposed storm surge barriers”

Daily Freeman (7/10/2018)

https://www.dailyfreeman.com/news/hudson-river-advocates-worry-about-proposed-storm-surge-barriers/article_45659ecf-4512-5965-a5ea-6db244d27a5e.html

“HV lawmakers ask Army Corps for more public input time on storm risk plans”

WAMC Northeast Public Radio (7/10/2018)

<http://www.wamc.org/post/hv-lawmakers-ask-army-corps-more-public-input-time-storm-risk-plans>

“Army Corps of Engineers proposes plan to build severe storm barriers”

News 12 Westchester (7/11/2018)

<http://westchester.news12.com/story/38625675/army-corps-of-engineers-proposes-plan-to-build-severe-storm-barriers>

“Army Corps narrows down plans to protect area from future storms”

NJTV News (7/11/2018)

<https://www.njtvonline.org/news/video/army-corps-narrows-down-plans-to-protect-area-from-future-storms/>

“Feds are planning ‘insane’ flood projects for NY”

E&E News-Climatewire (7/11/2018)

<https://www.eenews.net/climatewire/2018/07/11/stories/1060088731>

Editorial “The divide: Hudson River could be in danger from the US Army Corps of Engineers”

The Alt (Capital Region) (7/11/2018)

<http://thealt.com/2018/07/11/the-divide-hudson-river-could-be-in-danger-from-the-us-army-corps-of-engineers/>

“Army Corps considers massive storm surge barrier from NJ to NY”

WHYY Philadelphia (7/12/2018)

<https://whyy.org/articles/army-corps-considers-massive-storm-surge-barrier-from-n-j-to-n-y/>

“Giant sea gate proposed by feds for New Jersey and New York is slammed by environmentalists”

Bergen Record (7/13/2018)

<https://www.northjersey.com/story/news/environment/2018/07/13/giant-sea-gate-proposed-nj-army-corps-environmentalists-slam/776761002/>

“New York flood proposals spark concerns over Hudson River”

Poughkeepsie Journal (7/13/2018)

<https://www.poughkeepsiejournal.com/story/tech/science/environment/2018/07/13/new-york-flood-proposals-spark-concerns-over-hudson-river/779003002/>

Editorial “New York flood proposals spark concerns over Hudson River”

Poughkeepsie Journal (7/13/2018)

<https://www.poughkeepsiejournal.com/story/tech/science/environment/2018/07/13/new-york-flood-proposals-spark-concerns-over-hudson-river/779003002/>

Editorial “Giant ‘sea barrier’ should be non-starter”

Bergen Record (7/14/2018)

<https://www.northjersey.com/story/opinion/editorials/2018/07/14/editorial-thumbs-up-thumbs-down-july-14-north-jersey-nj/783418002/>

“Army Corps wants to build a massive 5-mile seawall to prevent against the next Sandy”

NJ.com/Star Ledger (7/14/2018)

https://www.nj.com/news/index.ssf/2018/07/a_20b_5-mile_long_harbor_gate_and_other_army_ideas.html

“Army wants to build massive FIVE MILE seawall in New York harbor to prevent another Hurricane Sandy”

UK Daily Mail (7/16/2018)

<https://www.dailymail.co.uk/news/article-5958461/Army-wants-build-massive-FIVE-MILE-seawall-New-York-harbor.html>

“The ocean at the gates”

Highlands Current (7/20/2018)

<http://highlandscurrent.com/2018/07/20/the-ocean-at-the-gates/>

“Interview with John Lipscomb”

Radio Kingston (7/20/2018)

<https://radiokingston.org/en/broadcast/source-hillary-harvey/episodes/interview-john-lipscomb>

“Environmental groups attack proposal to separate Hudson River from Atlantic”

The Other Hudson Valley (7/22/2018)

<https://theotherhudsonvalley.com/2018/07/22/separate-hudson-river-from-atlantic/>

“Protecting the Hudson Valley from storm surges”

Spectrum News Capital Region (7/23/2018)

<http://spectrumlocalnews.com/nys/capital-region/capital-tonight-interviews/2018/07/23/barrett-discuss-storm-surge-protections>

“This vital US Army unit is always in the crosshairs of environmental activists”

The Washington Times (7/24/2018)

<https://www.washingtontimes.com/news/2018/jul/24/army-corps-engineers-environmentalists-fights-over/>

“A death threat for the Hudson River”

Nyack News & Views/Earth Matters (7/25/2018)

<https://nyacknewsandviews.com/2018/07/earth-matters-army-corps-of-engineers-storm-surge-barriers/>

“A brilliant solution, or a terrible problem? The Corps of Engineers says flood barriers will protect the Hudson River. Advocates say they will kill it.”

Riverdale Press (8/12/2018)

<http://riverdalepress.com/stories/a-brilliant-solution-or-a-terrible-problem,66440>

“Rhinebeck town officials seek longer comment period on proposed tide-controlling barriers that could affect Hudson River”

Daily Freeman (8/14/2018)

https://www.dailyfreeman.com/news/rhinebeck-town-officials-seek-longer-comment-period-on-proposed-tide/article_d06f246b-a1e8-5dee-a5eb-950bd8c02b36.html

“More input sought on proposals separating Hudson from Atlantic”

The Other Hudson Valley (8/17/2018)

<https://theotherhudsonvalley.com/2018/08/17/more-input-sought-on-surge-barrier-proposals/>

“Can we outbuild future coastal flooding?”

Science Friday (8/17/2018)

<https://www.sciencefriday.com/segments/can-we-outbuild-future-coastal-flooding/>

“Army Corps extends comment period on storm risk management”

WAMC Northeast Public Radio (8/21/2018)

<http://www.wamc.org/post/army-corps-extends-comment-period-storm-risk-management>

“Kingston Common Council objects to storm-surge barriers on Hudson River”

Daily Freeman (9/15/2018)

https://www.dailyfreeman.com/news/kingston-common-council-objects-to-storm-surge-barriers-on-hudson/article_5b29ee24-5626-517f-b12e-e1b25717c11e.html

“Would an enormous storm surge barrier save NYC’s coast—or destroy it?”

Curbed New York (9/27/2018)

<https://ny.curbed.com/2018/9/27/17908080/new-york-storm-surge-barrier-usace-climate-change>

“Storm surge barriers on the Hudson under review”

The Hudson Independent (10/2/2018)

<https://thehudsonindependent.com/storm-surge-barriers-on-the-hudson-under-review/>

“Army Corps proposed project could threaten NY-NJ”

NRDC expert blog (10/4/2018)

<https://www.nrdc.org/experts/jhena-vigrass/army-corps-proposed-project-could-threaten-ny-nj-waterways>

“Giant storm gates in NY Bay eyed to prevent Sandy-like floods “

Rockland/Westchester Journal News (10/4/2018)

<https://www.lohud.com/story/tech/science/environment/2018/10/04/army-corps-engineers-exploring-massive-anti-flood-projects/1502619002/>

“Storm surge barriers are not a simple flooding fix, environmentalists say”

Queens Daily Eagle (10/10/2018)

<https://queenseagle.com/all/2018/10/10/storm-surge-barriers-are-not-a-simple-flooding-fix-environmentalists-say>

“The Dutch can’t save us from rising seas”

CityLab (10/17/2018)

<https://www.citylab.com/perspective/2018/10/the-dutch-cant-save-us-from-rising-seas/573079/>

“Atlantic seawall planning by feds slowed down”

Times Union (10/19/2018)

<https://www.timesunion.com/news/article/Atlantic-seawall-planning-by-feds-slowed-down-13320964.php>

“Army Corps considers plans to protect NJ shoreline from storms”

News 12 New Jersey (10/21/2018)

<http://newjersey.news12.com/story/38626130/army-corps-considers-plans-to-protect-nj-shoreline-from-storms>

“Environmentalists wary of plan to build storm gates around NYC, LI”

News 12 Long Island (10/23/2018)

<http://longisland.news12.com/story/39346108/environmentalists-wary-of-plan-to-build-storm-gates-around-nyc-li>

“Proposed sea gates in NYC to guard against storm surge draws concern from LI”

Newsday (10/23/2018)

<https://www.newsday.com/long-island/nassau/army-corps-storm-surge-barriers-1.22363396>

Attachment E

NEW YORK – NEW JERSEY HARBOR AND TRIBUTARIES (NYNJHAT) COASTAL STORM RISK MANAGEMENT FEASIBILITY STUDY

Hudson River Estuary Management Advisory Committee

March 15, 2018

U.S. Army Corps of Engineers, New York District

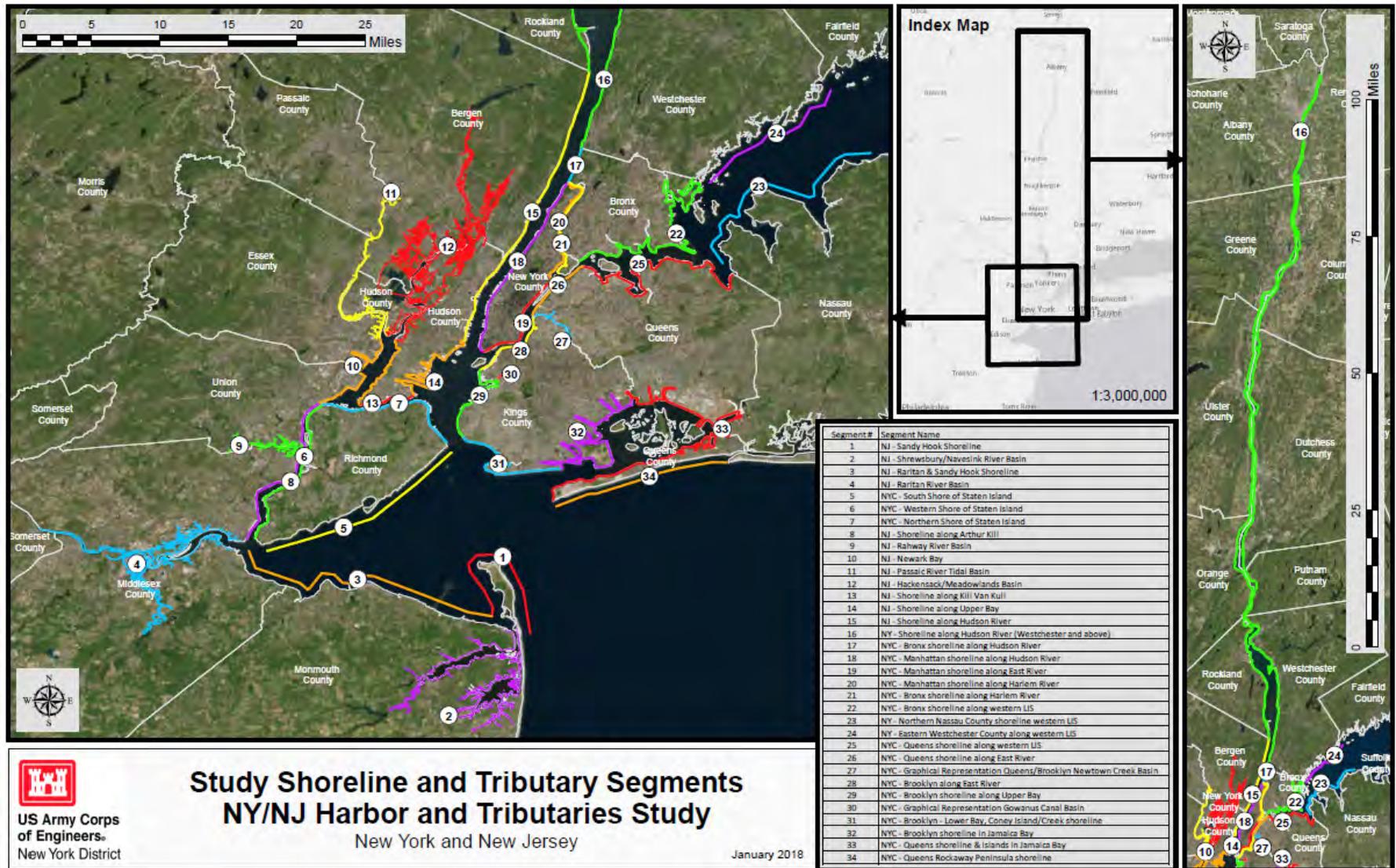
New Jersey Department of Environmental Protection

New York State Department of Environmental Conservation in
partnership with the New York City Office of Recovery and Resiliency

“The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation.”



NY-NJ HARBOR AND TRIBUTARIES STUDY AREA




US Army Corps of Engineers
 New York District



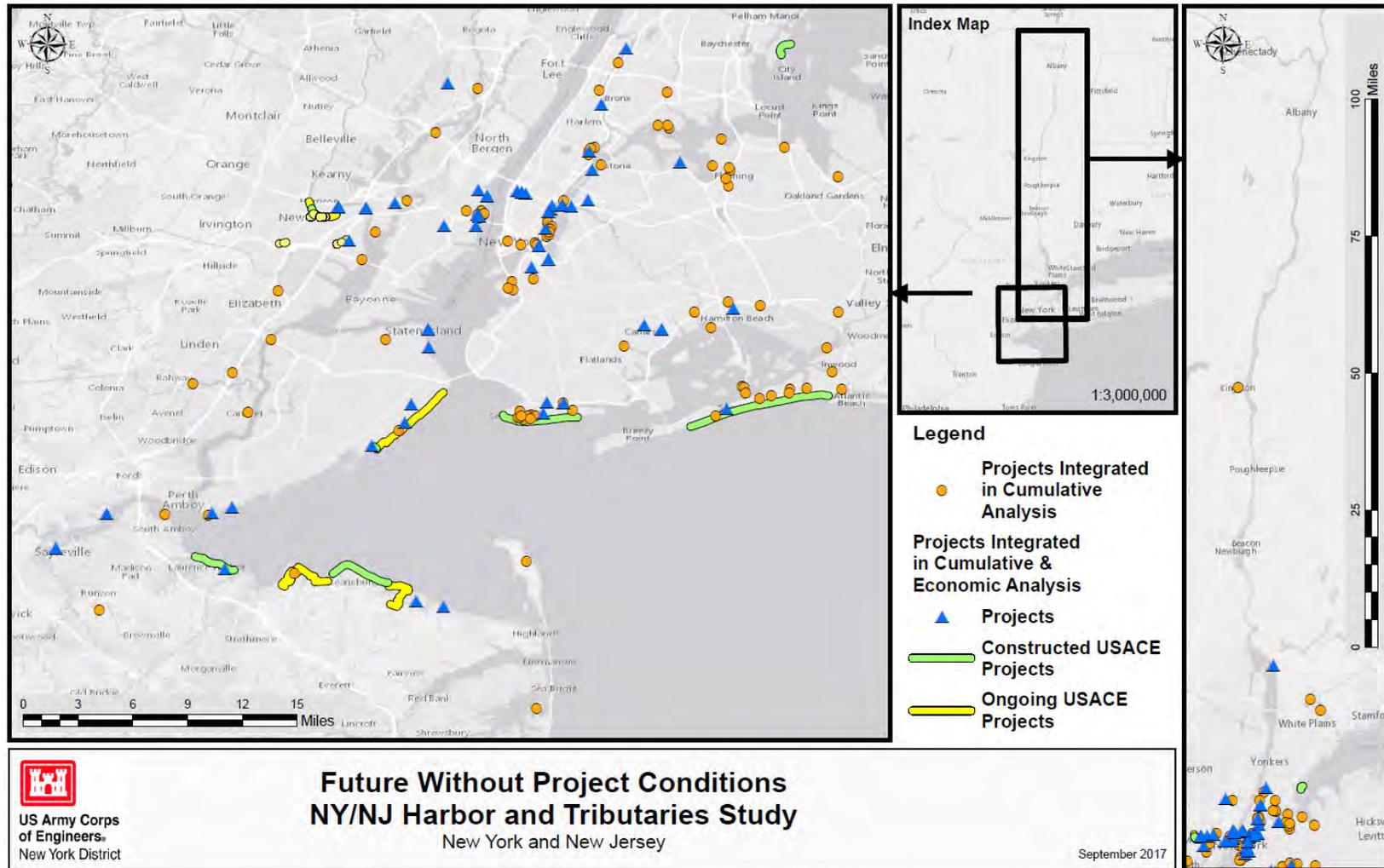
Department of Environmental Conservation

NYC
 Mayor's Office of Recovery & Resiliency


US Army Corps of Engineers



EXISTING AND ASSUMED PROJECTS FOR FWOP



ARRAY OF ALTERNATIVES

All alternatives will be combinations of structural and nonstructural measures, and natural and nature-based features. Names refer to key features.

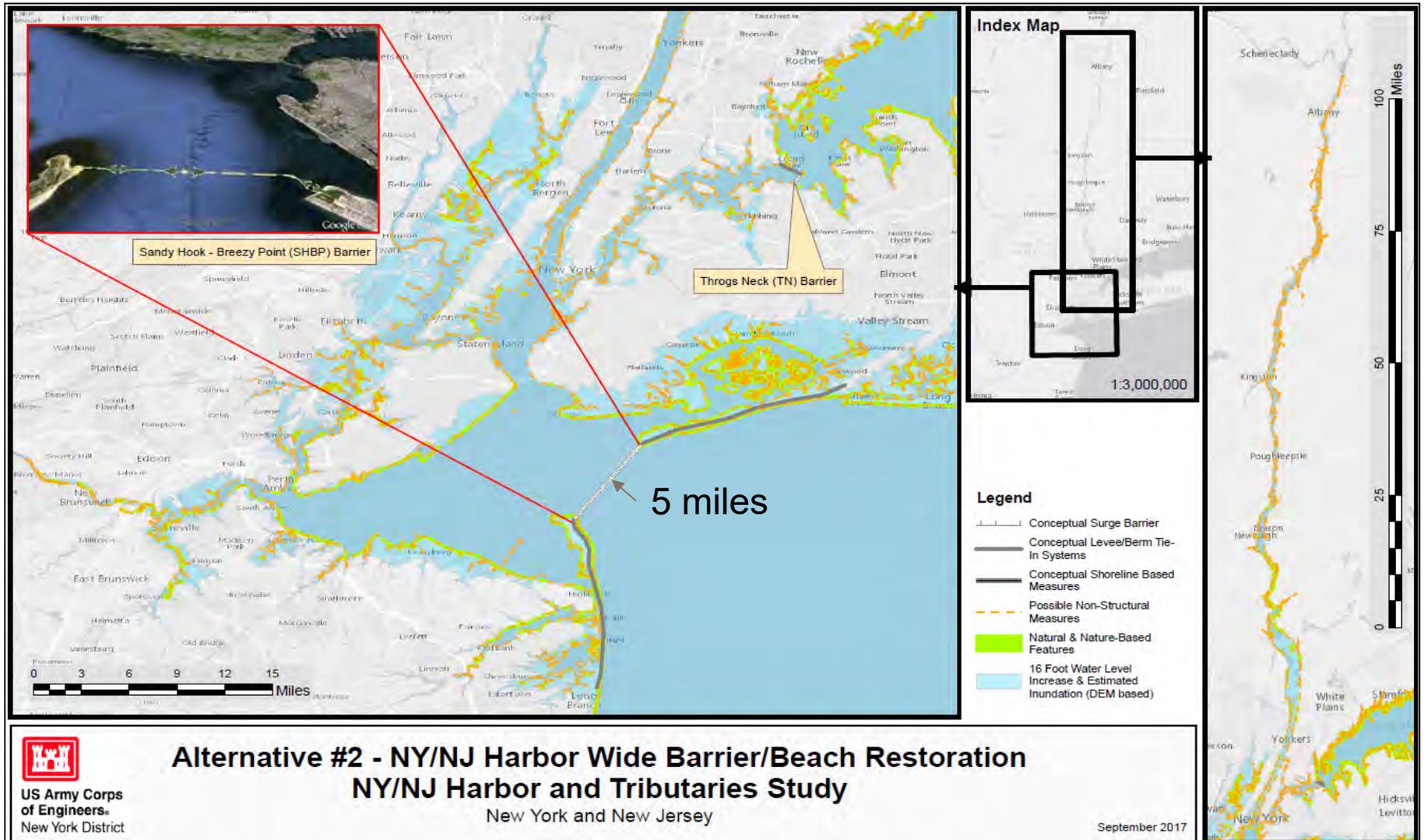
- Alternative 1: No Action
- Alternative 2: NY/NJ Outer Harbor Barrier
- Alternative 3A/3B: Multiple Barriers and Floodwalls & Levee Systems
- Alternative 4: Solitary Bay and River Basin Barriers, Floodwalls & Levees
- Alternative 5: Perimeter Only



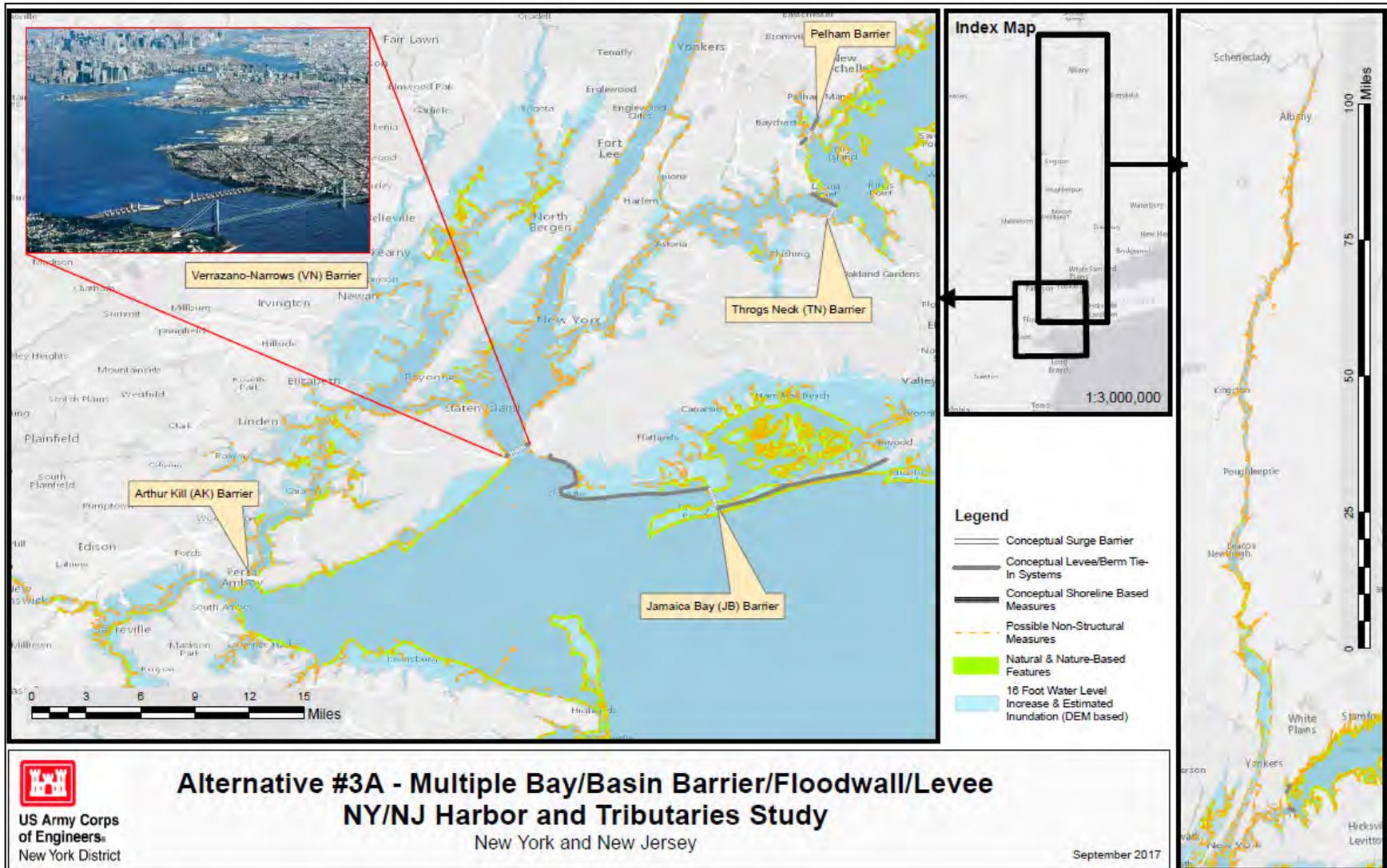
Department of
Environmental
Conservation



