



Friday, May 7, 2021

Submitted via [Federal eRulemaking Portal](#) and e-mail: [WRDA2020@usace.army.mil](mailto:WRDA2020@usace.army.mil)

Office of the Assistant Secretary  
of the Army for Civil Works  
Attn: Michael Connor  
108 Army Pentagon  
Washington, DC 20310-0108

U.S. Army Corps of Engineers,  
Attn: Ms. Amy Frantz, CEW-P  
U.S. Army Corps of Engineers, 3F91  
441 G St. NW  
Washington, DC 20314

Re: Docket ID No. COE-2021-0002; Comments for drafting the Implementation Guidance for the Water Resources Development Act (WRDA) of 2020

Dear Assistant Secretary Connor:

Riverkeeper, Inc. (Riverkeeper) extends our thanks to the Assistant Secretary of the Army for Civil Works (ASA[CW]) for providing the opportunity to comment on which sections of the Water Resources Development Act of 2020 (WRDA 2020) will require implementation guidance and to provide initial comments for use in developing that guidance.

Riverkeeper provides the following comments to the Office of the Assistant Secretary of the Army for Civil Works (OASA-CW) to assist OASA-CW and the U.S. Army Corps of Engineers (Corps) in preparing the Implementation Guidance for WRDA 2020. Riverkeeper is a member-supported watchdog organization dedicated to protecting and restoring the Hudson River from source to sea and safeguarding the drinking water supplies of over ten million New York City and Hudson Valley residents. Riverkeeper has 55,000 members and constituents, and as an organization, we see a lot of promise in the provisions of WRDA 2020.

As the Hudson River and communities that rely upon it are Riverkeeper's *raisons d'être* and the center of our core expertise, the body of this letter contains comments on the *New York-New Jersey Harbor and Tributaries Focus Area Feasibility Study* ("NYNJHAT Study" or "Study"), carried out under the Disaster Relief Appropriations Act of 2013 (Public Law 113-2), as modified by section 203(a)(4) of WRDA 2020, along with a short discussion on why sea-level rise should be fully integrated into all of the Corps storm surge work. The attachment to this letter contains Riverkeeper's section-by-section comments on WRDA 2020. Riverkeeper does have additional comments on section 203(a)(4) in the attachment, which focus on the interrelationship between section 203(a)(4) and other sections of WRDA 2020.

### **New York-New Jersey Harbor and Tributaries Study**

The implementation guidance for section 203(a)(4) of WRDA 2020 must clarify that due to the significance of the changes in scope and performance requirements, the Corps needs to restart the scoping process and alternatives analyses for the revised NYNJHAT Study.

In WRDA 2020, Congress altered the Study to undertake a significantly more comprehensive approach to flood risks within the Study Area. Section 203(a)(4)(A) expanded the Study from a traditional coastal storm risk management feasibility study to a feasibility study that can properly address risks of storm and flood damage from coastal storms, low-frequency precipitation events (e.g. stationary storms), and relative sea-level rise,<sup>1</sup> as individual threats and in combination.

The previous version of the NYNJHAT Study, from scoping forward, was based on traditional coastal storm risk management. WRDA 2020 made significant changes to the scope of the Study, in ways never considered in the original scoping documents or any of the subsequent decisions. To develop integrated, cost-effective solutions, the post-WRDA 2020 Study needs to restart at the project scoping phase. It would not be appropriate to simply add the new factors as an accessory to the prior version of the Study, as different selections would presumably have occurred earlier in the process which could have led to a very different Tentatively Selected Plan. An integrated solution requires beginning at the scoping stage of the Study.

The earlier version of the Study also used an artificially low value for the expected amount of sea-level rise. The Corps updated those methods<sup>2</sup> after the interim report was issued, which largely corrects that particular problem. While Riverkeeper agrees the 2019 revisions are a substantial improvement over the methods for calculating sea-level rise used for the interim report, the revisions did not address some fundamental concerns with the Corps' methods.<sup>3</sup> Further, the amount of sea-level rise expected over the life of the project is a fundamental design issue, affecting a large number of the Corps' calculations and decision points. The magnitude of the change would have altered the values used in the interim report, which may have affected those decisions.

WRDA 2020 includes a wide number of provisions that emphasize the value and importance of natural and nature-based features (NNBF),<sup>4</sup> and improved the potential for beneficially reusing sediments.<sup>5</sup> Those considerations did not factor into the earlier decision points of the study. Furthermore, WRDA 2020 changed the scope of the Study in ways that will require different metrics for evaluating potential solutions. There is no practical way forward other than restarting the process, and this must be clearly stated in the implementation guidance for section 203(a)(4) of WRDA 2020.

### **Accelerated Implementation for New York-New Jersey Harbor**

Riverkeeper understands how critical it is to begin implementing protections for the New York and New Jersey Harbor and tributaries, and encourages the Army to issue implementation guidance for section

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<sup>1</sup> See, WRDA 2020 § 203(a)(4)(A); see also, WRDA 2020 § 113(a)(1), (b)(2).

<sup>2</sup> Engineering Regulation (ER) 1100-2-8162, *Incorporating Sea level Changes in Civil Works Programs*, June 2019, and Engineering Pamphlet (EP) 1100-2-1, *Global Changes – Procedures to Evaluate Sea Level Change: Impacts, Responses, and Adaptation*, June 2019.

<sup>3</sup> As Riverkeeper's concerns with the Corps' updated methods for calculating sea-level rise are not specific to the NYNJHAT Study, those are discussed in the attachment to this letter, which contains the remainder of Riverkeeper's section-by-section comments for WRDA 2020.

<sup>4</sup> See, WRDA 2020 §§ 116, 119, 124; see also, WRDA 2020 §§ 114, 115, 118, 123, 211, 213, 216.

<sup>5</sup> See, WRDA 2020 § 125.

203(a)(4) of WRDA 2020 that allows for and encourages the Corps to split off an accelerated study (or studies) to identify and begin designing certain protective measures.

For example, even in the unlikely event that significant in-water barriers were determined to be the most cost-effective method for protecting the region, it would take at least 25 years of design and construction before such in-water barriers could enter service. Nobody wants a scenario where the next significant nor'easter or hurricane hits the Harbor before any protections have been implemented, particularly when the entirety of the former Alternative 5 could have been implemented in nine years. Similarly, there are some common features present in every one of the previously proposed alternatives, including previously rejected concepts. For example, there are identifiable outfalls in the region that will need backflow preventers under every alternative. Accelerated implementation would be particularly advantageous for any natural or nature-based features that increase protection over time.<sup>67</sup>

An accelerated study could identify protections common to all alternatives, screen those for (a) potential of alternate outcomes due to the expanded scope of the study or valuation methods, (b) significant differences in how that element would be implemented in the different alternatives, and (c) potential sequencing problems with early implementation of that element. The elements that pass screening advance to design and implementation. While it is essential to properly evaluate all potential solutions against the full scope of the enlarged study, there are some obvious, low-hanging fruit common to all alternatives which could and should be implemented now.<sup>8</sup>

### ***Meaningful engagement with affected communities***

While WRDA 2020 encourages the Corps to increase stakeholder engagement, the NYNJHAT Study is the *only* project where Congress added an explicit requirement to consult affected communities.<sup>9</sup> There is a good reason for this. For example, a bit over a year into the pre-WRDA 2020 version of the Study, the Corps first notified the public of the NYNJHAT Study through the February 13, 2018, Federal Register “Notice of Intent To Prepare a Tiered Environmental Impact Statement,” which informed the public:

- the Corps was “anticipating hosting a NEPA Scoping Meetings in March and April 2018,” which would be followed by a scoping comment period of 30 days, established from the scheduled date of the meeting,
- “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 web page … and will be distributed to the local stakeholders and known interested parties,” and
- pertinent information about the Study was available on the Corps’ Feasibility Study Webpage.