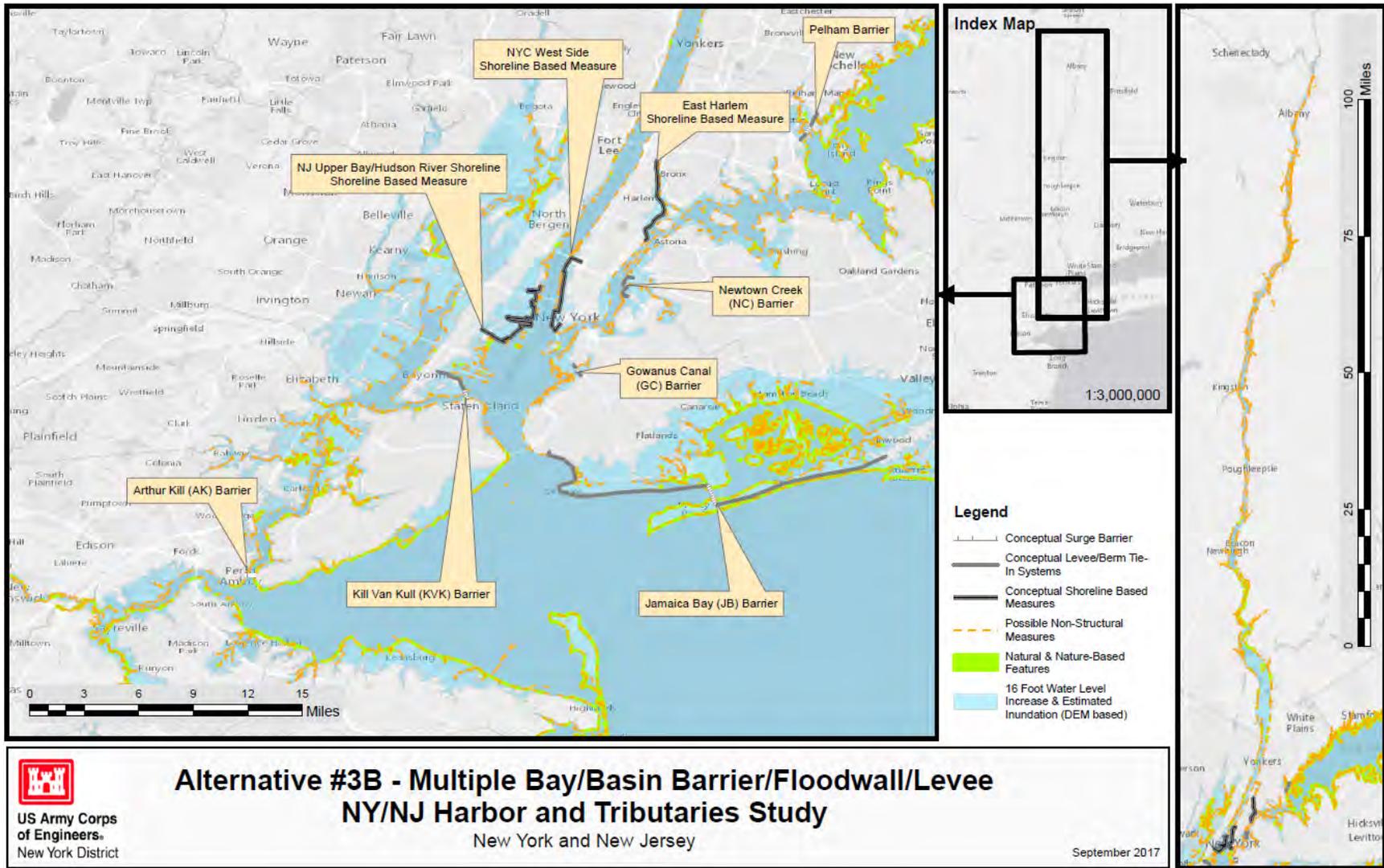
ALT 2: NY/NJ OUTER HARBOR BARRIER



ALT. 3A: MULTIPLE BARRIERS & FLOODWALLS/LEVEES



ALT. 3B: MULTIPLE BARRIERS & FLOODWALLS/LEVEES




US Army Corps of Engineers
 New York District

Alternative #3B - Multiple Bay/Basin Barrier/Floodwall/Levee
NY/NJ Harbor and Tributaries Study
 New York and New Jersey

September 2017



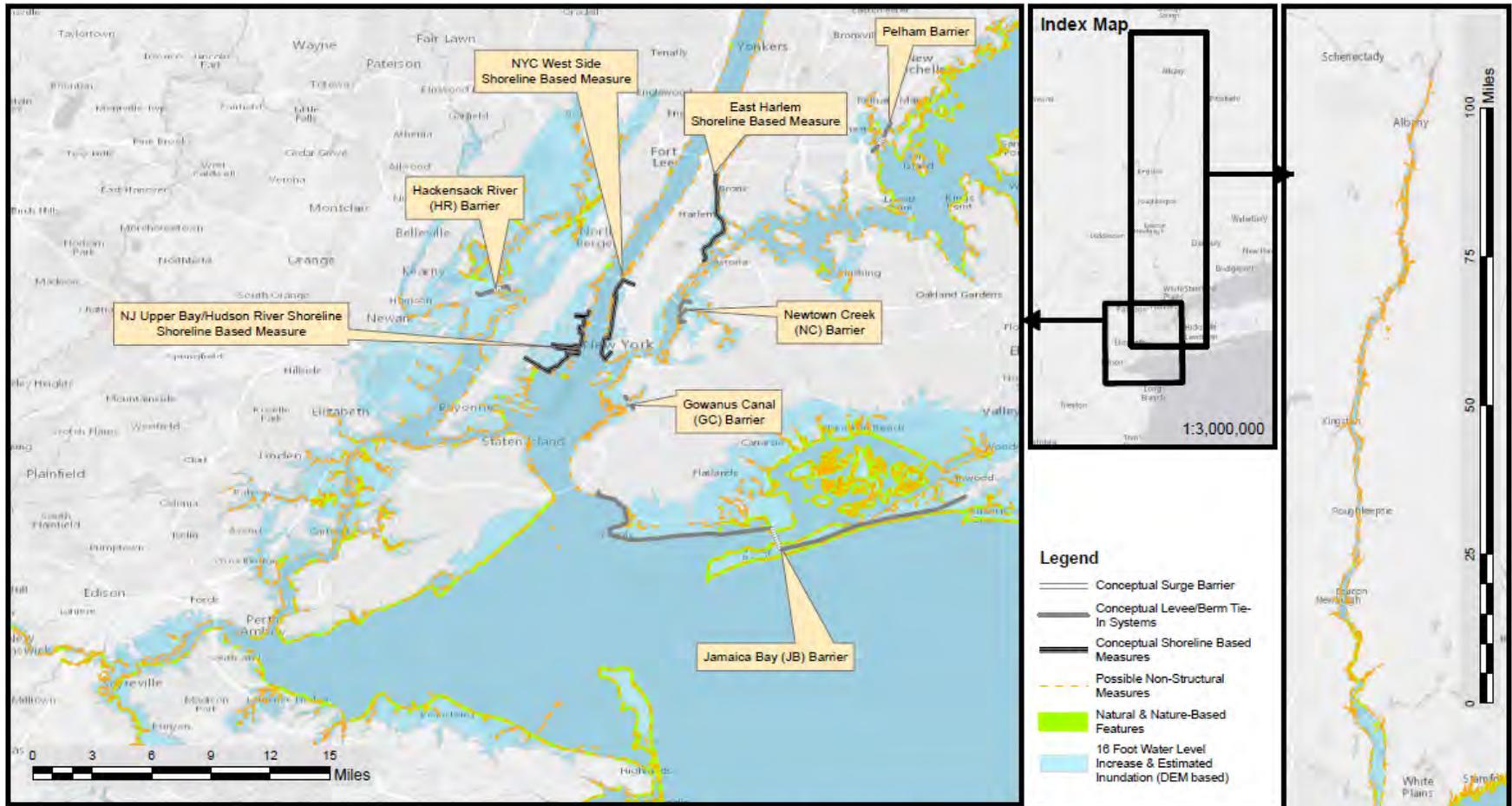
Department of Environmental Conservation

NYC
 Mayor's Office of Recovery & Resiliency


US Army Corps of Engineers



ALT. 4: SOLITARY BARRIER & FLOODWALLS/LEVEES



US Army Corps of Engineers
New York District

Alternative #4 -Solitary Bay and River Basin Barriers/Floodwalls/Levees NY/NJ Harbor and Tributaries Study

New York and New Jersey

September 2017



Department of Environmental Conservation

NYC
Mayor's Office of Recovery & Resiliency

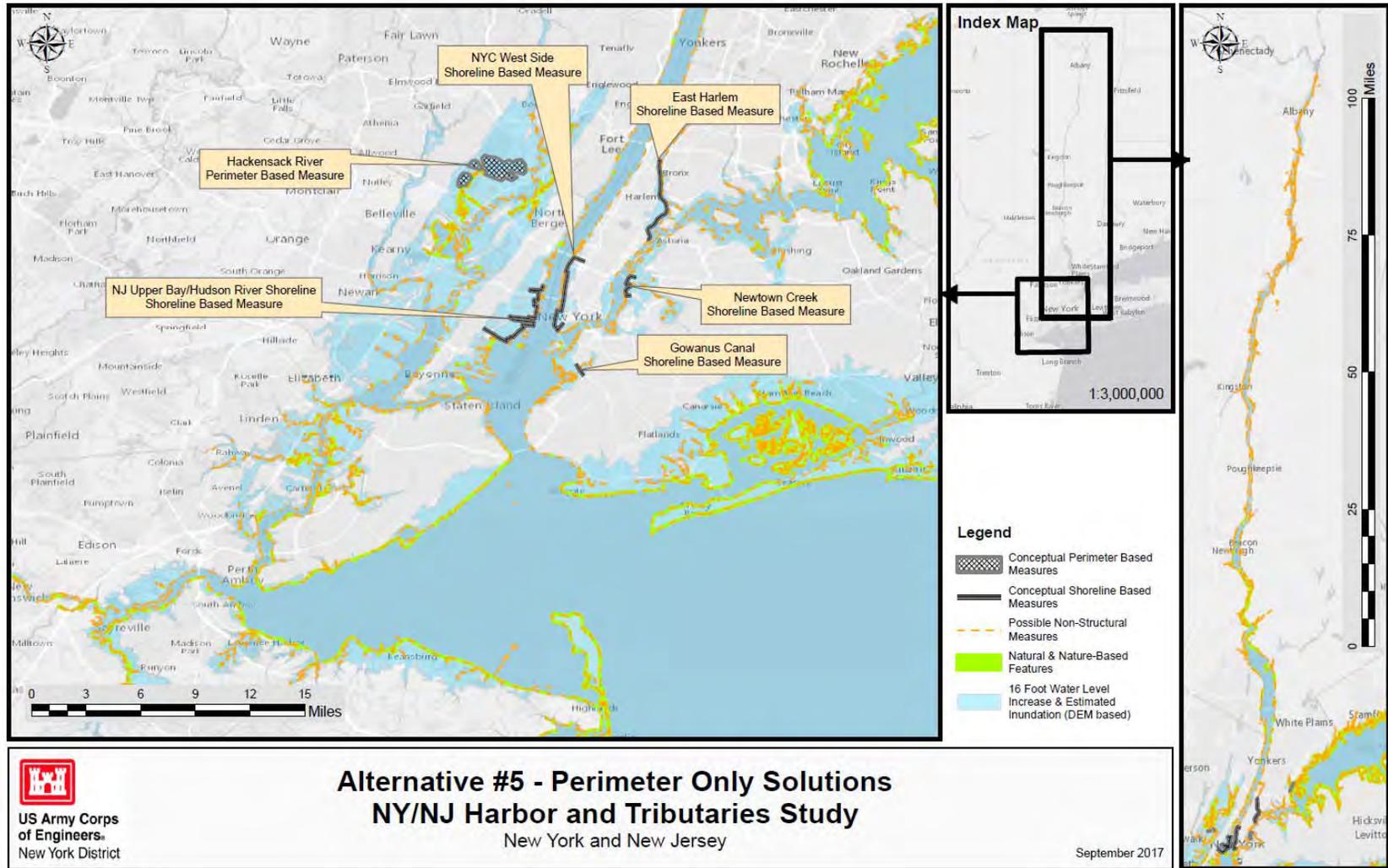


US Army Corps of Engineers



U.S. ARMY

ALT. 5: PERIMETER ONLY



SCHEDULE AND PROGRESS

Milestone	Start	End	Product	Study Progress (% Complete)
Start to Alternatives Milestone (AMM)	July 2016	Sep 2017	Agency Workshop Summary	10
AMM to Tentatively Selected Plan (TSP)	Sep 2017	Jun 2018	Preliminary Draft Report (Sep 2018)	30
TSP to Agency Decision Milestone (ADM)	Jun 2018	July 2020	Draft Report (Mar 2020)	85
ADM to Final Report	July 2020	Mar 2021	Final Report (Mar 2021)	95
Final Report to Chief's Report	Mar 2021	Jul 2022	Chief's Report	100



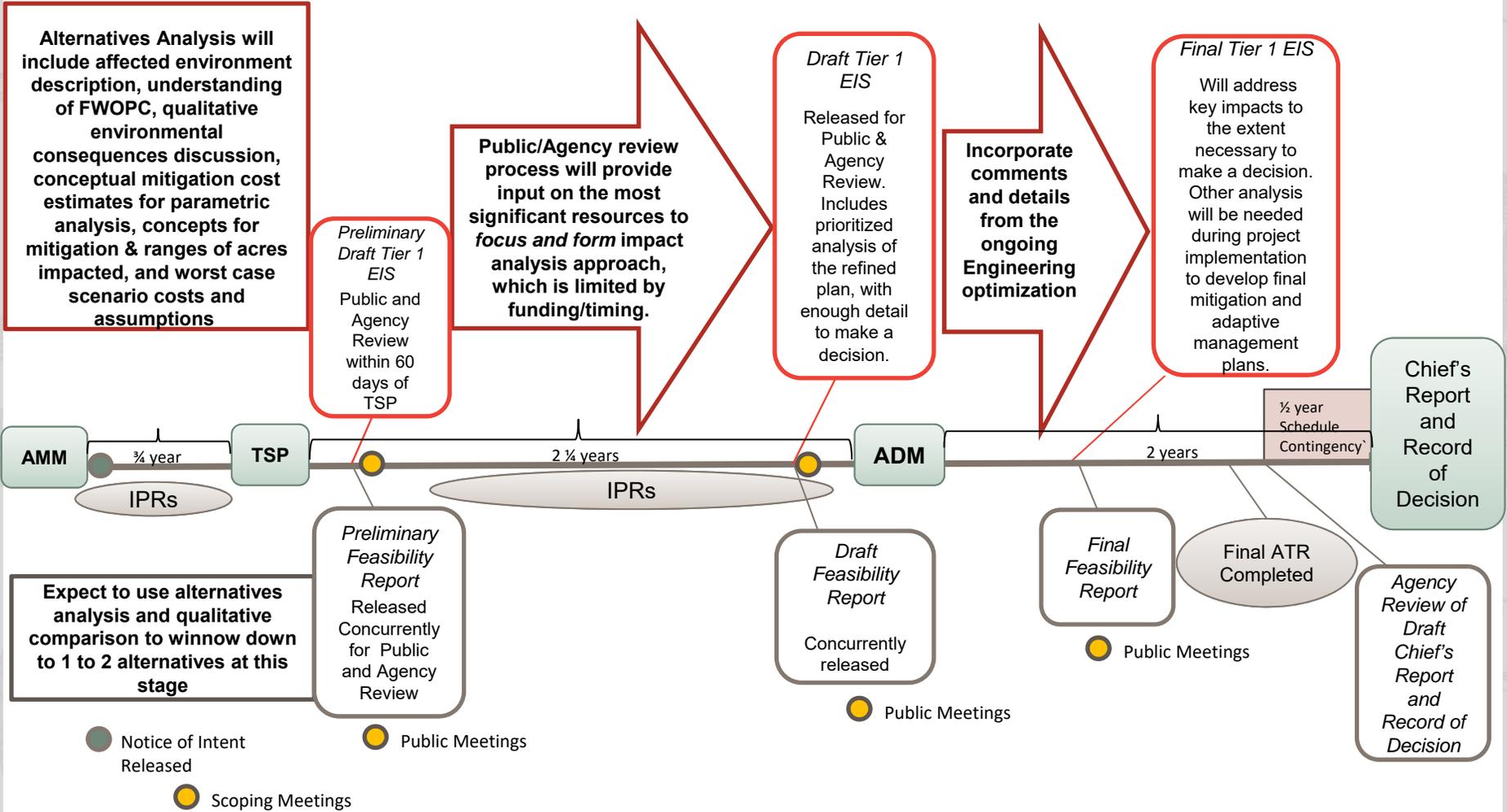
Department of
Environmental
Conservation



US Army Corps
of Engineers.



PROPOSED NEPA TIMELINE FOR NYNJHATS



PUBLIC PARTICIPATION & STAKEHOLDER ENGAGEMENT¹²

Product/Event	Description	Public Participation	Example
NEPA Scoping Meeting	Alternatives to be discussed	Feedback on alternatives	Existing information and resources for USACE to consider, assumptions about FWOP projects
Preliminary Draft Report/Preliminary Draft Tiered EIS*	Ranking of best performing alternatives, based on parametric analysis. Anticipate 1 or 2 candidates for TSP	Public meetings, Formal comments on preliminary draft report	Feedback on USACE assumptions, ID questions to include in refined analysis, ways to quantify environmental impacts
Draft Report/Draft Tiered EIS	Refined analysis (BCR, net benefits) to support recommendation of one TSP	Public meetings, Formal comments on draft report	Comments on how the TSP will affect resources and communities
Final Report/Final Tiered EIS	TSP is optimized to Recommended Plan	Public feedback needed for Non-Federal letter of support	Public meeting feedback on Recommended Plan
Chief's Report	Report to Congress for authorization		

*Preliminary draft reports are the "public/stakeholder" mechanism for additional input to define the alternative formulation path.



Department of Environmental Conservation



Attachment F

Stevens ECOM (sECOM) Model Domain for NYHOPS

Operational system of observing sensors and forecast models: <http://stevens.edu/nyhops>

Model: 3D with 10 sigma levels, uses Mellor-Yamada 2.5 turbulence, ~100 m resolution for NYC area, GLERL wave model and Grant-Madsen bedstress enhancement, $Z_0 = 1$ mm

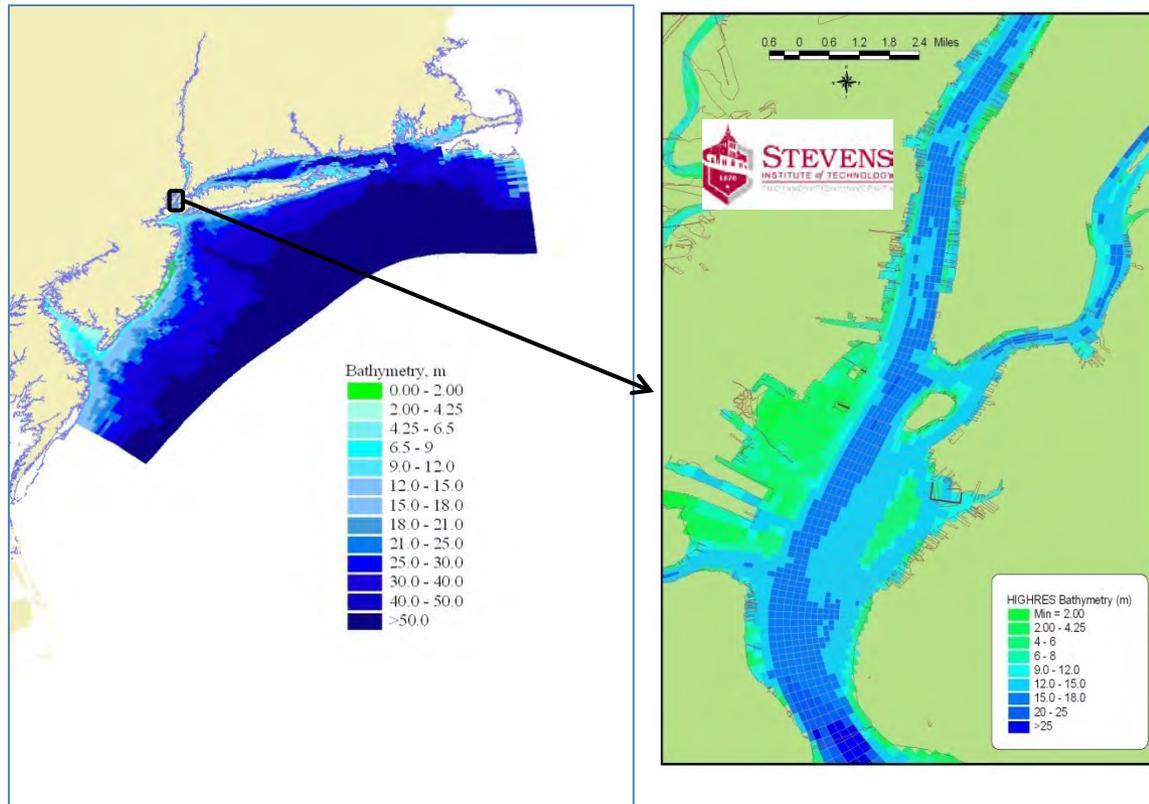
Atmospheric forcing: NAM WRF 12 km wind, pressure

Freshwater: Gaged major tribs (93), estimated minor tribs (146), WWTP (241)