However,

- the Corps did not host NEPA Scoping Meetings until July 2018,
- the Corps did not inform the public of the delay in meeting date by either the Federal Register or local newspapers, and notices of all future meetings were *only* communicated by email, and
- the Feasibility Study Webpage provided scant additional information: it had links to a Fact Sheet, an October 2017 PowerPoint presentation, and information about signing up to receive additional information and notices via email.

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<sup>6</sup> Mussel beds, oyster reefs, sandbars, and wetlands are some examples, which help baffle the intensity of storm surge and wave action.

<sup>7</sup> Riverkeeper also believes it might be advantageous to use an accelerated study (or studies) to test improved cost-benefit models before their use in the main model.

<sup>8</sup> It may be advisable to use alternative authorities for accelerated studies in some cases, such as section 118 of WRDA 2020 for rural or economically disadvantaged communities, or section 119 of WRDA 2020 for eligible inland estuarine communities subject to frequent flooding.

<sup>9</sup> See, WRDA 2020 § 203(a)(4)(B).

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. In addition, although Riverkeeper was among entities the Corps invited to a NYNJHAT Study stakeholders meeting in December 2017, the Corps did not notify Riverkeeper of the NEPA Scoping Meetings in July 2018. The Corps first notified the public of the July 9-11, 2018 public scoping meetings, over the July 4<sup>th</sup> federal holiday.

The problem was not limited to the Corps' outreach to the general public. Many municipalities that were within the study area or affected by the proposed designs were unaware of the Study. At least twenty-three municipal entities<sup>10</sup> passed resolutions calling for the Corps to improve the process by which it was undertaking the prior version of Feasibility Study, and to increase transparency and public engagement by sharing detailed information with the public. There were at least 44 news media articles and the various letters from politicians asking for the same, and it becomes pretty apparent that section 203(a)(4)(B) exists because Congress views the Corps' outreach and engagement efforts on the NYNJHAT Study to date as insufficient.

Unfortunately, the New York District Office does not share this view. When Riverkeeper met with the District on January 26, 2021, the District denied that WRDA 2020 imposed *any* additional requirements beyond their previous efforts, as the Corps believed it had conducted significant outreach to local communities and was pleased with those outreach efforts. The Corps' stated interpretation would render the Congressional intent in adding a requirement for the Army to implement section 203(a)(4)(B) of WRDA 2020 void of meaning, a result which cannot be correct.

Riverkeeper urges the Assistant Secretary of the Army for Civil Works (ASA[CW]) to develop implementation guidance for section 203(a)(4)(B) that requires the Corps to expand its prior efforts; conducting authentic outreach and engagement with affected communities throughout the area within or affected by the Study in meaningful dialogue - particularly environmental justice communities and groups that may be most affected by flooding from storm surge, stationary storms, and sea-level rise; require consultation with Federal and State recognized tribes in those same areas; require open and transparent sharing of information with the public on its progress (e.g., which studies the Corps plans to evaluate and rely upon, details and timelines for studies the Corps is planning to undertake); and publicizing meetings, deadlines, updates, and information with more than updates to the Feasibility Study Webpage.

To date, the Corps has not achieved anything remotely close to success in any of those areas. It will be particularly important for the Corps to engage those communities that may be adversely impacted or unprotected by the alternatives proposed in the NYNJHAT Study. Without meaningful, respectful, ongoing engagement with communities directly affected, any conclusions reached by the Corps will be incomplete.

#### ***The NYNJHAT Study must evaluate and address impacts of flooding from sea-level rise***

Riverkeeper requests that implementation guidance for the NYNJHAT Study clarify that the Study must evaluate and address impacts of flooding from sea-level rise within the Study Area. Riverkeeper has met with the Corps' New York District Office twice since WRDA 2020 became law, and both times, the District Office informed us they believe that section 203(a)(4)(A) of WRDA 2020 does not affect the

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<sup>10</sup> Cities of Beacon, Kingston, Peekskill, Putnam; Counties of Ulster, Westchester; Towns of Cortlandt, Lloyd, Ossining, Poughkeepsie, Rhinebeck, Saugerties, Stony Point; Villages of Croton-on-Hudson, Dobbs Ferry, Hastings-on-Hudson, Irvington, Ossining, Piermont, Rhinebeck, Sleepy Hollow, Tarrytown; County of Ulster Environmental Management Council; and the Hudson River Drinking Water Intermunicipal Council (consisting of the: City of Poughkeepsie; Towns of Esopus, Hyde Park, Lloyd, Poughkeepsie, Rhinebeck, and Village of Rhinebeck)

modified Study, as the Corps was already taking sea-level rise into account in their storm surge calculations in the last version of the Study.<sup>11</sup>

One of the rules of statutory construction is that every part of a law is presumed to have some effect, and you cannot interpret language in a law to be devoid of meaning unless there is no other permissible interpretation. Section 203 modifies three other existing feasibility studies, two of which are also affected by sea-level rise, yet the NYNJHAT Study is the only one that includes an explicit requirement for the Corps to evaluate and address impacts of flooding from sea-level rise. Congress included that language to require the Army to evaluate and address the effect of flooding from sea-level rise within the study area as its own event, the District cannot choose to interpret that direction from Congress in a manner that renders it without any operative effect.

#### ***Proper evaluation of in-water barriers***

In the last version of the NYNJHAT Study, four of the five action alternatives contained in-water barriers, and two of the action alternatives contained barriers that would close one of the busiest shipping channels in the world when activated. While such a heavy reliance on in-water barriers is unlikely to remain the case given the increased scope of the Study, the sheer number of issues regarding the last study's evaluation of in-water barriers warrant including specific instructions for in-water barriers within the implementation guidance for WRDA 2020.

One problem is that the previous version of the Study failed to consider how relative sea-level rise would affect the operation of the in-water barriers over time. Climate change increases the frequency of intense storms, which leads to an increased number of closures. Higher relative sea levels increase the duration of those closures and force in-water barriers to close for increasingly smaller storms. As a result, any in-water barrier located in a region experiencing relative sea-level rise will need to close with ever-increasing frequency over its operational life. Despite the importance of the New York-New Jersey Harbor and the Hudson Federal Navigation Channel, the prior version of the Study failed to conduct a screening-level evaluation to determine if any of the alternatives under consideration might lead to that harbor and channel being closed for an unacceptable amount of time.

That can happen. In a study commissioned for the City of Boston, the in-water barriers were expected to close 3-10 times a year at the start of operation and remain closed for 46-84 hours during nor'easters.<sup>12</sup> The study set a failure condition where the barriers were no longer capable of serving their intended purpose if they needed to close 50 times a year, due to the forced closure of the port and increased O&M costs. Under a moderate SLR scenario, Boston's proposed in-water barriers were projected to reach 50 closures a year within 20 years with minimal additional onshore protections, and at most 50 to 60 years with the maximum amount of onshore protection.<sup>13</sup>

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<sup>11</sup> The second meeting with the New York District Office occurred on April 2, 2021. However, the District Office may have changed its opinion. An April 28 meeting about the New York-New Jersey Harbor included an update on the Study, in which the District Office spoke about refocusing the Study, using layered approaches, paying greater attention to social factors and local economic issues, and the scope might include some actionable work on sea-level rise. Due to a lack of certainty, Riverkeeper still feels the need to request the implementation guidance for WRDA 2020 § 203(a)(4)(A) clarify that the Study must evaluate and address impacts of flooding from sea-level rise within the Study Area.