Tides: 9 constituents at open-ocean boundary

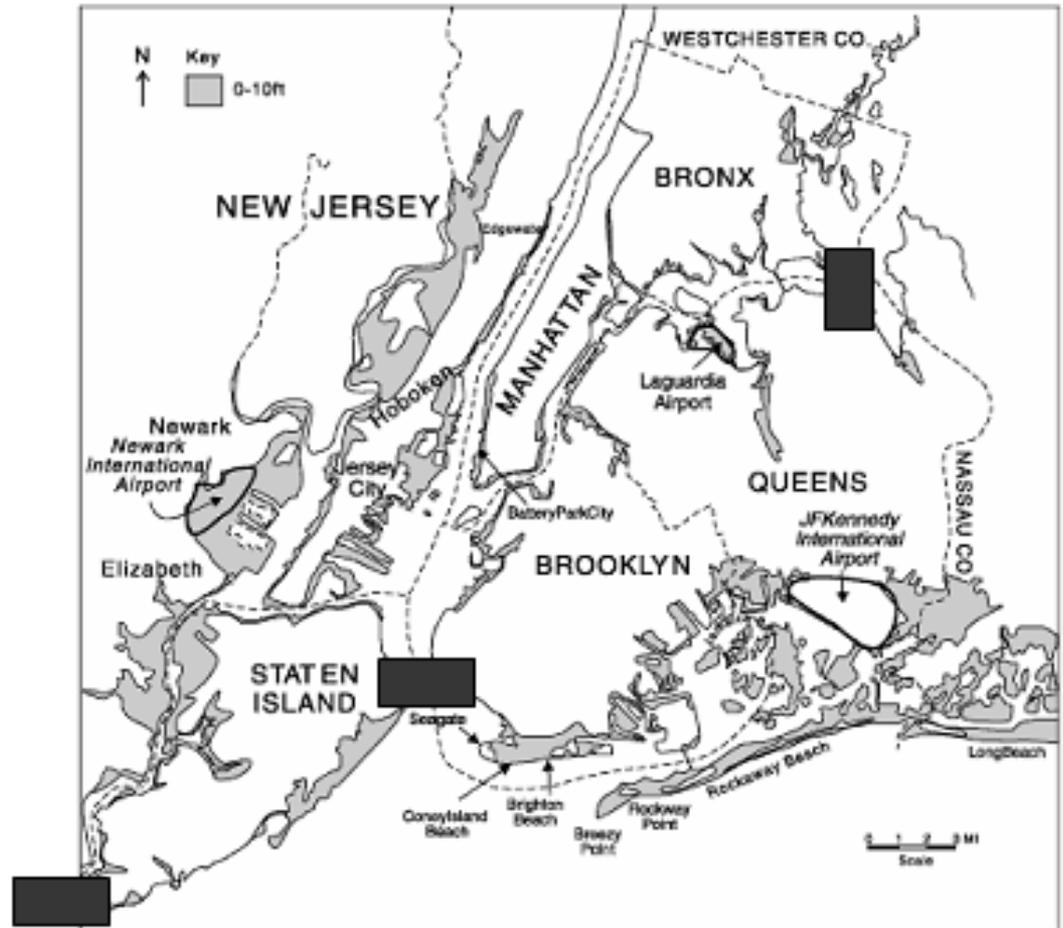
Offshore elevation BC: NOAA's ET-Surge elevation BCs superimposed upon tide

Validation: (V1) Blumberg et al, 1999; (V3) Georgas and Blumberg, 2009; Georgas, 2010; and **Orton et al. JGR 2012** for Irene (0.05-0.20 m rms errors)

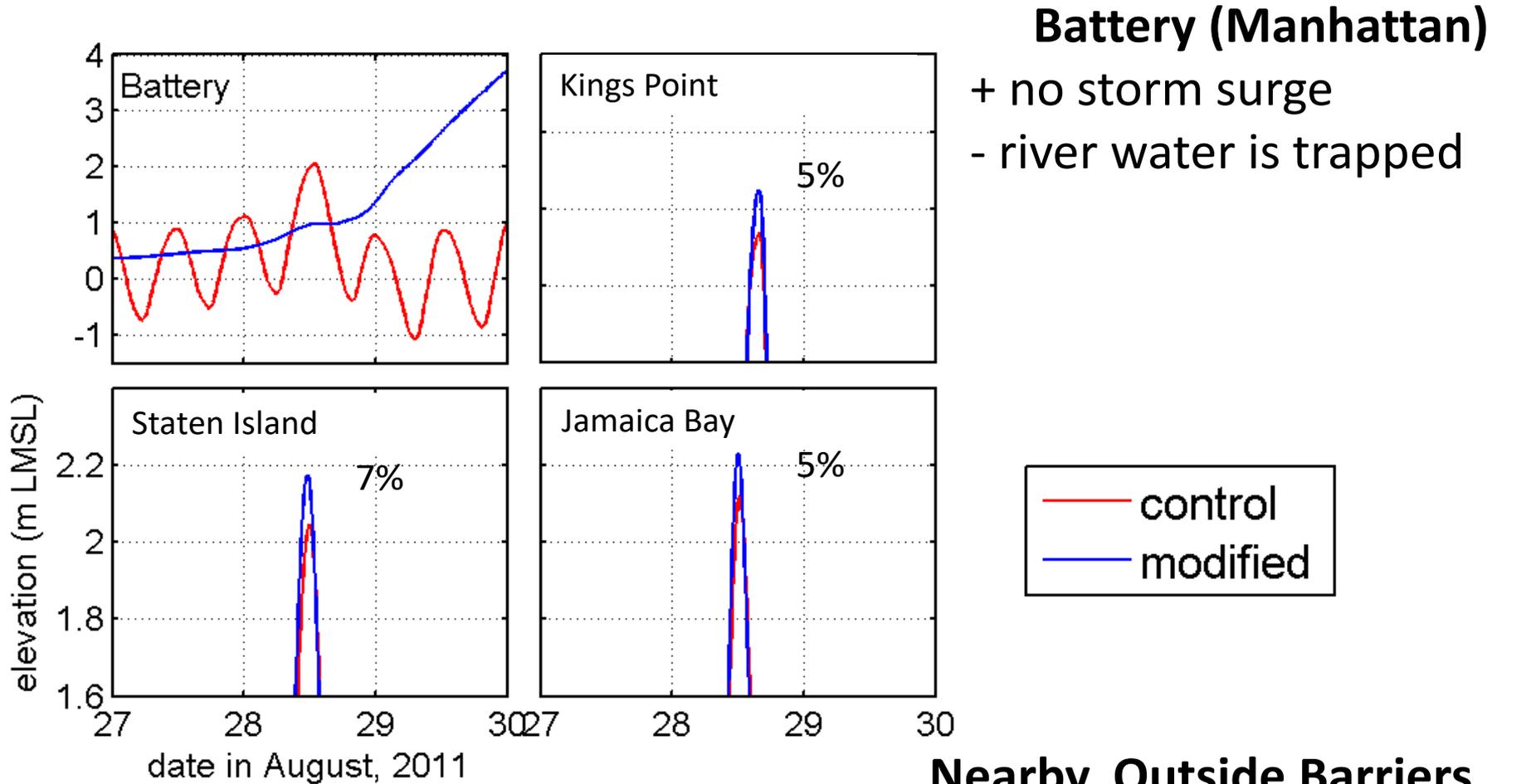


Three-Barrier Experiment

- Barrier plan – Hill (2012), Bowman and Bowman (2012), both in ASCE proceedings)
- Experiment simply has closed barriers for entire 10-day model run



Results: Timeseries View



Nearby, Outside Barriers
- Peak elevations rise 0.1-0.2 m

Conclusions

- Storm surge barriers
 - can protect the city center from storm surge flooding
 - however, they can also worsen flooding outside the barriers
 - trap rain runoff for an Irene flood event, causing water to rise at $\sim 3\text{m/day}$

Attachment G



May 15, 2018

Via Regulations.gov electronic submission

Lynn Lankshear
National Marine Fisheries Service
Greater Atlantic Region Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930

Re: Comments on 5-year review for Endangered New York Bight Distinct Population Segment of Atlantic Sturgeon (NOAA-NMFS-2018-0041)

Dear Ms. Lankshear:

I am writing to you to submit comments on behalf of Riverkeeper, Inc. and Scenic Hudson, Inc.¹ We thank you for providing us with the opportunity to comment on the National Marine Fisheries Service (“NMFS”) and National Oceanic and Atmospheric Administration’s (“NOAA”) *Initiation of 5-Year Review for the Endangered New York Bight, Chesapeake Bay, Carolina and South Atlantic Distinct Population Segments of Atlantic Sturgeon and the Threatened Gulf of Maine Distinct Population Segment of the Atlantic Sturgeon*, 83 Fed. Reg. 11731 (Mar. 16, 2018). Riverkeeper and Scenic Hudson’s comments herein refer to the Endangered New York Bight Distinct Population Segment (“DPS”) of Atlantic Sturgeon.

Interests of the Commenting Organizations

Scenic Hudson works to protect and restore the Hudson River as an irreplaceable national treasure and a vital resource for residents and visitors. Scenic Hudson combines land acquisition, support for agriculture, citizen-based advocacy and sophisticated planning tools to create environmentally healthy communities, champion smart economic growth, open up riverfronts to the public and preserve the valley’s inspiring beauty and natural resources.

Riverkeeper is a member-supported watchdog organization dedicated to defending the Hudson River and its tributaries, and protecting the commercial, recreational, ecological and aesthetic qualities of the Hudson River estuary, its fishery, and the entire Hudson River ecosystem, including its watershed and tributaries which make up the drinking water supply of nine million New York City and Hudson Valley residents. For more than 50 years, Riverkeeper has stopped

¹ These comments are also joined by Waterkeeper Alliance.

polluters, championed public access to the river, influenced land use decisions, and restored habitat, benefiting the natural and human communities of the Hudson River and its watershed.

Riverkeeper also maintains an enforcement presence on the Hudson River, patrolling the length and breadth of the estuary from south of the New York Harbor to north of the federal dam at Troy in our patrol boat, serving as a watchdog vessel, a platform for scientific research and an ambassador for the river. Our patrol boat conducts regular pollution patrols, provides support for scientific studies that advance understanding of the Hudson ecosystem, runs Riverkeeper's water quality testing program, and brings state and regional decision-makers, the media, and community stakeholders out on the river to share information about the Hudson River's its wildlife, critical habitat zones, pollution sources and water quality management issues.

Below we provide information gathered by Riverkeeper's watchdog patrol boat and staff scientists in response to the agencies' request for information on the status of the New York Bight DPS of Atlantic Sturgeon, "particularly information on population trends, distribution, abundance, habitat amount and suitability, threats and conservation measures for any DPS that has become available since their original listings under the ESA [Endangered Species Act] in 2012." *Id.* Our comments focus on the continued existing and future threats faced by the New York Bight DPS of Atlantic Sturgeon from in-river development projects and ongoing adverse impacts to newly designated critical habitat.

Comments of Riverkeeper, Inc. and Scenic Hudson, Inc., joined by Waterkeeper Alliance

The New York Bight DPS of Atlantic Sturgeon, an anadromous species which migrates from saltwater to spawn in the freshwater areas of the Hudson River annually from April to June and young can live up to 7 years in freshwater, are typically found in the deeper areas of the Hudson River. As discussed herein, the existence of the species continues to be imperiled by many of the same threats documented in the 2012 listing decision² as well as the recent 2017 critical habitat designation³.

Comments submitted jointly in September of 2016 by Riverkeeper and Scenic Hudson, and joined by Waterkeeper Alliance on the designation of critical habitat for the NY Bight DPS noted that the federal agencies must consider the range of "significant and growing uses of the Hudson River [which] will adversely affect Atlantic Sturgeon."⁴ The Atlantic sturgeon should remain listed for all the reasons stated in our 2016 comments on the critical habitat designation. (We incorporate those comments herein, and attach them hereto as Attachment A.)

² See *Threatened and Endangered Status for Distinct Population Segments of Atlantic Sturgeon in the Northeast Region*, 77 Fed. Reg. 5880 (Feb. 6, 2012) available at https://www.greateratlantic.fisheries.noaa.gov/nero/regs/frdoc/12/12AtlSturgeonFR_NER.pdf.

³ See *Designation of Critical Habitat for the Endangered New York Bight, Chesapeake Bay, Carolina and South*

Atlantic Distinct Population Segments of Atlantic Sturgeon and the Threatened Gulf of Maine Distinct Population Segment of Atlantic Sturgeon, 82 Fed. Reg. 39160 (Aug. 17, 2017) available at <https://www.gpo.gov/fdsys/pkg/FR-2017-08-17/pdf/2017-17207.pdf>.

⁴ See Sept. 2016 Comments of Riverkeeper, Inc. and Scenic Hudson, Inc. joined by Waterkeeper Alliance at 12 (attached hereto as Attachment A).

In fact, Riverkeeper has documented the adverse impacts of one such continued in-river development project which threatens the survival of the species: the Tappan Zee Bridge replacement project.⁵ Since the project began in 2012, reported sturgeon mortalities along the Hudson have increased 20-fold, according to New York State Department of Environmental Conservation (“NYSDEC”) data obtained by Riverkeeper through New York’s Freedom of Information Law.

Records kept by NYSDEC show a continuing surge in the number of sturgeon found dead in the Hudson River Estuary since the massive Tappan Zee Bridge replacement project began. The timing of the mortality increase aligns almost exactly with the start of bridge construction in 2012. During 2012, when crews began installing test piles for the new bridge, eight sturgeon deaths were reported to the state agency. That was more than in the four prior years combined. In 2013, when construction began in earnest, 25 sturgeon deaths were reported. In 2014, 43 were reported, and in 2015, 46 were reported. In the four years prior to construction, six dead sturgeon were reported. In the four years since construction started, 122 were reported. Since the start of construction, reported mortality has increased more than 20 times. Often, sturgeon were found cut in half, gashed or severed at the head or tail due to vessel strikes.⁶

These impacts to sturgeon mortality are increasingly significant in light of NMFS’s identification of vessel strikes as among the “most significant threats to the Atlantic sturgeon” in its recent 2017 updated Biological Opinion (“2017 BiOp”) for the project.⁷ Further, Riverkeeper’s concerns regarding the dramatic increases in numbers of reported sturgeon mortalities discussed above are significantly magnified by the large number of fish documented as at or near reproductive age. Riverkeeper urges NMFS to carefully analyze how the generational loss of so many spawning age, and near-spawning age, fish may adversely influence the continued survival of the species. For example, of the reported sturgeon mortalities in 2013 and 2014—which occurred post-listing decision, and during the course of the project—a large majority were adults and sub-adults. Due to the delayed sexual maturity and reproduction of sturgeon “a high annual survival as juvenile through adults [is necessary] to ensure that enough juveniles survive to reproductive maturity and reproduce enough times to maintain stable population sizes.”⁸

The Tappan Zee Bridge replacement project has also caused an increase in turbidity in the Hudson River which adversely affects the Atlantic Sturgeon. Aerial photos of the project area show numerous dates on which construction activities have caused substantial resuspension of bottom sediments and enormous discharges of highly turbid water that have caused visible contrast

⁵ See generally <http://www.newnybridge.com/>.

⁶ We have aggregated NYSDEC’s Atlantic and Shortnose Sturgeon Hudson River mortality data in a google map. See Riverkeeper Sturgeon Mortality Map, <https://www.google.com/maps/d/u/0/viewer?mid=1AZ2i68IWLpjQWO7topK257ORRQ0&ll=41.48807035929387%2C-73.37094785&z=8>.

⁷ Biological Opinion for the Tappan Zee Bridge Replacement Project at 55-56 (Jan. 4, 2017) [hereinafter “2017 BiOp”] available at <http://www.newnybridge.com/documents/environment/2017-jan-nmfs-bio-opinion.pdf>.

⁸ 2017 BiOp at 39.

to the national conditions of the river.⁹ Turbidity indicates that stirred-up sediment is covering habitat at the river bottom, disrupting the food chain that supports bottom-feeders such as endangered sturgeon. It also indicates that contaminants buried in layers of sediment are being released into the water, further threatening the health of species in the river.

As noted in the project's 2017 BiOp, in order "to rebuild [populations to viable levels], Atlantic sturgeon can only sustain *low levels* of anthropogenic mortality."¹⁰ Thus, these continued impacts to sturgeon populations via increased turbidity and mortality from vessel strikes continue to imperil the species and warrant its continued federal listing as endangered.

The 2017 updated Biological Opinion for this project states that "[e]ffects to critical habitat proposed for the New York Bight DPS of Atlantic sturgeon will be considered in a separate conference report."¹¹ Thus far, no such conference report has been issued, and reinitiation of consultation¹² is currently ongoing. The data utilized in conducting this review as well as any results of this reinitiation of consultation, to the extent they are available, should be considered in this five-year review.

In addition to vessel strike and turbidity impacts to sturgeon during the new bridge construction phase of the project, the legacy pollution discharged during the old bridge demolition also has adverse impacts to water quality, one of the habitat features upon which Atlantic Sturgeon are critically dependent.¹³ For example, as recently as October of 2017, Riverkeeper members submitted watchdog reports of the bridge demolition project improperly causing the discharge of toxic, petroleum-based creosote into the river causing an oily sheen to coat the water's surface from Nyack to Piermont.¹⁴

All of this project's adverse impacts to sturgeon—*none* of which were previously considered or evaluated in the 2012 listing decision—demonstrate additional ongoing threats to sturgeon which warrant its continued federal protection and listing as an endangered species. Furthermore, the Tappan Zee Bridge replacement project is just *one* project currently underway in the range of the NY Bight DPS of Atlantic Sturgeon, though it alone has had significant adverse impacts on the species' survival. As mentioned previously in our 2016 comments on the designation of critical habitat, "significant and growing uses of the Hudson River will adversely affect Atlantic Sturgeon [and its] critical habitat."¹⁵ The anchorages proposal we raised as one such

⁹ See, e.g., Aerial Photos by Lee Ross (Dec. 21, 2015) available at <https://www.riverkeeper.org/news-events/news/preserve-river-ecology/riverkeeper-puts-nys-on-notice-over-endangered-species-clean-water-act-violations-at-tappan-zee-project-site/> (additional recent photos are also available).

¹⁰ *Id.* (emphasis added).

¹¹ 2017 BiOp at 192.

¹² *Id.* at 217 ("reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: . . . new species is listed or critical habitat designated that may be affected by the identified action").

¹³ 2017 BiOp at 55.

¹⁴ See LoHud, "Did Tappan Zee Bridge demolition leak creosote into Hudson River?" (Oct. 13, 2017) available at <https://www.lohud.com/story/news/local/tappan-zee-bridge/2017/10/13/tappan-zee-bridge-demolition-creosote-hudson/758626001/>.

¹⁵ See Attach. A, Sept. 2016 Comments of Riverkeeper, Inc. and Scenic Hudson, Inc. joined by Waterkeeper Alliance at 12.

example in 2016 is another in-river project which, though currently dormant, would significantly adversely affect the NY Bight DPS of Atlantic Sturgeon in the Hudson River, particularly with regard to as-yet-unstudied impacts of riverbottom anchor scour on benthic species such as Atlantic Sturgeon.¹⁶

Conclusion

The threats to the NY Bight DPS of Atlantic Sturgeon identified in the 2012 listing decision and 2017 critical habitat designation still exist to the same extent as previously identified. In fact, in-river development—such as the Tappan Zee Bridge replacement project—has increased and amplified the adverse impacts of the threats previously identified by NMFS, warranting the continued listing of the species as endangered.

Given the adverse impacts of the Tappan Zee Bridge replacement project in particular, we believe that the NMFS’s reinitiation of consultation will show that the project has adversely modified designated critical habitat for the NY Bight DPS of Atlantic Sturgeon. The agency should consider these significant adverse impacts—and the potential future impacts of additional in-river projects—in its 5-year review of the listing decision for the NY Bight DPS of Atlantic Sturgeon and should find that continued federal protection of the species is required to ensure its survival.

Thank you again for the opportunity to comment on the fate of this unique, charismatic and imperiled species, and for your consideration of our comments.

Sincerely,

Richard Webster
Legal Director
Riverkeeper, Inc.

Hayley Carlock
Director of Environmental Advocacy
Scenic Hudson, Inc.

Joined by:

Dan Estrin
General Counsel and Advocacy Director
Waterkeeper Alliance

¹⁶ *Id.*; see also “Riverkeeper statements regarding Coast Guard announcement that it will suspend future rulemaking decisions on the Hudson River anchorages proposal” (Jun. 28, 2017) available at <https://www.riverkeeper.org/news-events/news/preserve-river-ecology/riverkeeper-statements-regarding-coast-guard-announcement-that-it-will-suspend-future-rulemaking-decisions-on-the-hudson-river-anchorage-proposal/>.

Attachment A



September 1, 2016

Via Electronic Submission

Kimberly B. Damon-Randall
Assistant Regional Administrator
Protected Resources Division
National Marine Fisheries Service
Greater Atlantic Regional Office
55 Great Republic Drive
Gloucester, MA 01930

Re: Comments on the Designation of Critical Habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay Distinct Population Segments of Atlantic Sturgeon, NOAA-NMFS-2015-0107

Dear Ms. Damon-Randall:

Riverkeeper, Inc. and Scenic Hudson, Inc. appreciate the opportunity to comment on the National Marine Fisheries Service's ("NMFS") and the National Oceanic and Atmospheric Administration's proposed rule to designate critical habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay Distinct Population Segments ("DPSs") of Atlantic sturgeon as published in the June 3, 2016 issue of the Federal Register.¹

Riverkeeper and Scenic Hudson's Interests

Riverkeeper is a member-supported watchdog organization dedicated to defending the Hudson River and its tributaries and protecting the drinking water supply of nine million New York City and Hudson Valley residents.

¹ Endangered and Threatened Species: Designation of Critical Habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay Distinct Population Segments of Atlantic Sturgeon, 81 Fed. Reg. 35,701 (June 3, 2016) (to be codified at 50 C.F.R. pt. 226).

Scenic Hudson works to protect and restore the Hudson River as an irreplaceable national treasure and a vital resource for residents and visitors. Scenic Hudson combines land acquisition, support for agriculture, citizen-based advocacy and sophisticated planning tools to create environmentally healthy communities, champion smart economic growth, open up riverfronts to the public and preserve the valley's inspiring beauty and natural resources.

The Proposed Rule

In order to designate critical habitat, the proposed rule identifies four sets of physical and biological features as essential to Atlantic sturgeon conservation: (1) hard-bottom substrate in low salinity waters for settlement of eggs and early life stages; (2) habitat with certain salinity gradients and soft substrate downstream of spawning sites for juvenile foraging and development; (3) water of appropriate depth between the river mouth and spawning sites that supports movement of juveniles, subadults and adults; and (4) water, especially in the bottom meter of the water column, with proper temperature, salinity and oxygen values that support spawning, survival, and growth of the various life stages. The proposed rule also recognizes threats in the form of barriers and in-water structures, land development, commercial and recreational activities, dredging, global climate change, and water withdrawals and attempts to control flows. These activities are examples of why the features essential to the conservation of the DPSs require special management considerations or protections. Based on these factors, the rule designates four critical habitat units for the New York Bight DPS in the main stems of the Connecticut, Housatonic, Hudson and Delaware Rivers.

Comments

Riverkeeper and Scenic Hudson support the designation of all of the Hudson River, bank to bank, from the Federal Dam in Troy, New York downstream to the mouth of the River at the New York Harbor (the "main stem") as critical habitat for the New York Bight DPS of Atlantic sturgeon.² We also appreciate the inclusion of certain historic locations as critical habitat, such as Haverstraw Bay and the Hyde Park area of the Hudson River.³ Moreover, we support the finding to not exclude any habitat areas based on economic impacts, national security issues, or other impacts of the designation.⁴

² 81 Fed. Reg. at 35,717.

³ 81 Fed. Reg. at 35,705.

⁴ 81 Fed. Reg. at 35,713.