<sup>12</sup> *Feasibility of Harbor-wide Barrier Systems: Preliminary Analysis for Boston Harbor*, May 2018. Available at [www.greenribboncommission.org/wp-content/uploads/2018/05/Feasibility-of-Harbor-wide-Barriers-Report.pdf](http://www.greenribboncommission.org/wp-content/uploads/2018/05/Feasibility-of-Harbor-wide-Barriers-Report.pdf), at pp. 10. Last visited April 27, 2021.

<sup>13</sup> *Idem*, at pp. 3, 16-17, and 68-69.

In the last version of the NYNJHAT Study, only one alternative lacked in-water barriers. The Corps was setting up a scenario in which if the Study found the frequency of closure of in-water barriers would become unacceptable, the Corps could have found itself with only one viable alternative. As a result, Riverkeeper recommends the implementation guidance for section 203(a)(4) of WRDA 2020 require that any alternatives that would close the harbor and navigational channel need to be screened in the early stages as to whether the duration and frequency of closure would remain acceptable over the operational life of that alternative.

Another problem is that the previous version of the Study had four of the five action alternatives using in-water barriers, without evaluating the scale of the impacts on circulation, physical conditions, and the many components of the Hudson River estuary ecosystem. As stated in *Preliminary Evaluation of the Physical Influences of Storm Surge Barriers on the Hudson River Estuary*:

Storm surge barriers have the potential to cause large-scale changes to the Hudson River estuary ecosystem. ... The effects of the fixed infrastructure of barriers during non-storm conditions on the circulation, physical conditions, and ecosystem of the estuary should be carefully assessed for a full range of possible impacts. 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.”<sup>14</sup>

The continual bottom flow of an estuary provides an effective ventilation system, drawing in new oceanic water and expelling brackish water. Without this natural flushing process, the waters of an estuary would become stagnant, oxygen would be depleted, and pollution would accumulate.<sup>15</sup>

Even when in-water barriers are open, the fixed infrastructure forms a partial obstruction of the waterway, which causes significant changes to tidal circulation, currents, and velocity, especially in the vicinity of the barrier openings. For a real-world comparison of what this means, Holland constructed the Oosterscheldekering (Eastern Scheldt Storm Surge Barrier) in 1986 as part of a series of projects to prevent a repeat of the North Sea flood of 1953. Even with the gates fully open, a comparison of tidal characteristics of 1983 and 1987 found a 12% decrease in tidal range, a 30% decrease in peak velocity, and a 28% decrease in the volume of the tidal prism.<sup>16</sup>

In the Hudson, such alterations would result in a significant change in the amount of tidal energy entering and exiting the harbor, twice a day. That tidal pulse travels over 150 miles of the Hudson River, and powers the ventilation and flushing of the Hudson. Numerous species rely on the energy of that tidal pulse to propagate. Intertidal marshes throughout the estuary, essential to the health of the estuarine ecosystem, are utterly dependent on the existing tidal exchange. Not only would these marshes lose the energy and sediment transport associated with reduced tidal energy, a reduction in tidal range results in a narrower area that is available for intertidal marsh. In the case of the Eastern Scheldt, that represented a

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<sup>14</sup> *Evaluation of the Physical Influences of Storm Surge Barriers on the Hudson River Estuary*, P. Orton and D. Ralston, September 2018. Available at [www.hudsonriver.org/download/surge\\_barrier\\_report\\_V8.pdf](http://www.hudsonriver.org/download/surge_barrier_report_V8.pdf), at p. 1. Last visited May 4, 2021.

<sup>15</sup> *Modeling the lateral circulation in strait, stratified estuaries*, Journal of Physical Oceanography, J. Lerczak and W. Geyer, June 2004. Available at [doi.org/10.1175/1520-0485\(2004\)034%3C1410:MTLCIS%3E2.0.CO;2](https://doi.org/10.1175/1520-0485(2004)034%3C1410:MTLCIS%3E2.0.CO;2). Last visited May 4, 2021.