While Riverkeeper and Scenic Hudson commend the current proposal, room for improvement remains. The list of physical features essential for the conservation of Atlantic sturgeon and necessary to support successful reproduction and recruitment for these DPSs should be expanded. Specifically, NMFS should designate soft-bottom waters as essential for the conservation of adult Atlantic sturgeon and expand the habitat components for juvenile Atlantic sturgeon. NMFS should also amend the critical habitat boundaries for the New York Bight DPS to establish marine critical habitat in the Long Island Sound and the New York Bight and to include certain tributaries and tributary segments of the Hudson River. Finally, NMFS must fully evaluate how significant and growing uses of the Hudson River will impact Atlantic sturgeon habitat, and ensure that additional research is conducted regarding the habitat of this species.

**I. NMFS Should Designate Additional Physical and Biological Features
Essential to the Conservation of Atlantic Sturgeon.**

The Endangered Species Act defines critical habitat as those specific areas in the geographical area occupied that “(1) have the physical or biological features essential to the conservation of the listed entity, and (2) may require special management considerations or protections.”⁵ As noted above, the proposed rule lists four physical features essential for the conservation of Atlantic sturgeon belonging to the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs. This list should be expanded as follows:

**A. Soft-bottom waters of the Hudson River estuary should be designated as
critical habitat for adult Atlantic Sturgeon.**

Riverkeeper and Scenic Hudson agree with NMFS’s determination that one conservation objective “is to increase the abundance of each DPS by facilitating increased survival, growth, and physiological development to the adult life stage.”⁶ However, we disagree with NMFS’s failure to designate certain critical habitat for adult Atlantic sturgeon. Soft-bottom waters in the Hudson River, particularly those with “sand waves,” are important habitats for spawning Atlantic sturgeon, not only juveniles.

After many years of work with a wide variety of biologists, researchers, regulators, fishers, and the public, Riverkeeper and Scenic Hudson have learned that soft-bottom waters of the Hudson River estuary, particularly those in close proximity to spawning areas, are essential to the conservation of Atlantic sturgeon. While the proposed designation includes soft-bottom waters for juvenile foraging and development, it fails

⁵ 81 Fed. Reg. at 35,707–08; 16 U.S.C.S. § 1532(5)(A) (Lexis 2016).

⁶ 81 Fed. Reg. at 35,709.

to expressly recognize the need to protect soft-bottom areas that serve as resting and feeding habitats for spawning adults.

Atlantic sturgeon spawn in freshwater rivers and develop in estuaries before migrating to marine waters.⁷ They are an anadromous fish, returning to the same freshwater rivers to reproduce.⁸ Successful recovery of the species depends not only on the successful growth and development in early life stages, but also on the maturation of juvenile fish into adults.⁹ Adult Atlantic sturgeon must then survive long enough, and in great enough numbers, to return to their natal rivers to reproduce.¹⁰ In the Hudson River estuary, sonar images show that Atlantic sturgeon congregate on sand waves in soft-bottom areas near Hyde Park, a popular spawning location.¹¹ It is Riverkeeper and Scenic Hudson's understanding that these soft-bottom areas, particularly the sand waves, play an essential role in conservation by providing resting and feeding habitat for adult Atlantic sturgeon returning to the Hudson River estuary to spawn.

In addition to being necessary for the conservation of the species, soft-bottom areas "may require special management considerations or protections."¹² That criteria refers to either a current requirement for special management considerations or protections or potential future requirements.¹³ Soft-bottom areas are particularly vulnerable to

⁷ 81 Fed. Reg. at 35,703.

⁸ 81 Fed. Reg. at 35,703.

⁹ See NATIONAL MARINE FISHERIES SERVICE, DESIGNATION OF CRITICAL HABITAT FOR THE GULF OF MAINE, NEW YORK BIGHT, AND CHESAPEAKE BAY DISTINCT POPULATION SEGMENTS OF ATLANTIC STURGEON DRAFT BIOLOGICAL INFORMATION AND ESA SECTION 4(B)(2) SOURCE DOCUMENT iii (2016) (characterizing Atlantic sturgeon subadult and adult survival as "essential to the conservation of the [DPSs]"); see also 81 Fed. Reg. at 35,709.

¹⁰ 81 Fed. Reg. at 35,709 (stating "given that Atlantic sturgeon mature late and do not necessarily spawn annually, increased adult survival would improve the chances that adult Atlantic sturgeon spawn more than once").

¹¹ See Attach. 1, Sonar Images of Atlantic Sturgeon Over Soft Substrate (Sand Waves) (June 16, 2016).

¹² 81 Fed. Reg. at 35,707-08; 16 U.S.C.S. § 1532(5)(A) (Lexis 2016).

¹³ 81 Fed. Reg. at 35,708 (stating that "the term 'may' in the phrase 'may require special management considerations or protections' was the focus of two cases in Federal district courts that ruled that features can meet this provision because of either a present requirement for special management considerations or protection or possible future requirements.") (citing *Center for Biol. Diversity v. Norton*, 240 F. Supp. 2d 1090 (D. Ariz. 2003); *Cape Hatteras Access Preservation Alliance v. DOI*, 344 F. Supp. 108 (D.D.C. 2004)).

growing and significant uses, such as dredging and the proposal to establish several anchorage grounds in the mid-Hudson River. These activities, and others mentioned later in these comments, pose a threat to the soft substrate habitat that adult Atlantic sturgeon need for sustenance and protection.¹⁴

While NMFS can and should continue to gather information on adult Atlantic sturgeon habitat, it cannot ignore what it currently knows. In the preamble to the proposed rule, NMFS recognizes that studies show that Atlantic sturgeon feed on benthic organisms found in soft-bottom areas.¹⁵ While Riverkeeper and Scenic Hudson appreciate that the proposed rule recognizes the importance of deep water free from obstructions to support “[s]taging, resting, or holding” areas for spawning fish,¹⁶ we urge NMFS to expressly include soft-bottom areas of the Hudson River estuary, particularly sand waves, in critical habitat designation.

B. The habitat designation components for juvenile sturgeon should include a broader range of environments.

In its rulemaking notice, NMFS admitted to finding it difficult to develop water quality parameters for Atlantic sturgeon due to “[t]he complex relationship between dissolved oxygen, temperature, and salinity, as well as other factors that can affect dissolved oxygen levels in estuaries (e.g., water depth and mixing).”¹⁷ At least one study, which was cited by the agency, has found inconsistent correlations between catches of Atlantic sturgeon and temperature and salinity levels.¹⁸ Moreover, variations in Atlantic sturgeon populations occur seasonally and by location.¹⁹ NMFS should take these variations into account by expanding the designated habitat components to include a *broader* range of environments where Atlantic sturgeon are known to occur. Such an approach is consistent with the precautionary principle and the purposes of the Endangered Species Act.

¹⁴ See, e.g., Attach. 2, Sonar Images of Scour Marks in the Hyde Park Area of the Hudson River (June 29-30, 2014).

¹⁵ 81 Fed. Reg. at 35,709.

¹⁶ 81 Fed. Reg. at 35,717.

¹⁷ 81 Fed. Reg. at 35,708.

¹⁸ John A. Sweka et al., *Juvenile Atlantic Sturgeon Habitat Use in Newburgh and Haverstraw Bays of the Hudson River: Implications for Population Monitoring*, 27 NORTH AMERICAN JOURNAL OF FISHERIES MANAGEMENT 1063 (2007).

¹⁹ *Id.* at 1063–66.

Chiefly, the habitat components should recognize the significance of waters with hard and soft substrate for all life stages. We discussed the need to include soft-bottom waters as critical habitat for adult Atlantic sturgeon above. The proposed rule also differentiates between hard-bottom substrate for spawning and soft-bottom substrate for juvenile foraging and development. That overlooks important evidence indicating that juvenile Atlantic sturgeon are not limited to soft-bottom waters. In one study, while juvenile fish frequently occurred in the waters of Haverstraw Bay with soft substrate, some of the largest catches came from waters in the Bay with hard substrates.²⁰ Therefore, it is possible that juvenile Atlantic sturgeon reside in hard-bottom areas, or at least utilize those areas for migration.²¹ Regardless, the habitat components for developing juvenile sturgeon should include both hard and soft substrates.

Next, NMFS should expand the salinity range for juvenile Atlantic sturgeon to include both lower and higher salinity waters. The proposed rule currently includes a limited salinity range of 0.5 – 30 parts per thousand for foraging and development.²² However, the preamble of the proposed rule states that the Environmental Protection Agency recommends, *inter alia*, salinity levels of 0.0 – 0.5 parts per thousand for larval and juvenile fish, including Atlantic sturgeon.²³ It also mentions that juvenile fish “have been shown to tolerate salinities of 33 parts per thousand.”²⁴ Given this clear evidence of the tolerance of juvenile sturgeon, NMFS should revise the proposed salinity features to include a wider range of habitats.

Finally, NMFS should clarify the temperature range necessary for juvenile and subadult development. The proposed rule includes the following habitat component: “[w]ater, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support: ... (iii) Larval, juvenile, and subadult growth, development, and recruitment (e.g., 13 °C to 26 °C for spawning habitat and no more than 30 °C for juvenile rearing habitat...).”²⁵ It is unclear whether NMFS considers 13 °C as the lower limit on the temperature range for juvenile rearing habitat. Since evidence indicates that juvenile fish can occur in waters with lower temperatures,²⁶ NMFS should

²⁰ *Id.* at 1065.

²¹ *Id.*

²² 81 Fed. Reg. at 35,717.

²³ 81 Fed. Reg. at 35,708.

²⁴ 81 Fed. Reg. at 35,703.

²⁵ 81 Fed. Reg. at 35,717.

²⁶ 81 Fed. Reg. at 35,703; *see also* Sweka, *supra* note 18, at 1063–64.

revise the proposed rule to clarify that there is no lower limit on the temperature range for juvenile and subadult Atlantic sturgeon. Moreover, NMFS should provide some rationale for its contention that 30 °C is the upper limit of sturgeon temperature tolerance.

II. The Critical Habitat Boundaries of the New York Bight DPS Should be Expanded to Identify Marine Habitats and Include Hudson River Tributaries.

A. Areas of the Long Island Sound and New York Bight should be designated as critical habitat for subadult and adult Atlantic Sturgeon.

NMFS contends that, due to a lack of information, it cannot at this time identify physical or biological features in the marine environment essential to the New York Bight DPS.²⁷ However, evidence indicates that Atlantic sturgeon congregate in the marine waters of the Long Island Sound and the New York Bight, particularly within the 50-meter depth contour.

Marine environments play an important role in the successful recruitment of Atlantic sturgeon.²⁸ Previous surveys of Atlantic sturgeon populations reveal a troubling inconsistency between the abundance of juvenile and adult Atlantic sturgeon populations in and around the Hudson River.²⁹ While surveys show that juveniles are increasing in abundance in the River, mature fish populations in marine waters remain low.³⁰ This inconsistency leads to “a concern that an increase in premigrant juveniles is not resulting in an increased abundance of late juvenile and adult Atlantic sturgeon.”³¹

The New York Bight and the Long Island Sound support adult populations of Atlantic sturgeon from the Hudson River estuary.³² At a minimum, aggregation areas along Long Island should be designated as critical habitat for Atlantic sturgeon. As one study concluded:

²⁷ 81 Fed. Reg. 35709.

²⁸ See Keith J. Dunton et al., *Marine Distribution and Habitat Use of Atlantic Sturgeon in New York Lead to Fisheries Interaction and Bycatch*, 7:1 MARINE AND COASTAL FISHERIES: DYNAMICS, MANAGEMENT, AND ECOSYSTEM SCIENCE 19 (2015).

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

³² 81 Fed. Reg. at 35,707.

In addition to protection in the Hudson River, concentrations of Atlantic Sturgeon, combined with the high incidence of bycatch during the spring and fall off western Long Island, indicate the need for spatial and temporal marine fisheries closures to reduce bycatch and allow population recovery. Because several distinct and endangered populations segments are inadvertently caught in the [New York Bight], protecting aggregation areas off Long Island will impact the recovery of significant segments of the Atlantic Sturgeon population.³³

Marine areas are critical to the conservation of Atlantic sturgeon. They spend most of their lives there, where they are vulnerable to various threats, including commercial fishery bycatch, dredging, and vessel strikes. Atlantic sturgeon are known to use inshore marine areas, like mouths of estuaries, bays, inlets, narrow migration corridors along the coast. Such areas have been designated as critical habitat for other species of sturgeon, including green sturgeon and Gulf sturgeon. Marine area designations could be based on known occupied areas (i.e., congregation areas, migration routes), the associated physical habitat conditions in the occupied areas, or more dynamic conditions such as seascapes (i.e., based on ocean color and sea surface temperature).

Continuing uncertainty about adult Atlantic sturgeon habitat is no reason to disregard the best available science. NMFS knows that “[s]ubadult and adult Atlantic sturgeon use marine waters to traverse between estuarine areas, particularly within the 50 meter depth contour.”³⁴ The agency also knows that adult Atlantic sturgeon congregate in marine environments.³⁵ Therefore, known aggregation areas within the 50 meter depth contour should be designated as critical habitat.

B. Additional tributary segments of the Hudson River should be designated as critical habitat for the New York Bight DPS of Atlantic Sturgeon.

The proposed rule would establish critical habitat for the New York Bight DPS of Atlantic sturgeon in the Hudson River from the Federal Dam downstream to where the main stem empties into the New York Harbor.³⁶ While Riverkeeper and Scenic Hudson agree that the main stem of the Hudson River should be designated as critical habitat, tributaries of the river should not be ignored.

³³ Dunton, *supra* note 28, at 31.

³⁴ 81 Fed. Reg. at 35,709.

³⁵ 81 Fed. Reg. at 35,709.

³⁶ 81 Fed. Reg. at 35,705; 81 Fed. Reg. at 35,717.

Tributaries are vital components of the estuarine habitat that Atlantic sturgeon need to reproduce and develop.³⁷ Atlantic sturgeon spawn in freshwater rivers and develop in estuaries before migrating to marine waters.³⁸ They are an anadromous fish, returning to the same freshwater rivers to reproduce.³⁹ New York's Hudson River Estuary Management Act defines the Hudson River estuary as "the tidal waters of the Hudson River, including the tidal waters of its tributaries and wetlands..." from the Federal Dam to the New York Harbor.⁴⁰ The Hudson River Estuary Program, a collaborative effort led by the New York State Department of Environmental Conservation, views the restoration of tributaries as essential to combating the decline of fish populations in the Hudson River, including Atlantic sturgeon.⁴¹ Tributaries are directly connected to the main stem, and conditions in tributaries affect the Hudson River. NMFS should recognize that tidally-connected tributaries are essential to the ecosystem that supports Atlantic sturgeon populations and designate those tributaries as critical habitat.

Riverkeeper and Scenic Hudson urge NMFS to include the tributaries and tributary segments in the following table. We recognize that physical barriers, like dams and

³⁷ New York State Department of Environmental Conservation, *The Atlantic Sturgeon: The Symbol of the Hudson River Estuary*, <http://www.dec.ny.gov/lands/5084.html> (last visited September 1, 2016); NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION HUDSON RIVER ESTUARY PROGRAM, HUDSON RIVER ESTUARY ACTION AGENDA 2015-2020 62 (2015), available at http://www.dec.ny.gov/docs/remediation_hudson_pdf/dhreaa15.pdf (stating that "[t]he estuary serves as a spawning and nursery ground for important fish and shellfish species, such as ... Atlantic and shortnose sturgeon..."). DANIEL E. MILLER, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, HUDSON RIVER ESTUARY HABITAT RESTORATION PLAN iii (2013) (available at http://www.dec.ny.gov/docs/remediation_hudson_pdf/hrhrp.pdf (stating that "[c]oastal migratory fish, such as...Atlantic sturgeon...rely on the Hudson River Estuary for spawning, nursery, and forage habitat.")).

³⁸ 81 Fed. Reg. at 35,703.

³⁹ 81 Fed. Reg. at 35,703.

⁴⁰ N.Y. ENVTL. CONSERV. LAW § 11-0306 (Consol. 2016) (*emphasis added*); New York State Department of Environmental Conservation, *Hudson River Estuary Program Boundaries* (2008), http://www.dec.ny.gov/docs/remediation_hudson_pdf/hrepb.pdf; New York State Department of Environmental Conservation, *The Hudson Estuary: A River That Flows Two Ways*, <http://www.dec.ny.gov/lands/4923.html> (last visited September 1, 2016).

⁴¹ Miller, *supra* note 37, at 8 (stating that "[s]uccessful restoration of high quality spawning, nursery, and refuge habitats in the Hudson River estuary, including tributaries, will allow greater spawning success and survival of young-of-year fish.")

impassible rapids, can impede movement to and from spawning grounds.⁴² For tributaries that contain those types of obstructions, Riverkeeper and Scenic Hudson recommend including the downstream portion as critical habitat.

Tributaries and Tributary Segments

Lents Cove	Ramshorn Creek
Annsville Creek	Catskill Creek below the rapids
Popolopen Creek	Stockport Creek below the dam
Constitution Marsh & Foundry Cove	Coxsackie Creek
Moodna Creek below Route 9W	Schodack Creek
Wappinger Creek below the rapids	Moordener Kill
Rondout Creek below the dam	Normans Kill
Esopus Creek below the dam	Mohawk River below the locks
Jansen Kill below Route 9G	

The proposed rule identifies certain areas of the main stem of the Hudson River where studies have shown that Atlantic sturgeon reproduce and develop. For example, juvenile fish live in the Hudson River estuary from at least Kingston downstream to the Tappan Zee Bridge.⁴³ Several tributaries join the main stem of the Hudson River in that stretch, including Rondout Creek, Wappinger Creek, Moodna Creek, Constitution Marsh & Foundry Cove, Popolopen Creek, Annsville Creek, and Lents Cove. These tributaries and tributary segments below obstructions are directly connected to juvenile critical habitat, and should be included in the designation.

The proposed rule also states that “[s]pawning may occur in multiple sites within the river.”⁴⁴ NMFS specifically identified the Hyde Park area between Kingston and Poughkeepsie as a likely spawning grounds based on scientific studies and historical documentation.⁴⁵ In addition, NMFS recognized an area between Poughkeepsie and Beacon as a likely spawning location because of its similarity to the Hyde Park area in freshwater content and water depth.⁴⁶ Rondout Creek joins the main stem of the Hudson River just upstream of Hyde Park and Wappinger Creek joins the main stem between Poughkeepsie and Beacon. The proximity of these tributaries to likely

⁴² 81 Fed. Reg. at 35,717.

⁴³ 81 Fed. Reg. at 35,706.

⁴⁴ 81 Fed. Reg. at 35,706.

⁴⁵ 81 Fed. Reg. at 35,705.

⁴⁶ 81 Fed. Reg. at 35,705.

spawning grounds provides additional support for including them in the critical habitat designation.

Furthermore, NMFS recognizes the possibility that, in addition to a spring spawning season, the New York Bight DPS of Atlantic sturgeon may spawn in the fall.⁴⁷ If so, "it is likely that the fall spawning would occur or would have occurred further upstream than the locations for spring spawning in rivers."⁴⁸ Therefore, tributaries and tributary segments below obstructions further upstream, including Esopus Creek, Jansen Kill, Ramshorn Creek, Catskill Creek, Stockport Creek, Coxsackie Creek, Schodack Creek, Moordener Kill, Normans Kill, and the Mohawk River should be considered in the critical habitat designation.

Water quality data that Riverkeeper collects and maintains for some tributaries show no reason to exclude them from the critical habitat designation. According to the proposed rule, "[t]he physical features essential for the conservation of [the DPSs of Atlantic sturgeon] are those habitat components that support successful reproduction and recruitment."⁴⁹ Hard-bottom substrate and low salinity (0.0 – 0.5 parts per thousand) waters are the essential habitat components for spawning and early life stages.⁵⁰ Gradually increasing salinity (0.5 – 30 parts per thousand) and soft substrate are the essential habitat components for juvenile life stages.⁵¹ Additional habitat components include water of sufficient depth with no physical barriers to allow adult and juvenile fish to move freely, and suitable temperature, salinity, and oxygen levels for all life stages.⁵² At least three years of salinity and temperature data for Annsville Creek, Wappinger Creek, Rondout Creek, Esopus Creek, Catskill Creek, and the Mohawk River all fall within the habitat component ranges for spawning and early life and/or juvenile stages of Atlantic sturgeon.⁵³

Riverkeeper and Scenic Hudson urge NMFS to include this broader set of tributaries and tributary segments as critical habitat. Should NMFS choose not to do so, we ask

⁴⁷ 81 Fed. Reg. at 35,704.

⁴⁸ 81 Fed. Reg. at 35,704.

⁴⁹ 81 Fed. Reg. at 35,717.

⁵⁰ 81 Fed. Reg. at 35,717.

⁵¹ 81 Fed. Reg. at 35,717.

⁵² 81 Fed. Reg. at 35,717.

⁵³ See Riverkeeper, Inc., Hudson River Data, <http://www.riverkeeper.org/water-quality/hudson-river/> (last visited September 1, 2016).

that the agency explain its rationale for omitting these vital components of the Hudson River estuary from the critical habitat designation.

III. NMFS Should Evaluate How Significant and Growing Uses of the Hudson River Will Adversely Affect Atlantic Sturgeon Critical Habitat.

Riverkeeper and Scenic Hudson agree that certain structures and activities, including barriers and in-water structures, land development, commercial and recreational activities, dredging, climate change, and water withdrawals illustrate why and how the physical features essential for successful reproduction and recruitment of Atlantic sturgeon may require special management.⁵⁴ We also agree that many activities, including those previously mentioned, will adversely affect critical habitat for Atlantic sturgeon.⁵⁵

Riverkeeper and Scenic Hudson request that specific language be included in the final rule to address known, significant, and growing uses that will adversely impact Atlantic sturgeon habitat in the Hudson River. These uses should be fully evaluated, as they demonstrate why the physical features that are essential to the conservation of Atlantic sturgeon may require special management considerations or protections. They include: major oil storage facilities; public/private utilities such as petroleum and gas pipelines; horizontal directional drilling; proposed additional tug and barge anchorages, including those for refined and crude oil transport barges; bulkhead permits; and local waterfront revitalization initiatives. The unique and localized impacts from large water intake facilities and drinking water intakes on the Hudson River should also be fully examined. These additional considerations further support NMFS's conclusion that the combination of physical features and the need for special management warrant the designation of critical habitat in the occupied geographical area of the DPSs.

IV. Continued Research Is Necessary for Full Understanding of the Species.

Finally, while we believe this designation is appropriate given our current knowledge about the species biology, there is a need for continued research to fill many of the gaps in the available information. Therefore, we urge the National Oceanic and Atmospheric Administration and NMFS to:

- Continue supporting research into the biology and habitat needs of the species, including the potential use of additional habitats, such as tidal tributaries to the main stem rivers, to improve the chances of species recovery;

⁵⁴ 81 Fed. Reg. at 35,709.

⁵⁵ 81 Fed. Reg. at 35,713.

**Comments of Riverkeeper, Inc., and Scenic Hudson, Inc.
on the Designation of Critical Habitat for Atlantic Sturgeon
by the National Marine Fisheries Service.**

September 1, 2016

- Continue to support research to characterize the important physical and biological habitat features of marine environments for subadult and adult Atlantic sturgeon, and to understand the importance of marine migration routes and congregation areas to rates of survival and spawning; and
- Ensure there is an avenue to regularly update the critical habitat designation with new information.

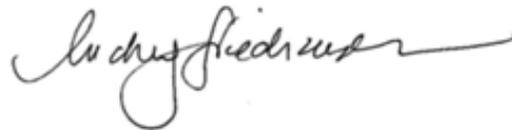
In sum, Riverkeeper and Scenic Hudson appreciate and support the proposal to designate the entire main stem of the Hudson River as critical habitat for the New York Bight DPS of Atlantic sturgeon. However, we also urge NMFS to expand the critical habitat designation as discussed above, and to fully evaluate the range of adverse impacts associated with significant and growing uses on the Hudson River. Finally, we urge NMFS to continue to research this important species and update the critical habitat designation if warranted.

On behalf of our members and our constituents, we thank you for the opportunity to comment on the proposed critical habitat designation. Please do not hesitate to contact us if you have any questions.

Sincerely,



John Parker
Director of Legal Programs
Riverkeeper, Inc.



Audrey Friedrichsen, Esq., LL.M.
*Land Use and Environmental
Advocacy Attorney*
Scenic Hudson, Inc.

Joined by:

Daniel E. Estrin
General Counsel & Legal Director
Waterkeeper Alliance

ATTACHMENT 1

EdgeTech Discover - 4125D Dual Frequency Side-Scan

File View Configuration Control Help

Off - 40 + N - 40 + T - 60 + Off - 40 + N - 71 + T - 90 +

Meters 35 30 25 20 15 10 5 HF SR 5 10 15 20 25 30 Meters

Meters 40 35 30 25 20 15 10 5 LF SR 5 10 15 20 25 30 35 Meters

Towfish Control Video Gains Display Disk Bottom Track Grids Image Capture Printer Status

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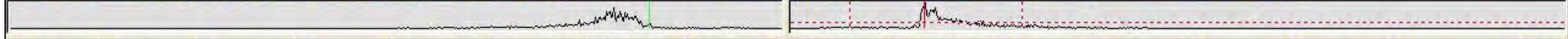
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Video Gain: 71.0 71.0 40.0 40.0

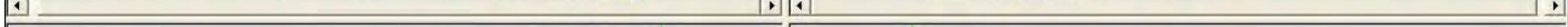
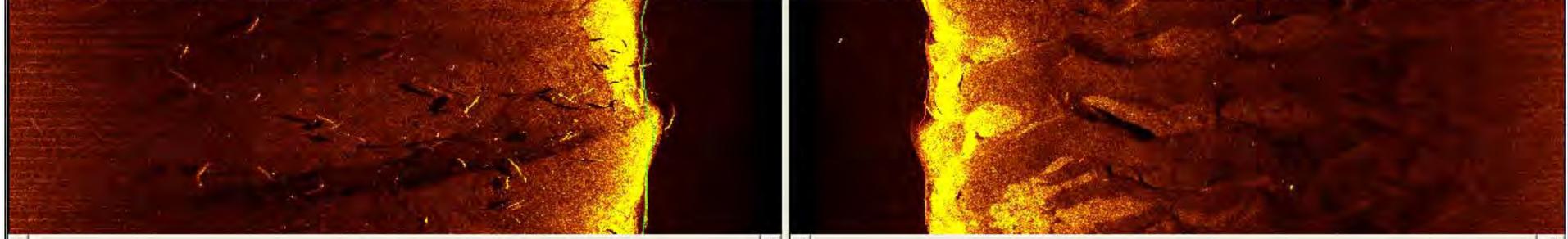
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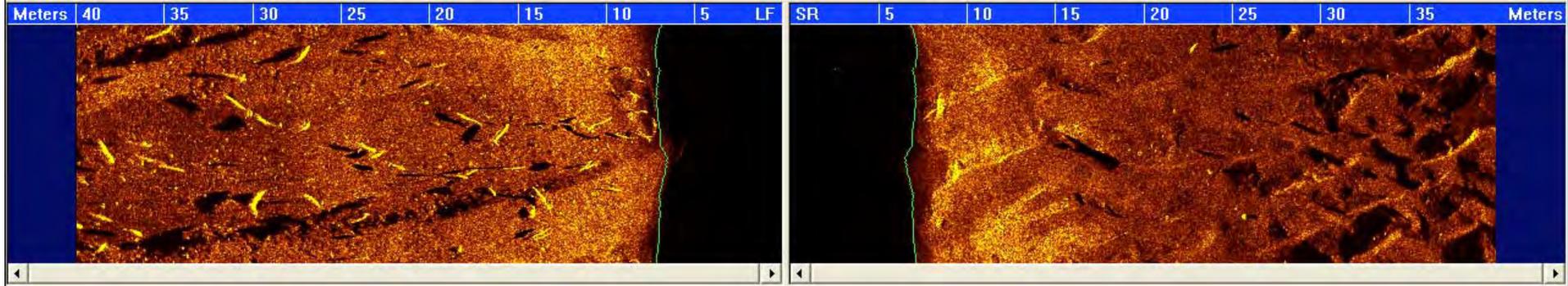
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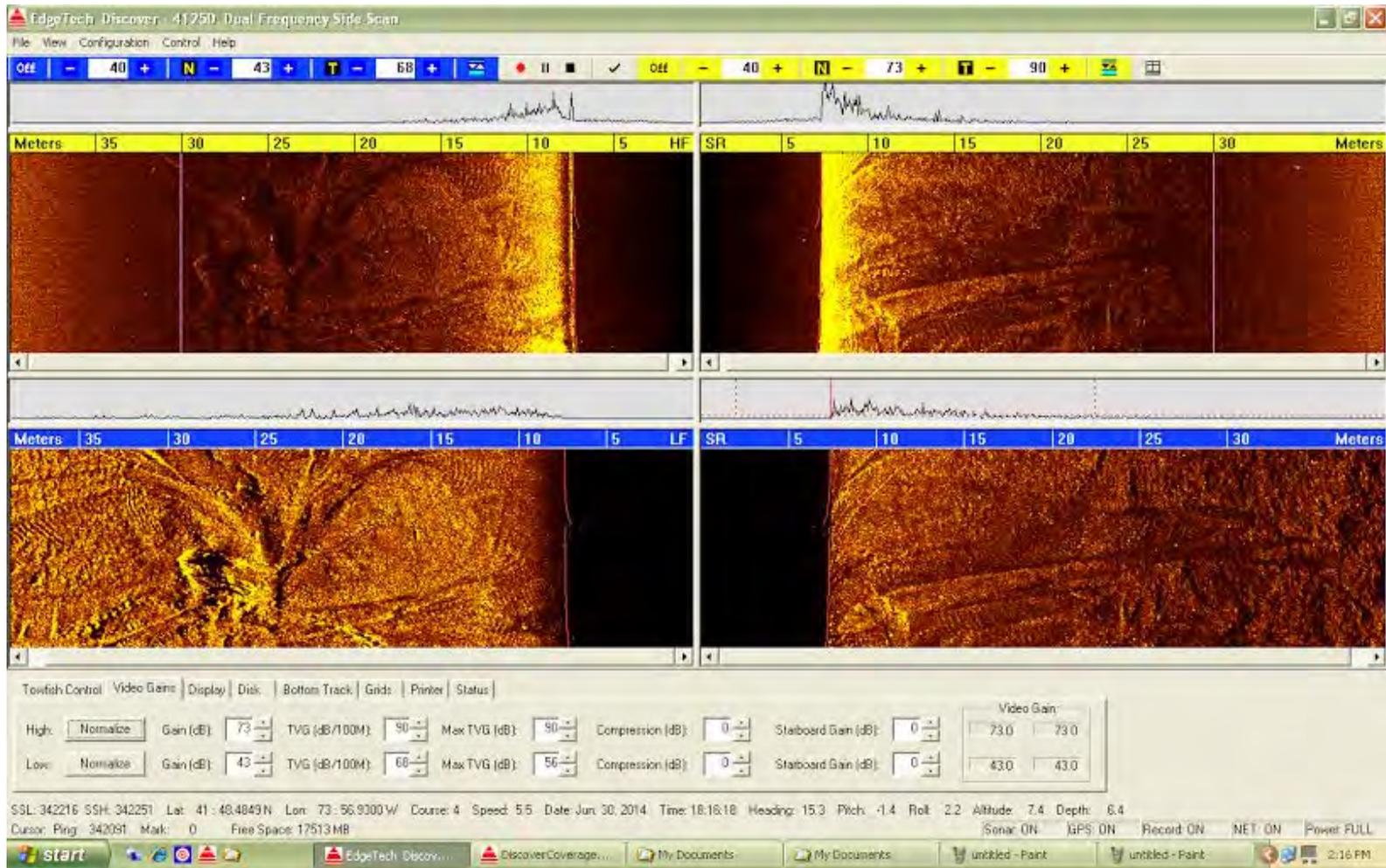
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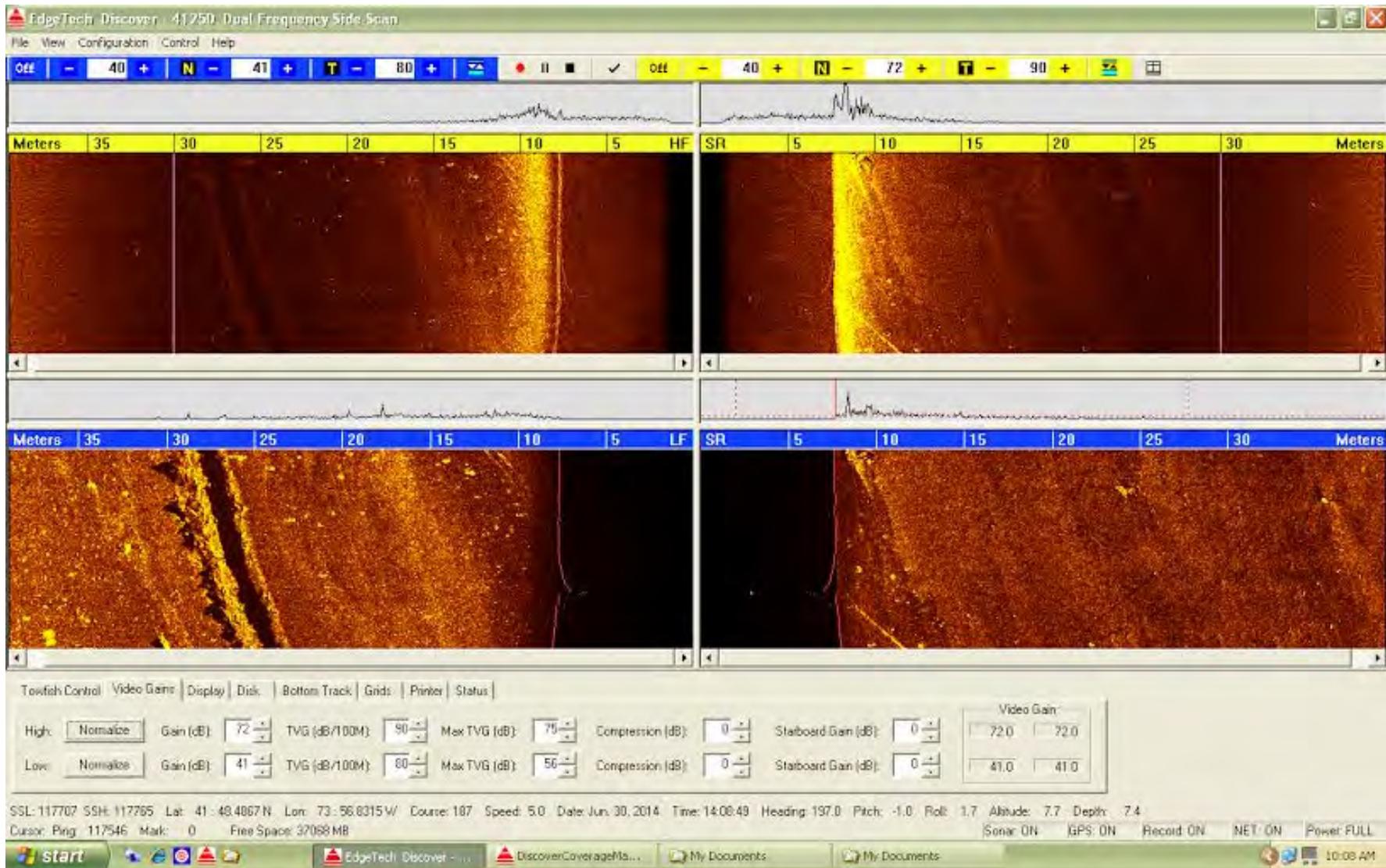
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Cursor: Ping: 105576 Mark: 0 Date: Jun. 16, 2016 Time: 15:11:28 Free Space: 159834 MB Sonar: ON GPS: ON Record: ON NET: ON Power: FULL

ATTACHMENT 2

Scour Marks Hyde Park





EdgeTech Discover - 4125D Dual Frequency Side Scan

File View Configuration Control Help

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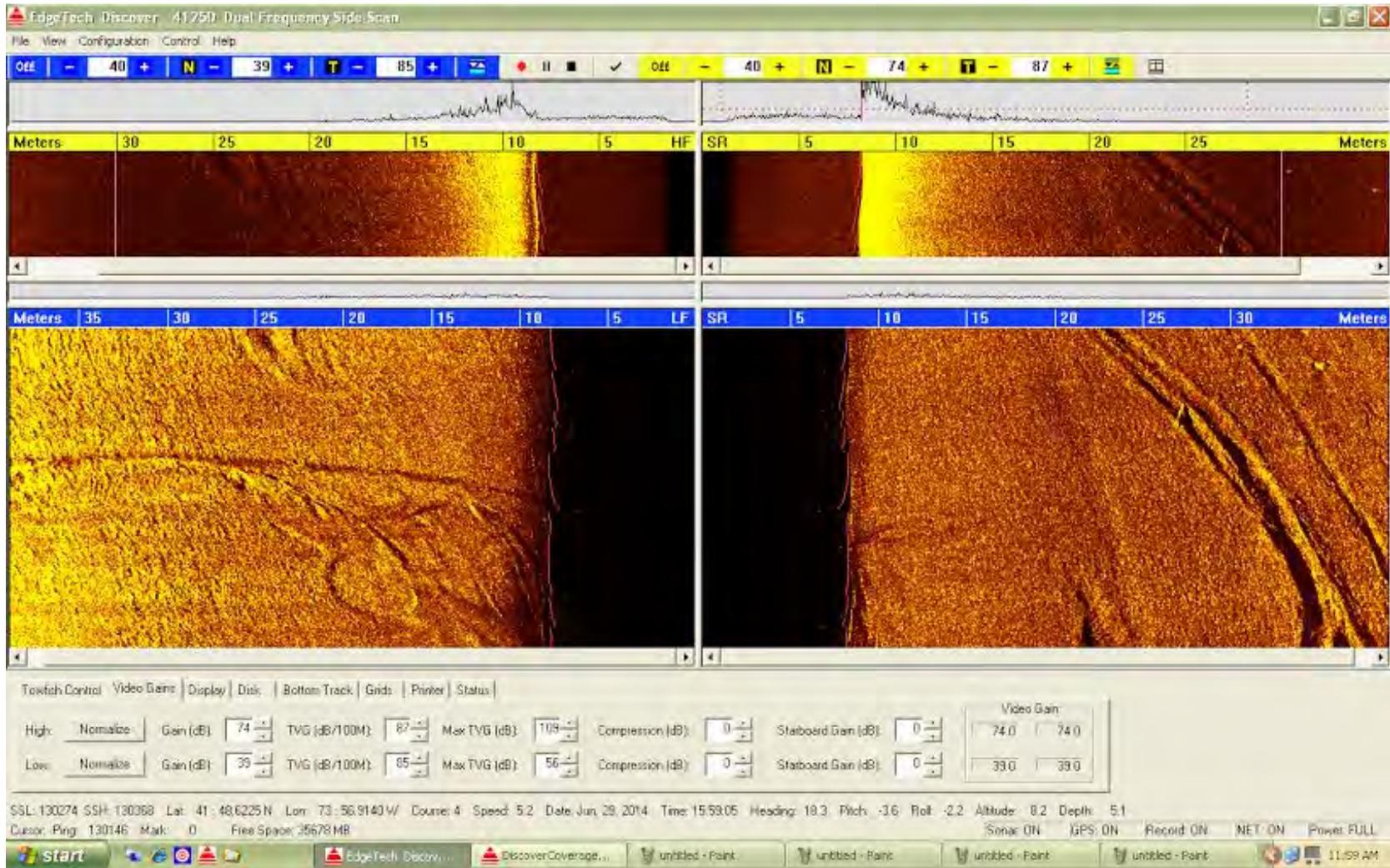
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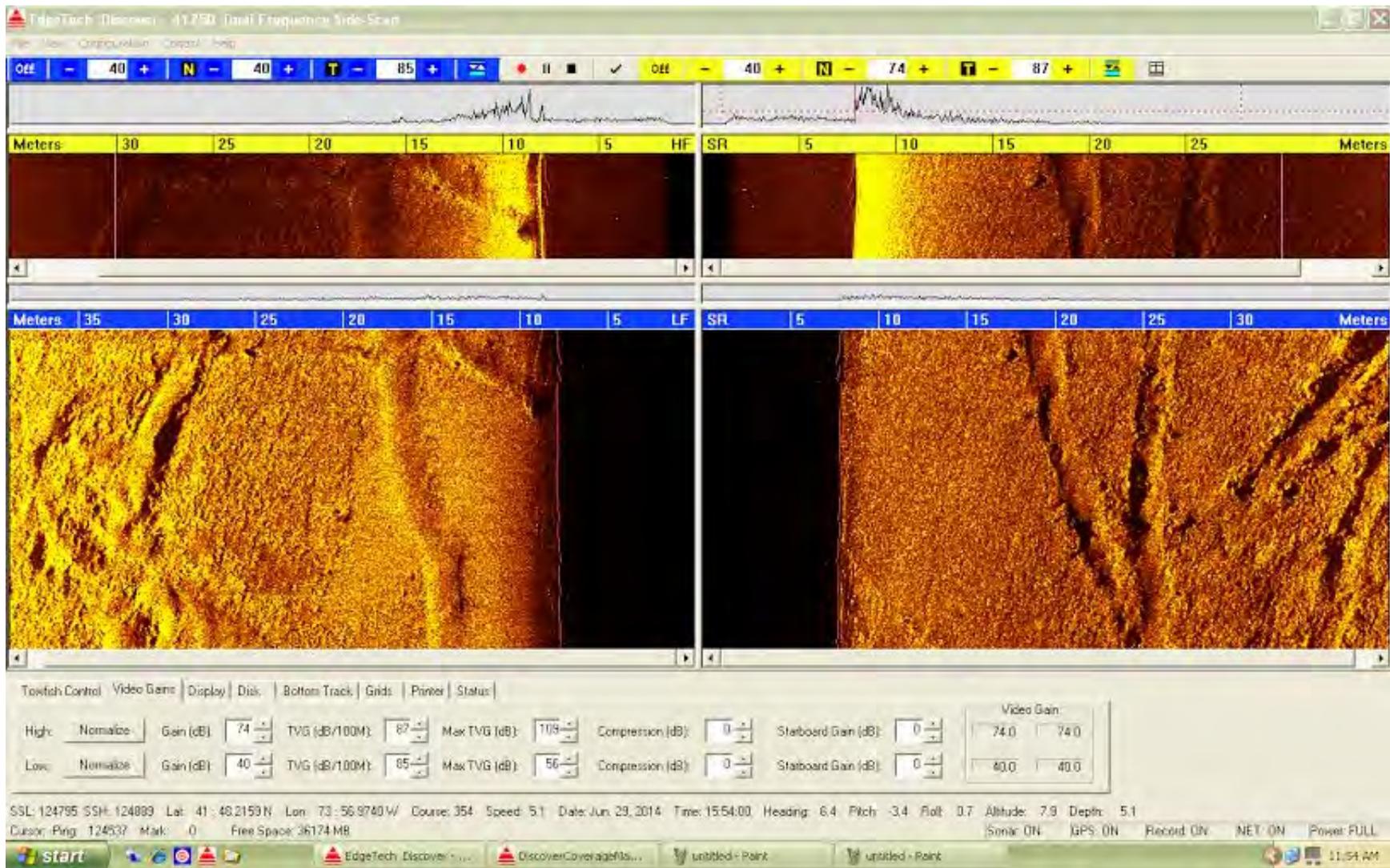
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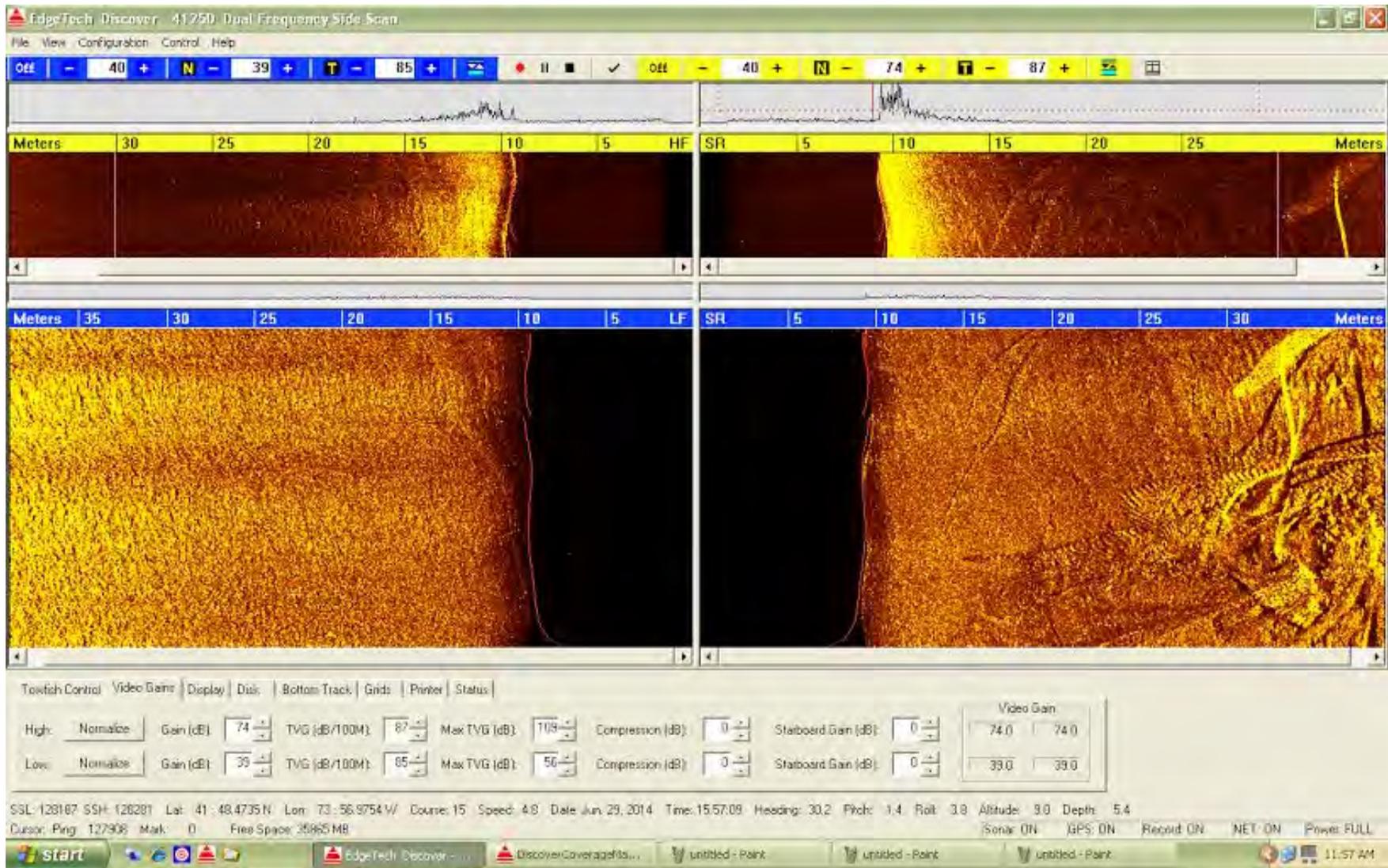
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Anchor from Ship

Attachment H



October 22, 2018

Via electronic and certified mail

Mr. Daniel Falt, Project Manager
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New York District Planning Division-Environmental Branch
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Ms. Daria Mazey, Project Biologist
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New York District Planning Division-Environmental Branch
26 Federal Plaza
New York, NY 10278-0090
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Re: Riverkeeper Comments on the Revised Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Impact Statement - Atlantic Coast of New York - East Rockaway Inlet to Rockaway Inlet and Jamaica Bay (August 2018)

Dear Mr. Falt and Ms. Mazey:

Thank you for the opportunity to submit comments¹ on behalf of Riverkeeper, Inc. in response to the U.S. Army Corps of Engineers (“Corps”) New York District’s August 2018 *Revised Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Impact Statement for East Rockaway Inlet to Rockaway Inlet and Jamaica Bay* (“Revised Draft EIS”).²

We welcome the Corps’ focus and attention on “examin[ing] coastal storm risk management problems and opportunities for the East Rockaway Inlet to Rockaway Inlet and

¹ These comments were prepared with the assistance of and in part by the Environmental Litigation Clinic at Pace University’s Elisabeth Haub School of Law.