<sup>16</sup> *Geomorphological changes of the Oosterschelde tidal system during and after the implementation of the Delta project*; Journal of Coastal Research, 14 (1998); pp. 1134-1151; Louters, et al.;1998. Available at [www.researchgate.net/publication/236833210\\_Geomorphological\\_changes\\_of\\_the\\_Oosterschelde\\_tidal\\_system\\_during\\_and\\_after\\_the\\_implementation\\_of\\_the\\_Delta\\_project](https://www.researchgate.net/publication/236833210_Geomorphological_changes_of_the_Oosterschelde_tidal_system_during_and_after_the_implementation_of_the_Delta_project). Last visited May 5, 2021.

31% decrease in intertidal area and a 63% decrease in actual salt marsh behind the barrier.<sup>17</sup> As a result, the reduction in tidal range produced by in-water barriers reduces the natural protection and resiliency of the very area that the barriers are intended to protect.<sup>18</sup>

Even if they were never closed, any harbor-wide, in-water barriers would have significant impacts on salinity, sediment transport, water quality, and the entire ecosystem. When closed, such barriers would essentially cut off ventilation and circulation for the entire system. Low pressure fronts may stall with winter nor'easters, during which the barriers would be expected to remain closed for up to 4 days. The effect of a closed harbor-wide barrier would extend 150 miles of the Hudson River, as the estuary extends from New York City to the Federal Dam at Troy, New York, and encompasses globally rare, tidal freshwater marshes. Tidal circulation drives estuarine circulation, which is one of the most fundamental and important components, as it affects almost all other processes in an estuary,<sup>19</sup> and causes the Hudson River to function as a net exporter of sediments to the estuary and the Harbor.<sup>20</sup>

Impacts to tidal exchange, estuarine circulation, sediment transport, and water quality from in-water barriers would in turn affect aquatic species, including both state and federally listed endangered and threatened species. In addition, the partial obstruction of flow will increase the velocity through the remaining open area. Even temporary velocity barriers can result in predation on the fish at unnaturally high levels. There are numerous examples of this behavior: the congregation of sea lions taking advantage of the high density of adult salmon at the base of the fish ladders of Seattle's Ballard Locks;<sup>21</sup> Caspian terns congregate and feast upon juvenile salmon on their way out to sea at a similar chokepoint created by the Bonneville Dam, east of Portland, Oregon.<sup>22</sup> We see this in the Hudson River as well, as the chokepoint created by the Federal Dam at Troy as striped bass similarly feast on river herring and American shad.<sup>23</sup>

In-water barriers would also alter the freshwater-saltwater interchange, altering the degree and reach of the saltwater wedge into estuarine and riverine environments. Larval fish and shellfish communities depend on this interchange of salt and freshwater to complete their life cycles, including food production, larval distribution and settlement. Changing the freshwater - saltwater dynamic will result in many other

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<sup>17</sup> *Geomorphological changes of the Oosterschelde tidal system during and after the implementation of the Delta project*; Journal of Coastal Research, 14 (1998); pp. 1134-1151; Louters, et al.;1998. Available at [www.researchgate.net/publication/236833210\\_Geomorphological\\_changes\\_of\\_the\\_Oosterschelde\\_tidal\\_system\\_during\\_and\\_after\\_the\\_implementation\\_of\\_the\\_Delta\\_project](http://www.researchgate.net/publication/236833210_Geomorphological_changes_of_the_Oosterschelde_tidal_system_during_and_after_the_implementation_of_the_Delta_project). Last visited May 5, 2021.

<sup>18</sup> The portions of former intertidal marsh that lie above the post-barrier high tide line would also presumably change from carbon sinks to carbon sources.

<sup>19</sup> *The Dynamics of a Partially Mixed Estuary*, Journal of Physical Oceanography, Geyer, et al., August 2000. Available at [doi.org/10.1175/1520-0485\(2000\)030%3C2035:TDOAPM%3E2.0.CO;2](https://doi.org/10.1175/1520-0485(2000)030%3C2035:TDOAPM%3E2.0.CO;2). Last visited May 4, 2021.