² U.S. Army Corps of Eng’rs N.Y. Dist., *Revised Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Impact Statement - Atlantic Coast of New York - East Rockaway Inlet to Rockaway Inlet and Jamaica Bay* (August 2018) [hereinafter “Revised Draft EIS”] available at <http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/ny/coast/Rockaway/RockawayJamaicaBayRevisedDraftGRREIS083018.pdf?ver=2018-08-31-093656-900>.

Jamaica Bay study area,”³ also known as the Jamaica Bay Reformulation Study. Riverkeeper acknowledges that climate change is already significantly affecting—and will continue to affect with increasing severity—New Yorkers’ interactions with the oceanic and riverine ecosystems which surround the islands of New York City. We agree that sea level rise and more frequent, intense storms require planning and action. Riverkeeper advocates for reexamining land use decisions and constructing more protective, resilient shorelines over time rather than installing massive, in-water barriers that threaten to change the nature of the Jamaica Bay ecosystem forever. The Corps can and should address flooding threats New Yorkers face without sacrificing this entire ecosystem.

Additionally, we commend the Corps for recognizing that a “substantial revision” to the Draft EIS⁴ was necessary in light of “significant (extent and content) partner, agency, and public comments” and feedback from Corps Headquarters.⁵ Further, such reevaluation is essential in light of changes to the August 2016 Draft EIS’s “tentatively selected plan” resulting from the Corps’ decision to “move all further evaluation of the Jamaica Bay storm surge barrier measure, a significant component of the TSP [tentatively selected plan for Jamaica Bay-Rockaway Inlet], to the ongoing New York and New Jersey Harbor and Tributaries Feasibility Study.”⁶

Comments of Riverkeeper, Inc.

Below we provide our comments on 1) Riverkeeper’s procedural concerns now that the Jamaica Bay/Rockaway Inlet Barrier portion of the Jamaica Bay Reformulation Study has been transferred to the NYNJHAT project for full review; 2) concerns about the adequacy of the Corps’ response to our December 2016 comments on the Draft EIS; 3) new, highly relevant and significant information which must be evaluated and taken into account in the Final EIS for this project; and 4) our comments on the remaining measures in the Revised Draft EIS for the East Rockaway Inlet to Rockaway Inlet and Jamaica Bay recommending shoreline projects.

I. Transfer of Bay Measures from Jamaica Bay Reformulation Study to NYNJHAT

Transferring the Jamaica Bay/Rockaway Inlet Barrier proposal from the Jamaica Bay Reformulation Study to the NYNJHAT Feasibility Study raises numerous concerns. The original Draft EIS for Jamaica Bay/Rockaway Inlet considered measures both in the bay and on the shore to address coastal storm risks.⁷ As the Revised Draft EIS explains, the Jamaica Bay Reformulation Study now only addresses shoreline measures for dealing with coastal storm risks,

³ *Id.* at i.

⁴ U.S. Army Corps of Eng’rs N.Y. Dist., *Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Impact Statement - Atlantic Coast of New York - East Rockaway Inlet to Rockaway Inlet and Jamaica Bay* (August 2016) [hereinafter “Draft EIS”] available at http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/ny/coast/Rockaway/RockFeasStudy/1_Rockaway%20Draft%20Integrated%20HSGRR%20and%20EIS.pdf?ver=2016-08-19-094124-930.

⁵ Revised Draft EIS at i.

⁶ *Id.*

⁷ See U.S. Army Corps of Eng’rs, *East Rockaway Reformulation Study Public Meeting Presentation* at 5 (April 22, 2015) (discussing “shoreline alternatives” 0 through 3 and “bay alternatives” A through D) available at <http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/ny/coast/Rockaway/East%20Rockaway%20Reformulation%20Presentation%2022%20April%2015.pdf>.

and moves the in-water, bay measures to the NYNJHAT study for further consideration. However, this shift creates numerous procedural concerns that the Corps must consider and address in its final EIS.

First, since funding was already earmarked in the Hurricane Sandy Recovery Fund for the projects contemplated by the Jamaica Bay Reformulation Study, the Corps must explain—now that the project proposals have been split up—how any such funding would be allocated among shoreline and bay measures.⁸ Similarly, the Corps must ensure that all environmental impacts associated with the alternatives proposed for the bay are adequately studied in the NYNJHAT study in light of the implementation of the recommended shoreline measures in the Rockaway Inlet/Jamaica Bay region. Additionally, the Corps should explain which of the NYNJHAT study alternatives would incorporate the bay measures shifted from the Jamaica Bay Reformulation Study. The Corps must clarify which NYNJHAT alternatives would include the Jamaica Bay/Rockaway Inlet barrier alternatives.

Further, the bay measure alternatives proposed in the Jamaica Bay Reformulation Study are authorized under “an existing, authorized project for the area that was constructed in 1977 and renourished through 2004, based upon the 1965 construction authorization”⁹ under the Flood Control Act of 1965 with an “original multiple purpose” of “coastal erosion control and coastal flooding protection.”¹⁰ However, the NYNJHAT Feasibility Study is authorized under Public Law 84-71, June 15, 1955 (69 Stat. 132) with the purpose of conducting an investigation into potential coastal storm risk management solutions.¹¹ It specifically directs the Corps to examine damages in coastal and tidal areas due to coastal storms such as hurricanes “and of possible means of preventing loss of human lives and damages to property, with due consideration of the economics of proposed breakwaters, seawalls, dikes, dams, and other structures, warning services, or other measures which might be required.”¹²

The Corps must reconcile the studies’ differing statutory mandates in discussing the purposes and goals these alternatives would seek to meet. With different alternatives formulated in pursuit of differing goals, the bay measure alternatives shifted to the NYNJHAT for further study may need to be reformulated. The Corps should disclose each statutory mandate and how they may differ or align in its discussion of its decision to shift the bay measure alternatives to the NYNJHAT study.

⁸ See U.S. Army Corps of Eng’rs, *Fact Sheet - Atlantic Coast of New York City, East Rockaway Inlet to Rockaway Inlet (Rockaway Beach) and Jamaica Bay* (Feb. 2018) [hereinafter “Rockaway Inlet/Jamaica Bay Fact Sheet”] available at <https://www.nan.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/487597/fact-sheet-atlantic-coast-of-new-york-city-east-rockaway-inlet-to-rockaway-inle/> “Following the passage of the Disaster Relief Appropriations Act of 2013, the study was fully federally funded.”)

⁹ Revised Draft EIS at i.

¹⁰ *Notice of Intent To Prepare an Environmental Impact Statement for the East Rockaway Inlet to Rockaway Inlet and Jamaica Bay Reformulation Study* 80 Fed. Reg. 17,729, 17,730 (April 2, 2015) available at <https://www.gpo.gov/fdsys/pkg/FR-2015-04-02/pdf/2015-07580.pdf> (“The original multiple purpose (coastal erosion control and coastal flooding protection) project for East Rockaway Inlet to Rockaway Inlet and Jamaica Bay, New York was authorized by the Flood Control Act of 1965 (Pub. L. 89–298).”).

¹¹ See *Notice of Intent To Prepare a Tiered Environmental Impact Statement for the New York New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study*, 30 Fed. Reg. 6169, 6169 (Feb. 13, 2018) available at <https://www.gpo.gov/fdsys/pkg/FR-2018-02-13/pdf/2018-02874.pdf>.

¹² See Rockaway Inlet/Jamaica Bay Fact Sheet.

Finally, similar to Riverkeeper's December 2016 comments on the Draft EIS, we are concerned about the Corps' lack of information about the bay measure alternatives even as they are moved to the NYNJHAT study. First, the Corps' failed to provide adequate information and detail about the bay measure alternatives in the Draft EIS. In response to these comments, the Corps merely repeatedly stated that these concerns would be "reevaluated" "[a]s the Jamaica Bay Planning Reach segment is integrated into the New York and New Jersey Harbor and Tributaries CSRM [coastal storm risk management] Study."¹³ However, the Corps has similarly failed to provide information about other in-water alternatives thus far in the NYNJHAT study process. We are concerned that the bay measure alternatives shifted into the NYNJHAT study will continue to receive short shrift by the Corps.

As echoed in our original comments on Draft EIS, project information provided by the Corps both on the bay measure alternatives and NYNJHAT alternatives has been unsatisfactory. The Corps has provided only meager information to the public about the proposed alternatives, and the studies, research and data underlying the Jamaica Bay/Rockaway Inlet Barrier proposal. Without the underlying data, studies, or research information to critically evaluate, the public is robbed of its right to meaningfully comment on the proposals. In fact, the CEQ regulations explain that National Environmental Policy Act ("NEPA")¹⁴

procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.¹⁵

With limited specific information currently available, the Corps can hardly be said to have provided "high quality" environmental information to the public "before decisions are made and before actions are taken."¹⁶

II. Corps Response to Riverkeeper's Comments on the Draft EIS

As the Corps is aware, the Pace University Environmental Litigation Clinic at the Elisabeth Haub School of Law ("PELC") submitted extensive comments on the original Draft EIS on December 2, 2016 on Riverkeeper's behalf. As reflected in the Revised Draft EIS, responses to many of those comments have been deferred for consideration in connection with the preparation of the NYNJHAT Feasibility Study,¹⁷ and, as such, those comments remain open and unresolved. Rather than restate them here, all comments from the December 2, 2016 comment letter submitted by PELC on behalf of Riverkeeper (attached here as Attachment A) are incorporated into this comment letter by reference. As to the specific responses and

¹³ Revised Draft EIS, App'x G at 56.

¹⁴ 42 U.S.C. §§ 4321 *et seq.*

¹⁵ 40 CFR § 1500.1(b).

¹⁶ *Id.*

¹⁷ *See* Revised Draft EIS, App'x G at 55-62.

additional information contained in the Revised Draft EIS, Riverkeeper has the following comments.

As noted above, responses to many of Riverkeeper's original comments have been deferred to the planned release of the NYNJHAT Feasibility Study.¹⁸ Indeed, it appears that the Corps concurs that further comments and analysis of environmental issues related to the storm barrier portion of the original tentatively selected plan ("TSP") should be deferred to the NYNJHAT Feasibility Study.¹⁹ Thus, these comments will not be addressed again here, but rather are incorporated by reference.²⁰ To the extent that the Corps provided substantive responses to Riverkeeper's comments, those responses are addressed below.

Riverkeeper expressed concern that the original Draft EIS failed to include sufficient detail to comply with the NEPA or to allow for adequate public review and comment.²¹ The specific information Riverkeeper identified as missing, however, was related to the storm surge barrier portion of the tentatively selected plan ("TSP"), which the Corps has made clear will now be included as part of the NYNJHAT study. Accordingly, Riverkeeper will withhold further comment on these issues until that document becomes available. Insofar as the Corps represents that the "Draft GRR/EIS has been revised to include more details, remove inconsistencies, and incorporate comments received on the 2016 draft,"²² Riverkeeper does not have further comments on those revisions.

Likewise, Riverkeeper's comments and concerns with data gaps, incomplete or outdated information, adverse effects on essential fish habitat, exacerbation of existing environmental issues and water quality impacts,²³ were focused on impacts of and information related to the storm barrier portion of the TSP. As to these issues, the Corps has stated that "The sufficiency of the analyses of effects to important fish species is being coordinated with the National Marine Fishery Service ("NMFS"). The Essential Fish Habitat ("EFH") Assessment has been revised to reflect the updates to the Recommended Plan and is included as part of the Environmental Compliance Appendix D. The latest available data was used for this analysis. If you are in possession of newer data, please provide."²⁴ Riverkeeper has no further comments with respect to the sufficiency or timeliness of data, or impacts to ecosystems or EFH, as they relate to the proposed work in the Revised Draft EIS. Riverkeeper will comment on those issues as they relate to the storm barrier, if such issues still remain, in the context of the NYNJHAT Feasibility Study, which appears to be what the Corps envisions.²⁵

¹⁸ See Revised Draft EIS, App'x G at 55-62.

¹⁹ See *id.* at 56 ("In accordance with SMART Planning, conceptual designs are further developed as the study progresses. The Revised Draft GRR/EIS includes a more detailed level of Feasibility Design. As the Jamaica Bay Planning Reach segment is integrated into the New York and New Jersey Harbor and Tributaries CSRM Study, barrier design and operations as well as the potential environmental consequences of barrier construction and operation will be reexamined as part of the CSRM Study.").

²⁰ See Attach. A.

²¹ See *id.* at 2-7.

²² See Revised Draft EIS, App'x G at 56.

²³ See Attach. A at 5-7.

²⁴ See Revised Draft EIS, App'x G at 56.

²⁵ *Id.*

Similarly, the remaining numbered and bulleted comments in Riverkeeper’s original comment letter focused on the impacts of, and analysis regarding the storm surge barrier.²⁶ As recognized by the Corps in its responses,²⁷ these issues are more appropriately addressed in connection with the NYNJHAT Feasibility Study. As such, these comments are merely incorporated by reference here, and Riverkeeper reserves the right to raise them, to the extent necessary, in that public comment period.

III. Relevant New Information to Incorporate into the Final EIS

The Corps must take recent NYC Council bills into account in its evaluation of the project recommendations in the Revised Draft EIS, and it must incorporate such analysis into the Final EIS. In early October 2018, Councilman Costa Constantinides’s (D-Astoria) package of environmental protection bills passed the New York City Council.²⁸ These bills are currently awaiting signature by Mayor Bill de Blasio, and would require mandatory creation of flood maps by the City, in an attempt to alleviate damage from sea-level and storm-related emergencies, and would re-establish the Jamaica Bay Task Force. The Corps must commit to coordination with the City’s Jamaica Bay Task Force, if reestablished, in implementing the shoreline measures recommended in the Revised Draft EIS. The flood mapping proposed in these bills would be more detailed and more conservative than existing Federal Emergency Management Agency (“FEMA”) flood maps. The Final EIS must incorporate the additional flood mapping information gathered and created through the passage of these bills.

Additionally, the Corps must consider that the bay measure alternatives initially contemplated by the Jamaica Bay Reformulation Study (now moved to the NYNJHAT study) may never actually be implemented. In its public meetings on the NYNJHAT Feasibility Study alternatives, the Corps has acknowledged that many of the in-water barrier alternatives being studied would take decades to design, permit, and secure funding from Congress; none of the alternatives being studied under NYNJHAT are currently funded. Further, the Corps has stated that the in-water barrier alternatives could cost billions of dollars to implement, with the largest barrier—a 5-mile sea gate from Rockaway to Sand Hook—currently estimated to cost up to \$140 billion to construct, with additional millions of dollars of maintenance costs. Thus, it is very real that the NYNJHAT proposals may never actually be funded nor constructed, or may be delayed decades before being implemented.

In contrast, the Jamaica Bay Reformulation Study’s shoreline measures are already funded by Congress’ disaster relief appropriations in the wake of Superstorm Sandy.²⁹ Thus, the

²⁶ See Attach. A at 10-14.

²⁷ See Revised Draft EIS, App’x G 58-62.

²⁸ See New York City Council, District Councilmember 22 Costa Constantinides, *Press Release: Elected Officials, Residents, and Advocates Celebrate Passage of Jamaica Bay Bills to Protect This National Treasure and Surrounding Communities* (Sept. 28, 2018) available at <https://council.nyc.gov/costa-constantinides/2018/09/28/elected-officials-residents-and-advocates-celebrate-passage-of-jamaica-bay-bills-to-protect-this-national-treasure-and-surrounding-communities/>; see also Matt Walters, *New city bills pass to protect the bay*, Queens Chronicle, Oct. 4, 2018 available at http://m.qchron.com/mobile/editions/queenswide/new-city-bills-pass-to-protect-the-bay/article_d4480a3e-df66-515b-89a2-1918a5e0a860.html.

²⁹ See Rockaway Inlet/Jamaica Bay Fact Sheet (“Following the passage of the Disaster Relief Appropriations Act of 2013, the study was fully federally funded.”).

Corps must assess the effect of the already funded shoreline measures here in the Jamaica Bay Reformulation Study even if bay measures are never constructed. In the Final EIS, the Corps must evaluate the potential impact of bay measures never being implemented on the efficacy of shoreline measures that comprise the Rockaway Inlet/Jamaica Bay recommended projects here. These changed project assumptions and new information must be evaluated in the Final EIS.

IV. Shoreline Measures Recommended in the Revised Draft EIS

The shoreline measures recommended for implementation in the Revised Draft EIS for the Jamaica Bay Reformulation Study represent a fundamental, philosophical change to New York City's existing flood management strategy, and therefore must be carefully considered before being approved for implementation. The shoreline measures discussed in the Revised Draft EIS rely heavily on the use of pumping stations to remove salt water from low-lying areas (primarily located behind flood walls) as it intrudes during tidal and storm-related flooding events. This represents the first time that New York City would be opting to pump out storm water from actively flooding low-lying locations.³⁰

The Corps and local project sponsor the New York City Office of Resiliency and Recovery³¹ must carefully evaluate the ongoing maintenance and operation costs of implementing such pumping stations. Operation and maintenance costs will only increase over time as flood pumps are utilized ever more frequently, and during ever more intense flood events—whether higher daily tidal surges, sea level rise, or storms of greater intensity and frequency due to climate change. Operation and maintenance costs will increase until a more permanent solution to flooding is implemented, proving that pumping stations act more as a stop-gap measure than a final solution to coastal flood risks.

Additionally, the agencies must evaluate the vulnerability introduced into this system by relying on electric pumping stations to preserve low-lying, flood-prone areas. For example, if electricity is lost to a pump during a rainfall event, tidal flood, or coastal storm, that entire previously protected area becomes immediately vulnerable to flooding. Further, the use of pumping stations in Jamaica Bay as a response to flood risks has a precedential effect for the rest of New York City as it will be forced to respond to future increased flood risks. The agencies must carefully consider the potential precedential effect of implementing measures like this in their Final EIS before putting forth a recommendation.³²

Despite our concerns about the implementation of flood management strategies such as pumping stations, we applaud the Corps for considering green infrastructure and natural and nature-based features in its shoreline proposal for Mid-Rockaway. We commend the Corps for

³⁰ Though gravity-fed pumping stations are also currently in use in New York City at sewage treatment plants, the current proposal extends and expands the use of this technology beyond relieving temporarily overwhelmed sewers to regular use during tidal and storm-related flooding.

³¹ Revised Draft EIS at ii (“The State of New York through the Department of Environmental Conservation (NYSDEC) is the non-federal sponsor, and the City of New York through the New York City Mayor’s Office of Recovery and Resiliency is the local sponsor to the NYSDEC.”)

³² Cf. 40 C.F.R. §1508.27(b)(6) (in evaluating the significance of an action, the agency must consider “[t]he degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration”).

recommending the creation of nine acres of wetland which function in conjunction with a flood wall and bulkhead to operate as a whole functioning system of flood protection. We ask that the Corps evaluate the extent to which other built features in its proposal could be complemented by green infrastructure or natural and nature-based features to create a more resilient system of flood protection for this region.

Conclusion

We thank the Corps for taking the time to revise the Draft EIS and respond to our comments. We look forward to reviewing all aspects of the agency's recommendation for the Rockaway Inlet/Jamaica Bay once more specific plans are released for public review, as well as the proposed Rockaway Inlet Barrier in the NYNJHAT Feasibility Study process.

Sincerely,

Richard Webster
Legal Director
Riverkeeper, Inc.

Attachment A

PACE ENVIRONMENTAL LITIGATION CLINIC, INC.

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ADMINISTRATOR

JENNIFER RUHLE

December 2, 2016

The U.S. Army Corps of Engineers, New York District
Planning Division-Environmental Branch
26 Federal Plaza
New York, New York 10278-0090

Re: Comments on the U.S. Army Corps of Engineers, New York District's Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Impact Statement

Dear Mr. Robert Smith and Mr. Daniel Fault:

Pace Environmental Litigation Clinic, Inc. submits the following comments on behalf of its client, Riverkeeper, Inc., in response to the U.S. Army Corps of Engineers' (Corps) request for comments on its *Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Impact Statement* (Draft EIS) for the Atlantic Coast of New York, East Rockaway Inlet to Rockaway Inlet and Jamaica Bay.

Under its tentatively selected plan (TSP), the U.S. Army Corps of Engineers (Corps) proposes to build 28.8 miles of new structures, including a storm surge gate (Barrier, or "Storm Surge Barrier") across Rockaway Inlet.¹ This project is estimated to cost over \$3.7-billion-dollars,² result in the loss of 154 acres of natural habitat,³ and potentially impact the project

¹ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *Atlantic Coast of New York, East Rockaway Inlet to Rockaway Inlet and Jamaica Bay: Draft Integrated Hurricane Sandy General Reevaluation Report and Environmental Impact Statement*, 123 (Aug. 2016) (http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/ny/coast/Rockaway/RockFeasStudy/1_Rockaway%20Draft%20Integrated%20HSGRR%20and%20EIS.pdf?ver=2016-08-19-094124-930).

² *Id.* at 106.

area's "[m]ore than 850,000 residents, 48,000 residential and commercial structures, and scores of critical infrastructure features such as hospitals, nursing homes, wastewater treatment facilities, subway, railroad, and schools...."⁴

Despite the draft document's length, the Corps failed to include a determination of how the project will be funded, exactly how the proposed Barrier will be constructed, and conceded that the agency has not conducted sufficient modeling and analysis "to identify, quantify and conclusively address any possible impacts to water quality and fish and wildlife species and their habitats in the Bay."⁵ Because the purpose of the National Environmental Policy Act (NEPA) is to "insure that environmental information is available to public officials and citizens *before decisions are made and before actions are taken*,"⁶ the EIS' absence of accurate scientific, technical, and environmental analysis renders it unripe for review as a Draft EIS (the first and only publicly-reviewable step before a Final EIS).