<sup>20</sup> *Regional patterns and local variations of sediment distribution in the Hudson River Estuary*; Estuarine, Coastal and Shelf Science 71; Nitsche, et al.; 2007. Available at [www.sciencedirect.com/science/article/pii/S0272771406003428](https://www.sciencedirect.com/science/article/pii/S0272771406003428). Last visited May 4, 2021.

<sup>21</sup> *At Point Blank Range: The Genesis And Implementation Of Lethal Removal Provisions Under The Marine Mammal Protection Act*, Ocean and Coastal Law Journal, Youmg, et al.,2000. Available at [digitalcommons.mainelaw.maine.edu/cgi/viewcontent.cgi?article=1234&context=oclj](https://digitalcommons.mainelaw.maine.edu/cgi/viewcontent.cgi?article=1234&context=oclj). Last visited May 5, 2021. See also, *Fish ladders: safe fish passage or hotspot for predation?*, Neotropical Ichthyology, Agostinho, et al., October 2012.

<sup>22</sup> *Caspian Tern Management to Reduce Predation of Juvenile Salmonids in the Columbia River Estuary, Final Environmental Impact Statement*, U.S. Fish and Wildlife Service, 2005. Available at [www.fws.gov/pacific/migratorybirds//pdf/Caspian\\_Tern\\_Final\\_EIS.pdf](http://www.fws.gov/pacific/migratorybirds//pdf/Caspian_Tern_Final_EIS.pdf). Last visited May 4, 2021.

<sup>23</sup> It also happens to be a favored fishing location among human anglers for that same reason.

changes in estuary function, such as the autotrophic- heterotrophic community dominance, where freshwater dominance would decrease the rate of denitrification services in the estuary.

In-water barriers would also have a particularly significant impact to the benthic community, such as blue crab, as those barriers include a 10-foot to 20-foot high sill that forms the base of the pillars for the in-water barriers, as well as for the barriers themselves when closed. For some benthic species, even when the barriers are open, a 10-foot to 20-foot high sill will effectively isolate populations within the barrier from populations outside of the barrier.

Given the significant range of effects on habitat, species, and ecosystem health over a broad area, Riverkeeper requests the implementation guidance for section 203(a)(4) require any alternatives that physically close off the harbor to conduct an early assessment of the expected ecosystem, sediment transport, and water quality effects, so that a proper assessment of the associated costs and benefits could be made. Riverkeeper also requests the implementation guidance for section 203(a)(4) require the Corps to carefully assess the impacts of the proposed alternatives, to ensure the Corps' meets its obligations under Endangered Species Act during the selection and implementation of the selected alternative.

***All coastal studies should evaluate sea-level rise, and other forms of flooding***

Before WRDA 2020, the Corps stated that it lacked the authority to consider a holistic view of flood risks. During the WRDA 2020 webinar/teleconference hosted by the Corps on March 23, 2021, the Corps expressed that same language regarding projects other than the NYNJHAT Study. That approach is wrong. While the Corps may not be able to *spend* funds to directly address those risks, failing to *consider* those effects leads to the Corps being poorly informed as to how other flood risks alter the study area during the study period.

As discussed earlier, in the last version of the NYNJHAT Study, the Corps was setting up a scenario in which it could have found itself with only one viable alternative. The problem was because they were simply designing around a storm surge under current conditions and then adding relative sea-level rise to that surge and surrounding area to determine the effects. That approach left the Corps unaware of how their design conditions would change over time and similarly unaware of how their designs may impact other forms of flooding. Although it was well-intentioned, that willful ignorance can result in the selection of designs that ultimately fail to protect against coastal storms and/or exacerbate other forms of flooding. The Corps would not have found itself in that position if it had been considering how SLR and other forms of flooding would alter the area they proposed to protect.