I. A NEW DRAFT EIS IS WARRANTED, GIVEN DATAGAPS IN EXISTING ANALYSIS

The primary purpose of a NEPA Environmental Impact Statement is to "provide full and fair discussion of significant environmental impacts and [to] inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment."⁷ In this case, the Corps' Draft EIS does not provide a full discussion of the proposed project's impacts,⁸ nor an adequate description of its storm surge Barrier – indeed, no design specifics for the Barrier are listed, and the Corps has not settled on a proposed location within its TSP.⁹ For four key reasons, these omissions render the document legally insufficient for review either as a Draft EIS or a precursor to a Final EIS.

First, the draft provides an insufficient amount of details with regard to its TSP. The document is void of any meaningful discussion of the TSP Barrier's design or functionality, admitting that the "[f]inal Storm Surge Barrier design will be made in the future...."¹⁰ The absence of this information is particularly significant as "the Storm Surge Barrier ... is the TSP and is likely to be considered the Recommended Plan."¹¹ A Draft EIS is incomplete without details for the preferred alternative. Moreover, the document also fails to identify if, and when, the over \$3.7 billion dollar project may become funded, making the TSP, even one without any actual construction details, a plan without any chances of being constructed.¹² Without details, and without funding, the Corps should not have initiated a public comment period on this Draft EIS document.

Second, the draft attempts to pass mere conclusory statements off as fact. For example,

³ *Id.* at 130.

⁴ *Id.* at ii.

⁵ *Id.* at x.

⁶ 40 C.F.R. §1500.1(b) (emphasis added).

⁷ 40 C.F.R. § 1502.1.

⁸ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at x.

⁹ *Id.* at xiv, 93.

¹⁰ *Id.* at xiii.

¹¹ *Id.* at xi.

¹² *Id.* at 223-24.

the Corps claims that the alignment of the TSP's Storm Surge Barrier will "result in a maximum tidal amplitude change of 0.2 feet,"¹³ which in the agency's opinion "indicates that there would not be any major changes in the water column throughout the bay."¹⁴ This conclusion is, at best, speculative since the design of the TSP's Storm Surge Barrier and associated tie-ins have not yet been finalized.¹⁵ Even if the Corps has enough information about its proposed Barrier design to make projections on tidal amplitude changes, as will be noted below, it has not conducted any discernable research into the impacts of this constriction in tidal exchange and cannot therefore make any – even preliminary – assessments about whether the Bay's water quality will be affected. Unquestionably, it is impossible to estimate a project's impacts from an unknown design.¹⁶

Third, the draft is contradictory and misleading. Within the document, the Corps concludes that the Bay's "natural environment ... would be undisturbed[,] ... water chemistry would be consistent with and without a Storm Surge Barrier;"¹⁷ and that water flow speeds and directions would remain relatively constant, indicating that "the circulation within Jamaica Bay would be minimally impacted."¹⁸ In contrast, however, the draft also refers to a NYCDEP study that found "the storm surge Barrier ... could potentially impact the tidal range, water quality (e.g., dissolved oxygen), and habitat in the interior tidal tributaries and shallow areas of the Bay."¹⁹ The Corps acknowledges the City's concerns and notes that more research is underway. The public cannot navigate these contradictory conclusions; the Corps should have squared these inconsistencies in a basic impact assessment before soliciting for public comment.

Fourth, the draft is generally, and broadly, incomplete. The draft notes numerous potential environmental impacts, including but not limited to its unsupported assertions pertaining to the potential impacts on fish, wildlife, and endangered species (and their habitats) in the Bay;²⁰ the Corps' use of outdated water quality geometric means for Fecal Coliform;²¹ its assumption that only 240-340 million gallons of treated sewage will be discharged into the Bay per day (from treatment plants) without accounting for additional sources of discharges;^{22, 23} and its complete failure to integrate any of these analyses with the planned Barrier (e.g., pollution,²⁴ nutrient load problems, low dissolved oxygen levels,²⁵ whether the Barrier will further restrict the flow of sediments or affect the sediment's legacy chemicals).²⁶ As evidence of these deficiencies, the Corps itself admits that additional modeling and analysis is required "to identify,

¹³ *Id.* at 93.

¹⁴ *Id.*

¹⁵ *Id.* at xiii.

¹⁶ See *Sierra Club v. Babbitt*, 69 F. Supp. 2d 1202, 1217 (E.D. Cal. 1999).

¹⁷ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at x.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Id.* at 142-43, 163, 180, 216.

²¹ *Id.* at 55.

²² Emma Whitford, *Brooklyn Apartment Complex Allegedly Dumped 200K Gallons of Sewage Daily in Coney Island Creek*, [www.gothamist.com](http://gothamist.com) (http://gothamist.com/2016/10/04/brooklyn_coney_creek_sewage.php) (Oct. 4, 2016).

²³ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at 55.

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.* at 56-57.

*quantify and conclusively address any possible impacts to water quality and fish and wildlife species and their habitats in the Bay.*²⁷

The CEQ's regulations require environmental impact statements to "serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made."²⁸ The Corps' decision to defer the final design and selection of its Storm Surge Barrier and its associated tie-ins until after the close of the Draft EIS' public comment period²⁹ precludes the public's ability to submit meaningful comments, thereby forcing the public and other interested stakeholders to merely accept or reject – not inform – the Final EIS's recommendations and findings. Under such an approach, the Final EIS would serve only to justify the decisions that the Corps has already made. This bootstrapped outcome is unacceptable and prohibited by law.

Accordingly, and as discussed further below, the Corps' Draft EIS is wholly inadequate under NEPA, and in accordance with the CEQ's regulations, the Corps must prepare and circulate a revised Draft EIS for public comment and review (that takes into account these comments and otherwise fills several significant data gaps) before it develops a Final EIS.³⁰

II. THE DRAFT EIS DOES NOT MEET NEPA STANDARDS

A. The Draft EIS Review of Existing Conditions Fails to Include Key Information

The Corps' Draft EIS reveals numerous environmental issues, including Corps' use of under inclusive and outdated water quality testing; its unfounded determination that the project will only result in minor short-term adverse impacts on marine mammals and sea turtles;³¹ and its complete failure to consider whether the Storm Surge Barrier will exacerbate the Bay's already existent water quality, pollution, and sediment problems.

Indeed, as noted above, the Draft EIS does not even include a determination of exactly how the proposed gate will be constructed, admitting that additional modeling and analysis is required "to identify, quantify and conclusively address any possible impacts to water quality and fish and wildlife species and their habitats in the Bay."³² The purpose of NEPA is to "insure that environmental information is available to public officials and citizens *before decisions are made and before actions are taken.*"³³

NEPA clarifies that this "information must be of high quality," and that both "[a]ccurate scientific analysis, ... and public scrutiny are essential...."³⁴ The Draft EIS's absence of accurate scientific analysis renders it insufficient for a Draft EIS, forecloses the public's ability to properly and fully analyze its true environmental impacts, and therefore, is not ripe for review

²⁷ *Id.* at x (emphasis added).

²⁸ 40 C.F.R. § 1502.2(g).

²⁹ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at xiii.

³⁰ *See* 40 C.F.R. § 1502.9.

³¹ *Id.* at 143, 180, 216.

³² *Id.* at x.

³³ 40 C.F.R. §1500.1(b) (emphasis added).

³⁴ *Id.*

under a Final EIS. Because the public should not be forced to comment on a plan's merely hypothetical and speculative affects, we request that the Corps cease its pursuit of a Final EIS until a legally-sufficient Draft EIS is provided to the public for comment.

i. Species

The draft document includes several unfounded conclusions pertaining to fish and wildlife species and their habitats within the project area. For example, the Corps claims that the project will have beneficial long-term direct impacts on benthic shellfish species and the native habitats throughout Jamaica Bay;³⁵ that implementation of the proposed project will produce an overall beneficial effect on existing shellfish and macroinvertebrate species, and on some finfish species;³⁶ and that there will only be “minor short-term direct adverse impacts on threatened and endangered sea turtles and marine mammals.”³⁷ The Draft EIS thus concludes that “the TSP will not cause any significant adverse effects to [Essential Fish Habitat] or species.”³⁸ These assertions are not supported by any evidence, models, or peer-reviewed studies, and their existence within the Draft EIS – possibly included as placeholders for future reassessment during the next phase of NEPA review – will mislead the public, affecting their ability to submit thoughtful and meaningful comments. Thus, the Corps must include specific analytical data and analysis to support these assertions, and must conduct formal endangered species consultations and fisheries assessments with relevant federal and state agencies. Until such review is done, this document will not be ripe for review either as a Draft or a precursor to a Final EIS.

ii. Exacerbation

The Draft EIS is also legally insufficient under NEPA because it fails to identify and discuss the likelihood that the Storm Surge Barrier will exacerbate the Bay's already existent environmental issues. Although the Draft EIS acknowledges that Jamaica Bay (i) “continues to be threatened by poor water quality;”³⁹ (ii) has nutrient loading problems and is unable to maintain dissolved oxygen levels at the requisite water criteria threshold for recreation and fishing;⁴⁰ and (iii) that it suffers from chlorine, heavy metal, leachate, and untreated wastewater and raw sewage pollution, the Corps at no point included a discussion on how these already present environmental issues may be impacted by the implementation of the proposed project. Similarly, the Draft EIS identifies that the flow of sediments within the Bay is already restricted, and that due to prior pollution regulations and historical practices pertaining to the use of a wide range of chemicals, that the Bay's sediments include “legacy chemicals.”⁴¹ However, despite the identification of these issues, the Corps' Draft EIS is completely void of any discussion concerning whether the Storm Surge Barrier will further restrict the flow of sediments into and out of the Bay, potentially creating new, or compound existing water quality problems (e.g., affecting the sediment's legacy contamination bioaccumulation).

³⁵ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at 163.

³⁶ *Id.* at 142.

³⁷ *Id.* at 143.

³⁸ *Id.* at 142.

³⁹ *Id.* at 55.

⁴⁰ *Id.*

⁴¹ *Id.* 56-57.

iii. Water Quality

The Corps violated NEPA's procedural mandate that information provided within the Draft EIS process "must be of high quality," stemming from the use of "[a]ccurate scientific analysis."⁴² For example, within the Draft EIS, the Corps utilized outdated water quality data and outmoded means for assessing Fecal Coliform geomeans.⁴³ By using data from 1989-1998, the Corps was then able to conclude that the project area's levels "of fecal coliform and enterococci are well below acceptable federal guidelines for primary contact recreational uses."⁴⁴ The decision to use decades old information – when newer data is available – paints an inaccurate picture of water cleanliness and is a flawed scientific analysis. The Corps must use data from recent years' water quality testing in any new Draft EIS or Final EIS.

Additionally, the Corps' water quality determination efforts fail to include all of the necessary point and non-point sources with regard to certain pollutants into the Bay. For example, the Corps determined that only 240-340 million gallons of treated sewage are discharged into Jamaica Bay per day (from WWTPs) without either confirming this level of pollution or accounting for additional sources of discharges (*e.g.*, CSOs, MS4s, illegal and illicit discharges,⁴⁵ and direct discharges).⁴⁶ Before the Corps can legally pursue a Final EIS, it must first provide the public with a comprehensive Draft EIS that includes accurate water quality data.

B. Dearth of Details on the Tentatively Selected Plan Violate NEPA

The Corps' failure to include specific details about the Storm Surge Barrier within the Draft EIS' TSP renders it unripe for review under a Final EIS. The inadequacies of the Storm Surge Barrier's "conceptual design" range from the project's lack of requisite funding and land acquisition,⁴⁷ to its admission that the "[f]inal design and selection of the Storm Surge Barrier alignment and associated tie-ins are deferred until additional analyses and design refinements can be conducted ... based on responses from public, policy, and technical reviews of this Draft EIS and additional investigations conducted for that purpose."⁴⁸ Although "NEPA does set forth significant substantive goals ... its mandate to the agencies is essentially procedural," requiring agencies to make "fully informed and well-considered decision[s]...."⁴⁹ However, despite even this lax standard, due to the overwhelming uncertainties and omissions contained within the TSP, proceeding with a Final EIS would run contrary to the purpose of NEPA, authorizing the Corps to make an uninformed decision.

The Draft EIS is completely void of any meaningful Storm Surge Barrier-specific information, and thus violates NEPA. NEPA regulations require all agencies to "[i]dentify environmental effects and values in adequate detail so they can be compared to economic and

⁴² 40 C.F.R. § 15001.1(b).

⁴³ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at 55.

⁴⁴ *Id.*

⁴⁵ Emma Whitford, *Brooklyn Apartment Complex Allegedly Dumped 200K Gallons of Sewage Daily in Coney Island Creek*, [www.gothamist.com](http://gothamist.com) (http://gothamist.com/2016/10/04/brooklyn_coney_creek_sewage.php) (Oct. 4, 2016).

⁴⁶ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at 55.

⁴⁷ *Id.* at 132-33.

⁴⁸ *Id.* at xii-xiii.

⁴⁹ *Vermont Yankee Nuclear Power Corp. v. Nat. Res. Def. Council, Inc.*, 435 U.S. 519, 558 (1978).

technical analyses.”⁵⁰ Despite, or in spite of, this mandate, the TSP states that the Corps has decided to defer its “[f]inal design and selection of the Storm Surge Barrier alignment and associated tie-ins ... until additional analyses and design refinements can be conducted.”⁵¹ The only Barrier-specific information provided within the TSP is that it will involve “[a] 3,970-foot storm surge Barrier across Rockaway Inlet from near Jacob Riis Park to Floyd Bennet Field,”⁵² with 1,100 linear feet of gate opening, and that it will “result[] in a change in tidal amplitude of less than 0.2 feet for a portion of the tide cycle.”⁵³ This general description violates 40 C.F.R. § 1501.2(b) because it is impossible to estimate a project’s impacts based off of its unknown elements. See *Sierra Club v. Babbitt*, 69 F. Supp. 2d 1202, 1217 (E.D. Cal. 1999). Accordingly, the Corps has “acted arbitrarily and capriciously in failing to provide an adequate description of the Project,”⁵⁴ and thus cannot legally proceed with a Final EIS.

The TSP also fails to provide specific details identifying how the Corps will successfully acquire necessary funding and real estate, and when construction of the project is realistically expected to begin. The TSP states that the project is expected to require the use of 76.6 acres of land, which is estimated to cost \$29,436,400.⁵⁵ However, the TSP fails to identify how these lands will be acquired, merely stating in general terms that “[t]he Non-Federal Sponsors will be responsible for acquiring and furnishing all lands,” and that all of these “lands needed for this project will be acquired in fee, with the exception of the land needed for the flood protection levee easements, staging areas, perpetual road easements, and borrow area easements.”⁵⁶

Similarly, the TSP estimates that the project’s total construction cost will be \$3,781,433,000, with additional annual costs of \$163,638,000.⁵⁷ The TSP states that “[o]nce a final cost estimate is developed for the plan ... a cost-sharing apportionment table will be developed,”⁵⁸ and that this “[c]ost sharing will be based on ... The Disaster Relief Appropriations Act of 2013, which provides 100% Federal Funding, *as long as the appropriated funds remain available*.”⁵⁹ This text demonstrates that not only is the TSP currently unfunded, but also that the Corps is not guaranteed to receive the requisite \$3.7 billion dollars. In short, this project isn’t actually a proposed project, and the NEPA process should be put on hold until the agency has the likely means for actually carrying out the project. Under NEPA, agencies are required to “[r]igorously explore and objectively evaluate *all reasonable alternatives*.”⁶⁰ However, “[t]o be a reasonable alternative, it must be non-speculative, ... and bounded by some notion of feasibility.”⁶¹ Given the TSP’s complete lack of current funding and uncertainty with regard to acquiring future funding, the TSP is merely speculative, and thus cannot accurately be described as a *reasonable alternative* under NEPA. See *Colorado Rail Passenger Ass’n v. Fed.*

⁵⁰ 40 C.F.R. § 1501.2(b).

⁵¹ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at xiii.

⁵² *Id.* at xiv.

⁵³ *Id.* at x.

⁵⁴ *Sierra Club v. Babbitt*, 69 F. Supp. 2d 1202, 1217 (E.D. Cal. 1999).

⁵⁵ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at 133.

⁵⁶ *Id.* at 132-33.

⁵⁷ *Id.* at 106-07.

⁵⁸ *Id.* at 224.

⁵⁹ *Id.* (emphasis added).

⁶⁰ 40 C.F.R. § 1502.14.

⁶¹ *Utahans for Better Transp. v. U.S. Dep’t of Transp.*, 305 F.3d 1152, 1172 (10th Cir. 2002), as modified on reh’g, 319 F.3d 1207 (10th Cir. 2003).

Transit Admin., 843 F. Supp. 2d 1150, 1168 (D. Colo. 2011). Therefore, until the Corps is able to successfully acquire such funding, an analysis under even a Draft EIS is entirely premature since it cannot possibly contemplate what conditions will exist when the project is ultimately funded and constructed.

The TSP sub-section entitled *Separable Elements*, proposes a *phased NEPA decision process*, that if pursued would violate the procedural mandates of NEPA. The Corps acknowledges that both “[t]he CSRSM Plan features for the Atlantic Ocean Shoreline along Reach 3 to 6 ... [and] [t]he residual risk CSRSM features,” can both function individually and are separable.^{62, 63} The Corps then states, however, that “[t]he Storm Surge Barrier ... would not be fully effective without the CSRSM Plan for the Atlantic Ocean ... and therefore is not separable from those components of the TSP.”⁶⁴ Under the Corps’ phased-decision proposal, the TSP’s first phase would likely “consider construction recommendations to address erosion, storm surge, and wave damage along the Atlantic Ocean shorefront and residual risk measures;”⁶⁵ and the “second phase ... might address the details of Storm Surge Barrier construction (specific alignment, operation needs, site-specific mitigation measures, etc.)....”⁶⁶

Under this phased-decision proposal, the Corps is attempting to circumvent the purpose of NEPA that environmental information must be “available to public officials and citizens *before decisions are made and before actions are taken.*”⁶⁷ For example, despite the fact that there is a significant amount of details provided for phase 1’s CSRSM features (*See Id.* at xii-xv), the TSP provides absolutely no design details for phase 2’s Storm Surge Barrier, admitting that the “[f]inal Storm Surge Barrier design will be made in the future....”⁶⁸

In sum, if the Corps proceeds with one EIS, even one done in phases, it cannot, by law, proceed with a Draft EIS as lacking in substantiation and specifics as the one before the public today. We therefore suggest that the Corps stop any further work toward a Final EIS until a legally sufficient Draft EIS is provided to the public for comment - either for both projects, or for just the storm surge Barrier.

Congress enacted the National Environmental Policy Act (NEPA) with “twin aim ... [f]irst, it ‘places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action,’ and “[s]econd, it ensures that the agency will inform the public that it has indeed considered environmental concerns in its decisionmaking process.”⁶⁹ To achieve these goals, Section 102(2)(C) of NEPA “requires that all federal agencies include an environmental impact statement (EIS) ‘in every recommendation or report

⁶² U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at 128.

⁶³ The TSP defines “[a] separable element [as] any part of a project which has separately assigned benefits and costs, which can be implemented as a separate action (at a later date or as a separate project).” *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.* at 129.

⁶⁶ *Id.*

⁶⁷ 40 C.F.R. §1500.1(b) (emphasis added).

⁶⁸ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at xii-xiii.

⁶⁹ *Baltimore Gas & Elec. Co. v. Nat. Res. Def. Council, Inc.*, 462 U.S. 87, 97–98 (1983).

on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment.”⁷⁰

The Council on Environmental Quality (CEQ) “has promulgated regulations that set forth with specificity the process by which an EIS must be prepared, 40 C.F.R. § 1502.9(a)–(c).”⁷¹ These “regulations require that an EIS ‘be prepared in two stages’: a Draft EIS, and a final EIS. ... The former ‘must fulfill and satisfy to the fullest extent possible the requirements established for final statements;’” i.e., it must include the scope of the project, “the environmental impacts of the proposed action,” and “any alternatives to the proposed action.”⁷² Whereas the final EIS must “respond to comments ... [and discuss] any responsible opposing view which was not adequately discussed in the draft statement.”⁷³ A strict interpretation of “NEPA and the CEQ regulations permit an agency to issue a final EIS that does no more than incorporate a previously issued Draft EIS and respond to comments received regarding that draft (assuming, of course, that the draft complies with NEPA).”⁷⁴

In general, the purpose of the EIS process is to both “alert the public of what the agency intends to do and to give the public enough information to be able to participate intelligently in the EIS process.”⁷⁵ To achieve this goal, “NEPA and its implementing guidelines require agencies to submit a Proposed Action for public comment prior to the issuance of the final EIS,”⁷⁶ which is released in the form of a Draft EIS. As previously stated, an agency’s Draft EIS is required to both “provide an adequate description of the [proposed] Project,”⁷⁷ and to “inform the public of the probable impact[s] of a proposed action.”⁷⁸ An agency’s “failure to provide an appropriate and full discussion of the proposal may render a decision arbitrary and capricious.”⁷⁹

In this case, the Corps’ TSP is wholly inadequate under NEPA. There is absolutely no information provided within the Draft EIS that could accurately be described as an adequate description of the proposed project’s Storm Surge Barrier. Within the 270 page Draft EIS, the Corps merely provides a general description of the Barrier, stating that it would cross the Rockaway Inlet from a point “near Jacob Riis Park to Floyd Bennet Field,” and that it would be a total of 3,970 feet long,⁸⁰ “with 1,100 linear feet of gate opening....”⁸¹ No other substantive Barrier-specific information is provided. For example, the TSP states that “[t]he location and extent of the gate openings ... will be further refined as additional constraints are understood and as water quality modeling is completed.”⁸² Similarly, the TSP declares that additional analyses must still be conducted to identify optimal design details for various CSRM features, such as the Coney Island & the Rockaway east tie-ins, the Manhattan Beach and Rockaway shorefront

⁷⁰ *Kleppe v. Sierra Club*, 427 U.S. 390, 390 (1976).

⁷¹ *Habitat Educ. Ctr., Inc. v. U.S. Forest Serv.*, 673 F.3d 518, 527 (7th Cir. 2012).

⁷² 42 U.S.C. § 4332 (C).

⁷³ *Habitat Educ. Ctr., Inc.*, 673 F.3d 518, 527.

⁷⁴ *Id.*

⁷⁵ *State of Cal. v. Block*, 690 F.2d 753, 772 (9th Cir. 1982).

⁷⁶ *Id.* at 770-771.

⁷⁷ *Babbitt*, 69 F. Supp. 2d 1202, 1217.

⁷⁸ *Arizona Cattle Growers' Ass'n v. Cartwright*, 29 F. Supp. 2d 1100, 1118 (D. Ariz. 1998).

⁷⁹ *Id.*

⁸⁰ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at xiv (emphasis added).

⁸¹ *Id.* at x.

⁸² *Id.* at 137.

composite seawalls, and the project’s hydraulic reaches and design elevations.⁸³ Furthermore, not only does the TSP fail to discuss the project’s potential environmental impacts, the Corps even admits that it does not know what those impacts are, promising to conduct “additional modeling and analysis ... *to identify, quantify and conclusively address any possible impacts* to water quality and fish and wildlife species and their habitats in the Bay.”⁸⁴

Congress enacted NEPA to “insure that environmental information is available to public officials and citizens *before decisions are made and before actions are taken.*”⁸⁵ To effectuate this aim, NEPA requires agencies to “submit a Proposed Action for public comment prior to the issuance of the final EIS,”⁸⁶ providing the public with an opportunity to review the project and participate in the decision-making process by submitting comments.⁸⁷ However, because “[n]o such right exists upon [the] issuance of a final EIS,”⁸⁸ this window of opportunity is narrow and only exists during the Draft EIS public comment period.⁸⁹ Accordingly, the Corps statement that the project’s “[f]inal Storm Surge Barrier design will be made in the future based on responses from public, policy, and technical reviews of this Draft EIS and additional investigations conducted for that purpose,”⁹⁰ is of grave concern. Unfortunately, the TSP is riddled with similar statements, supporting the conclusion that the Corps does not plan to provide an adequate description of its proposed project until after the close of its Draft EIS public comment period. At this point, if the Corps were permitted to proceed with a Final EIS, it would effectively “insulate[] its decision-making process from public scrutiny,”⁹¹ since it is impossible to estimate a project’s impacts based off of its unknown design. *See Sierra Club v. Babbitt*, 69 F. Supp. 2d 1202, 1217 (E.D. Cal. 1999).

In conclusion, the Corps has “acted arbitrarily and capriciously in failing to provide an adequate description of the Project.” *See Sierra Club v. Babbitt*, 69 F. Supp. 2d 1202, 1217 (E.D. Cal. 1999). Therefore, until the Corps produces and provides the public with a legally sufficient Draft EIS, it cannot, by law, proceed with a Final EIS. Any attempt to do so, would result in a direct violation of NEPA.

C. Significant Questions Remain about the Barrier’s Environmental Consequences

Specifically, we are concerned about a host of the potentially significant impacts - many, if not most, of which were only mentioned (not discussed) in the Draft EIS. We ask that the Corps more fully explore these questions, and other issues raised below in a new Draft EIS before advancing the review of this proposal to a Final EIS stage.

1. The Corps has not conducted, nor provided, an adequate impacts analysis with regard to the affects that CSO discharges will have on the Bay while the gate is closed. Under the TSP, the

⁸³ *Id.*

⁸⁴ *Id.* at x (emphasis added).

⁸⁵ 40 C.F.R. §1500.1(b) (emphasis added).

⁸⁶ *Block*, 690 F.2d 753, 770-771.

⁸⁷ *Id.*

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ *Id.* at xii-xiii.

⁹¹ *Block*, 690 F.2d 753, 770-771.

Corps plans to only close the gate prior to, and during storm events.⁹² Because CSO discharges occur during heavy rain and snowstorm events,⁹³ these closures will coincide with CSO discharges, restricting the dispersion of pollution, thereby creating unprecedented water quality issues. As a result, investment in significant additional CSO storage infrastructure may then be needed, which could greatly increase the project's estimated costs. Please include a full analysis of the impact of combined sewer overflows and separate storm sewer discharges on the water quality of Jamaica Bay during the time the gate is closed. Please also include an analysis of these overflows and discharges given the anticipated reduced tidal exchange caused by the gates immovable infrastructure (even when open).

2. The Draft's failure to account for the potential impacts associated with closing the Storm Surge Barrier's gate on a more frequent than planned basis. Although the TSP states that the project's storm gate will only close in response to large coastal storms (e.g., hurricanes), it is only logical to assume that communities within the project area will request the Corps to close the gates in response to all potentially devastating storms, as a precautionary matter. These increased political pressures, if successfully exerted, would further exacerbate the Bay's already poor water quality and restricted flow. Please include an operations plan, or anticipated use plan, describing how, when, and whether the gate will be closed. Will it be engaged only for large storms, leading to some areas continuing to be flooded during smaller storms, or will it be closed under some other circumstances? For each of the circumstances the gate will be closed, the Corps should include modeled impact assessments - across all Draft EIS issue areas (including but not limited to water quality, fisheries, oyster reef productivity, human health, access, and navigation).
3. Without knowing when construction will begin, it is impossible to accurately determine the minimum requisite height that the TSP's Storm Surge Barrier, gate, and various walls must be to shield against the threat of rising sea levels. Thus, until such information is available, the Corps cannot possibly ensure the adequacy of the TSP's technical and architectural design. Please describe where, if anywhere, flooding in the action area will continue to occur, whether during small or large storms, and under a variety of sea level rise and storm surge scenarios. Please also include the Corps' modeled costs associated with recovery from such flooding events.
4. The Corps has failed to discuss the potential impacts that a closed Barrier may produce, when closed during storm events. For example, the gate is designed to reflect water beyond the barrier back out to sea. Unfortunately, however, this reflective effect will occur both beyond, and within the Bay. This will likely increase the risk of flooding within the Bay, jeopardizing the integrity of the Bay's more vulnerable coastal communities and nearby infrastructure. Additionally, this may result in increased, and currently unaccounted for costs, since the height of the Storm Surge Barrier's adjacent walls will likely have to be dramatically increased to protect those communities most at-risk. Moreover, in storms that result in both barrier-closing storm surge levels as well as severe and significant levels of rainfall or snowmelt, water backing up inside the Barrier threatens to flood properties and affect

⁹² U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at 134.

⁹³ *Id.* at 209.

ecosystems and water quality within the Bay, yet no such analysis was conducted by the Corps. Please include an assessment of where water outside the barrier - in the immediate vicinity of the barrier - will travel if the barrier is closed (please provide maps). Please also provide a full assessment of variable storm scenarios to flooding and environmental impacts within the Bay.

5. Until specific schematic designs are provided for the Storm Surge Barrier's gate, the Corps is unable to conduct accurate scientific modeling and analysis. For example, under the TSP, the gate will have permanent fixtures connecting it to both Floyd Bennett Field and Beach Channel Drive. These fixtures will likely narrow the mouth of the Bay, thereby further restricting the flow of water and sediments within the Bay, even when the gate is open. Please describe in more detail the impacts of the permanent fixtures installed as part of the gate on the water exchange between the Bay and the ocean, on the ability of fisheries, marine mammals, and sea turtles to transit through the gate's permanent structure.
6. Please describe the impact of the gate on endangered sturgeon.
7. Please describe what will happen to migrating (or simply swimming) fish trapped on the inside of the gate when the barrier is shut.
8. The Draft EIS's alternative analysis was unnecessarily restrictive, failing to consider the use of any green infrastructure or nature-based CSRM features. This omission is troubling, considering that the implementation of these residual risk programs are well suited for Jamaica Bay, and since these programs offer an environmentally responsible form of resiliency. We also urge the Corps to expand the Natural/Nature Based Features (NNBFs) reviewed as part of the residual risk projects and the perimeter plan for Jamaica Bay. Civil engineering solutions only accomplish one goal for which the structure is designed. On the other hand, NNBFs accomplish multiple goals, including but not limited to water quality improvements, habitat enhancement, and public amenities. NNBFs should be developed and implemented at the neighborhood scale (rather than larger regional scale) to ensure needs of the local communities and the local habitats are taken into consideration and in full partnership with the other public agencies. The following is a non-exhaustive list of strategies that warrant consideration and discussion within the Corps' Draft EIS: wetland restoration, oyster reef creation, living shorelines, and soft edge protection. Please include a more robust alternatives assessment that includes non-Barrier-based solutions to flood risk within and around Jamaica Bay.
9. Please describe the impact of altered hydrology on water quality, habitat, and sediment flux within the Bay. Please specifically examine impacts to restoration projects completed, planned, funded, and approved (including by the Corps) within Jamaica Bay over the past ten years - from oyster restoration pilot programs to seagrass restoration and borrow pit remediation projects.

Given that the Corps itself highlights in this Draft EIS that there are a host of unknown parameters, impacts, and specifics associated with this project, more review is clearly warranted

before the agency can progress any further in its review. Among the many deficiencies, these are some of the most egregious:

- No proposed size, shape, form, or use specifics for the storm surge barrier.
- No identified engineering analysis of the barrier.
- No water quality impact assessment of Jamaica Bay under closed-gate conditions.
- No assessment (and only minimal identification) of endangered species, fisheries, and marine mammal impacts and issues.
- No review (or even cataloguing) of past, present, and pending future remediation and restoration activities within the Bay, let alone any analysis of the impacts the barrier may have (open or closed) on the hundreds of millions of dollars of work that has been leveraged by the Corps, other federal agencies, state and local government, and community organizations for the benefit of the Bay and its resilience.
- No assessment of any natural or enhanced-ecosystem resilience planning alternatives.

These uncertainties and unknowns make evaluating the proposed plan extremely difficult. While we understand and accept that there will always be uncertainties even in the best developed plan, we are left wondering if the Army Corps of Engineers conducted due diligence to minimize such uncertainties - or even fully describe potentially significant impacts - and more explicitly address these many unknowns.

III. CONCLUSION

In conclusion, the Corps' Draft EIS concedes that the “[f]inal Storm Surge Barrier design will be made in the future based on responses from public, policy, and technical reviews of this Draft EIS....”⁹⁴ This is an admission on behalf of the Corps that it does not plan to release its finalized Storm Surge Barrier design until after the public comment period has ended. If successful, this would preclude the public, interested stakeholders, and even the agency's own experts from providing meaningful comments that could help inform the relevant decision-makers. Moreover, a host of significant data gaps (including outdated water quality data, unsupported assumptions about impact risks for endangered species and fisheries, and a dearth of any substantive information about water circulation or sediment transport) render the Draft EIS legally inadequate – the public will have had, at the Final EIS review stage of NEPA – no meaningful input into most of the environmental impacts of the TSP.

Therefore, in light of the overwhelming insufficiencies of its Draft EIS, if the Corps goes forward with a Final EIS, it will result in a direct violation of the purpose of NEPA to “insure that environmental information is available to public officials and citizens *before decisions are made and before actions are taken*,”⁹⁵ and 40 C.F.R. § 1501.2 (b), which provides that environmental “documents and appropriate analyses shall be circulated and reviewed *at the same time as other planning documents*.”⁹⁶ In sum, the Corps has “acted arbitrarily and capriciously in

⁹⁴ U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, *supra* at xiii (emphasis added).

⁹⁵ 40 C.F.R. §1500.1(b) (emphasis added).

⁹⁶ 40 C.F.R. § 1501.2 (emphasis added).

failing to provide an adequate description of the Project,”⁹⁷ and thus should be prevented from pursuing a Final EIS until it provides the public with a legally sufficient Draft EIS.

Sincerely,



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⁹⁷ *Babbitt*, 69 F. Supp. 2d 1202, 1217.

Appendix A – Literature for Inclusion

As noted in our comments, we ask that you incorporate these papers, their conclusions and considerations, in a revised Draft EIS, as well as in the ultimate Final EIS for this project.

- Elgershuizen, J.H., *Some Environmental Impacts of a Storm Surge Barrier*, Marine Pollution Bulletin, Vo. 12, No 8 (1981).

The Corp’s review must answer the question of water flow in a system with a narrowed inlet, stagnation during closed-barrier storms, and the sediment and nutrient impacts that have been shown to result therefrom.

“However, because of the reduction of the tide, ultimately the residence time will increase to possibly double in some periods in the eastern part of the estuary; so an increase of the present nutrient load may arise there. Periods of stagnation may exacerbate the situation if the wind-drift circulation (the major cause of mixing and circulation processes in such periods) is not large enough.... Plants like green algae and seagrass may promote the deposition by reducing local water velocities. An uptake of the nutrients by these plants causes an extra lengthening of the physical residence time by a biological one.”

- European Climate Adaptation Platform, *Storm surge barriers/flood barriers (2015)*.
http://climate-adapt.eea.europa.eu/metadata/adaptation-options/storm-surge-gates-flood-barriers/#costs_benefits

Impact assessments of barriers must, among other consideration, analyze sediment balance and the risk of accelerated erosion of marshes and other coastal ecosystems.

- San Francisco Bay Conservation and Development Commission, *Fresh Water Flow and Tidal Barriers Policy Background (10/14/16)*
<http://www.bcdc.ca.gov/bayfill/20161020TidalBarriers.pdf>

In San Francisco Bay, a State Commission recently took a barrier off the table because, among many reasons, there was no identified way to ensure that water circulation would be maintained or improved when the barrier was closed. The Commission found that the Bay needed more circulation (for water quality and ecological function reasons), not less; thus, any lessening of water circulation was unacceptable. Further, any fill, barrier, or pier projects should be designed to help increase circulation, not hinder it.

“Because further study is needed before any barrier proposal to improve water circulation can be considered acceptable, the Bay Plan does not include any barriers.”

- Mooyaart, L.F., et al., *Storm Surge Barrier: Overview and Design Considerations*, Coastal Engineering 2014. <http://repository.tudelft.nl/islandora/object/uuid%3A8ca0ffc7-c317-4c80-aadb-d35323f51824?collection=research>

Globally, this study examined the relationship between barrier openings, water circulation, and water quality. The Corps should look to other barriers around the world, and compare – directly – this proposed action to other systems with narrow inlets (with barrier infrastructure closing up to three quarters of the inlet, permanently), high nutrient inputs, shallow marshes and tidal flats, and a lack of freshwater influx (beyond sewage point sources and urban direct discharge).

- Bakker, C., & P. van Rijswijk, *Zooplankton biomass in the Oosterschelde (SW Netherlands) before, during and after the construction of a storm- surge barrier* (1994) *Hydrobiologia*, Vol. 282(1): 127-143. <http://link.springer.com/article/10.1007/BF00024626>

Special attention must be paid to the accumulation of plankton biomass, and the resulting impacts on biological oxygen demand, the risk of harmful algal blooms, and the ecosystem impacts of altered food web cycles. Barriers like the Corps' TSP have been shown, regularly and repeatedly, to significantly affect the water quality and ecological health of estuaries behind such barrier.

- ten Brinke, W.B.M.; Dronkers, J. (1994). *Fine sediments in the Oosterschelde tidal basin before and after partial closure*, in: Nienhuis, P.H. et al. (Ed.) *The Oosterschelde Estuary (The Netherlands): a case-study of a changing ecosystem*. *Hydrobiologia*, 97: pp. 41-56. <http://www.vliz.be/en/imis?module=ref&refid=53418>

Similarly, the Corps must examine sediment transport issues in Jamaica Bay with more precision. Not all sediments behave the same; this study, for one, concluded for one barrier-affected system that “net transport of fine sediments has changed from an export (before the works) into an import.” Sediment flux is a vital element of navigation planning as well as fisheries productivity and ecosystem health. Millions of dollars have been spent in recent years on marsh island restoration, sea grass replanting, and wetland sediment management measures; any change to sediment flux induced by a barrier threatens all of this work.

- Bakker, C., & M. Vink, *A new trend in the development of the phytoplankton in the Oosterschelde (SW Netherlands) during and after the construction of a storm-surge barrier*, (1994) *Hydrobiologia* 282:79. <http://link.springer.com/article/10.1007/BF00024623>

The timing of ecological events such as plankton blooms or fish migrations can be just as important to the ecosystem as habitat availability and pollution. The Corps must, as the researchers did in this study, take a hard look at the phenology of Jamaica Bay. If the Bay's barrier is closed (once, a few times, or more often – individually by event, cumulatively over a season, or year to year), will plankton blooms (resulting from natural processes or closed-Bay stagnation and nutrient overloading) happen as they naturally would? Would they be earlier or later in the season? Would any changes affect fisheries and marine mammals, or any endangered species such as seabird and migratory birds? What are the impacts to species if they arrive to the Bay and they have missed a plankton bloom triggered by a closed barrier and a coastal storm? Without answers to these questions, the Corps cannot proceed with impact review. These are the first-order impacts of a barrier-driven system, and are fundamental to the agency's consideration.

“During the barrier-construction period (1984–87), characterized by decreasing current velocities, increasing sedimentation of suspended matter, increasing water transparencies and unchanged nutrient conditions, the growth season for the phytoplankton started earlier and lasted longer.... In the post-barrier years (1987–90) a changed light-nutrient-salinity regime (i.e. much light, limitation of nitrate, high salinity) was demonstrated and an extended summer season developed, without the original gradual transitions.”

Alternative Storm Surge Barrier Designs for Water Quality Protection

Mooyaart, L.F., et al., *Storm Surge Barrier: Overview and Design Considerations*, Coastal Engineering 2014. <http://repository.tudelft.nl/islandora/object/uuid%3A8ca0ffc7-c317-4c80-aadb-d35323f51824?collection=research>

Storm surge barriers are employed for a variety of functions, including water quality protection. In a more expanded Draft EIS, and in the Final EIS, the Corps should include a more robust look (beyond the lift and sector gates considered) at different barrier designs, paying particular attention to the designs’ different impacts on water quality, fish and mammal passage and habitat impacts, and on water circulation. From the study above, and a host of other sources, we ask for any EIS modelling to be done to determine which of these (or any other) designs have the lowest impact potential:

- **Vertical lift gates** are lifted vertically from the sill to open.
- **Vertical rising gates** lie beneath the sill in open position.
- A **segment gate** rotating around a horizontal axis, which passes through the bearing center. In closed position the segment gate rests on the sill and in open position it is lifted. Other names for this gate type are **radial** or **tainter gates**.
- Similar to a segment gate the **rotary segment gate** has a horizontal axis. It lies in a recess in the concrete sill in the bed of the river. The rotary segment gate contrasts the normal segment gate as it is possible to sail over the gate in this position.
- **Flap gates** consist of a straight or curved retaining surface, pivoted on a fixed axis at the sill.
- A **barge gate** is a caisson stored on one side of a waterway, pivoting around a vertical axis to close.
- **Rolling gates** are closure panels stored adjacent to the waterway. They are rolled into position in anticipation of a flood event.

Again, although “USACE is working with the NYCDEP to refine existing water quality models to refine the evaluation of potential long-term effects on water quality within the bay,” this modeling should reflect different barrier designs and be available for public review prior to any Final EIS.

Research on Jamaica Bay Water Quality and Ecosystem Remediation

- Gobler, C.J., Acidification, hypoxia and algal blooms in Jamaica Bay: Barriers to current and future ecosystem restoration and climate change resilience in Jamaica Bay, Science and Resilience Institute at Jamaica Bay. <http://www.srijb.org/2014/11/25/acidification-hypoxia-and-algal-blooms-barriers-to-ecosystem-restoration-and-climate-change-resilience/>

- Benotti, M.J., M. Abbene, and S.A. Terraciano. 2007. Nitrogen loading in Jamaica Bay, Long Island, New York: Predevelopment to 2005. USGS Scientific Investigations Report 2007- 5051. <http://pubs.usgs.gov/sir/2007/5051/SIR2007-5051.pdf>
- Hartig, E.K. et al., Anthropogenic and Climate-Change Impacts on Salt Marshes of Jamaica Bay, New York City, WETLANDS, Vol. 22, No. 1 (2002), 71-89. http://www.edc.uri.edu/nrs/classes/NRS555/assets/readings_08/rafferty/hartig_et_al_2002.pdf
- Gordon, A.L., et al., Integrated Reconnaissance of the Physical and Biogeochemical Characteristics of Jamaica Bay, Columbia Earth Institute (2000) http://www.ldeo.columbia.edu/~agordon/Reports/JamBay_2000.pdf

“Large inputs of the nutrients nitrogen and phosphorus into Jamaica Bay from waste water treatment plants, sewage outflows, and in runoff are serious concerns because they fuel phytoplankton blooms, which in turn may lead to eutrophication and hypoxic (low oxygen) conditions in the lower water column. ... As a result of these inputs Jamaica Bay can be classified as a hypereutrophic system. ... The rapid flushing of the bay is the most important factor keeping the bay well oxygenated.”

- NYCDEP, Jamaica Bay Watershed Protection Plan (2007). http://www.nyc.gov/html/dep/pdf/jamaica_bay/vol-2-chapter-3.pdf

“The quality of the water is degraded from discharges via Water Pollution Control Plants (WPCPs), combined sewer outfalls, and storm sewers. These activities have synergistically affected historic flow patterns in the Bay, eradicated natural habitat, impacted water quality, and modified the rich ecosystem that was present prior to the extensive urban development of the watershed.”

- Jamaica Bay Watershed Protection Plan Advisory Committee, Planning for Jamaica Bay’s Future: Final Recommendations on the Jamaica Bay Watershed Protection Plan (2007) <http://www.esf.edu/glrc/documents/Jamaica%20Bay%20Watershed%20Protection%20Plan%20Final%20recommendations.pdf>

“Delays in the bay's flushing time caused by human alterations to the water flow (from dredging, filling, development) have increased the potential for pollutants to settle out to the bottom.”

- Battelle Memorial Institute: Final Independent Expert Panel Peer Review Report for the Jamaica Bay, Marine Park, & Plum Beach Environmental Restoration Project, Kings and Queens Counties, New York, Draft Interim Report (2010) <http://www.nan.usace.army.mil/Portals/37/docs/civilworks/RevPlansDocs/jamaicaiepr.pdf>

“In the 19th and 20th centuries, a series of human actions resulted in extensive habitat loss, severe degradation of much of the remaining habitats, and deterioration of the bay’s chemical, physical, and biological environment. These actions included the filling of marshes and open

water areas; hardening of shorelines; altering of the bathymetry of the bay bottom; and inputs from raw and treated sewage, combined sewage overflow, and landfill leachates, all of which impaired the ability of Jamaica Bay to function as an ecological system. ... Detailed information on hydrology, water quality (including salinity), and circulation model results would improve the analysis of restored wetlands productivity.”

- Messaros, R., et al., Challenges and Successes of Tidal Wetlands Restoration in Jamaica Bay, New York (2010), *Watershed Management* 2010 343-363.
[http://ascelibrary.org/doi/abs/10.1061/41143\(394\)32](http://ascelibrary.org/doi/abs/10.1061/41143(394)32)
- Jamaica Bay Watershed Protection Plan Advisory Committee, National Park Service, U.S. Department of the Interior, Update on the Disappearing Salt Marshes of Jamaica Bay, New York (2007)
http://www.nytimes.com/packages/pdf/nyregion/city_room/20070802_FinalJamaicaBayReport.pdf

“Changes in the bay’s physical contours by westward progression of the Rockaway Peninsula, the dredging of navigational channels, the stabilization of Rockaway Inlet, landfills, and the construction of John F. Kennedy International Airport (JFK) and its runway into the bay have altered sediment transport and affected water circulation. Jamaica Bay’s tributaries, basins, creeks and canals have also been highly altered over the years and tend to have little or no freshwater flow other than that conveyed by the sewage treatment or water pollution control plants (WPCPs) and/or storm sewers.”

- NYCDEP, Jamaica Bay Watershed Protection Plan: 2014 Update,
http://www.nyc.gov/html/dep/pdf/jamaica_bay/jbwpp_update_10012014.pdf
- Jamaica Bay Institute, Research Opportunities in the Natural and Social Sciences at the Jamaica Bay Unit of Gateway National Recreation Area, Nutrient Enrichment and Eutrophication (2008) at 30. <https://www.nps.gov/gate/learn/nature/upload/JBAY-Research%20Opportunities.pdf>
- NYSDEC, Nitrogen Pollution and Adverse Impacts on Resilient Tidal Marshlands, Technical Briefing Summary (2014) at 1. http://www.dec.ny.gov/docs/water_pdf/impairmarshland.pdf

“There has been an accelerated loss of salt marshes in recent decades all around Long Island, but most notably along the south shore and within Jamaica Bay. By way of example, within nitrogen impaired Jamaica Bay between 1974 and 1994, 526 acres of marsh islands were lost – at an average rate of 26 acres per year. Between 1994 and 1999, the rate of loss accelerated with 220 acres of marsh islands lost at an average rate of 44 acres per year.”