Similarly, the Corps planned to manage water impounded behind closed in-water barriers by closing the barriers at low tide, assumed they could impound water up to the high tide line, possibly augmented by pumping,<sup>24</sup> and expected to have several days of storage capacity.<sup>25</sup> During an extended storm event, the Corps expected water levels inside the in-water barriers would increase by up to 6.5 feet.<sup>26, 27</sup>

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<sup>24</sup> See, U.S. Army Corps of Engineers, *New York-New Jersey Harbor and Tributaries Study, Public Engagement Appendix*, 2019, at p. 62, Response to Item 353.

<sup>25</sup> See, U.S. Army Corps of Engineers, *New York-New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study, Interim Report Engineering Analyses*, 2019, at p. 20.

<sup>26</sup> See, U.S. Army Corps of Engineers, *New York-New Jersey Harbor and Tributaries Study, Public Engagement Appendix*, 2019, at p. 57, Response to Item 315.

<sup>27</sup> It is unclear if the Corps considered that the Study Area has asymmetric tides, as low tide at Brooklyn, NY, occurs around the same time as high tide at Hudson, NY, and much of that tidal volume from the previous high tide would soon flow back toward the Harbor.

The median tidal range in the Harbor is 4.5 feet; each month has days where it is less than 3 feet. Based on NOAA tidal predictions for the New York-New Jersey Harbor in 2021, if those barriers existed today and closed precisely at low tide, an addition of 6.5 feet of impounded water behind the barriers would typically end with a water level around 2.0 feet above the normal high tide line; 4.4 feet above the normal high tide line on the date with the smallest tidal range.<sup>28</sup> Assuming the Corps' 6.5-foot estimate was valid, there could be a good argument that represents an acceptable level of induced flooding.<sup>29</sup> The problem is, today is not the correct point of comparison.

Alternatives reliant on significant in-water barriers will take at least 25 years to design and construct. New York State projects SLR in the range of +0.75 to +2.5 feet by the time those barriers enter service, which increases to +1.25 to +6.25 feet near the end of their projected service life.<sup>30</sup> If the Corps had been considering how SLR and other forms of flooding will alter the area they propose to protect, it would have been readily apparent that the storage capacity currently within the proposed barriers will be decreasing throughout the study period, leaving insufficient capacity well within the project life. As a result, there is no question that in-water barriers will require pumping requirements, which will increase over time, and the pump capacity needed to manage the inflow from a nor'easter that arrives during peak spring flow would be no small feat.<sup>31</sup>

As can be seen on the [NYC Flood Hazard Mapper](#),<sup>32</sup> increasingly larger areas of New York City will be facing tidal flooding within the barriers as a regular occurrence well before 2100. While the Corps can state today that the barriers will not be used to prevent tidal flooding, the Corps would be forced to grapple with the issue nonetheless as significant flooding during spring tides increasingly changed from theory to reality.

Those are some of the reasons why the Corps needs to consider the effect of relative sea-level rise and other forms of flooding upon a study area in all coastal storm risk management feasibility studies, even when the design is limited to storm surge. Flooding events and human responses to those events are interconnected, and choosing to ignore the effects of other flood risks could result in the selection of designs that ultimately fail to satisfy the design criteria and exacerbate other forms of flooding. For all projects subject to multiple forms of flooding, Riverkeeper requests the OASA-CW to prepare implementation guidance that requires the Corps to consider how the proposed designs may impact other forms of flooding. For projects subject to increases in relative sea level, Riverkeeper requests the OASA-CW to prepare implementation guidance that requires the Corps to consider how sea-level rise will impact that area being protected over the lifespan of the project, and to incorporate any associated changes in design conditions that may result from those impacts.

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<sup>28</sup> These values are based on the current tidal ranges in the Harbor. As construction of in-water barriers will reduce that tidal range, the actual induced flooding would be greater than these values indicate.

<sup>29</sup> The floodwaters would also contain contaminants from combined sewage outfall overflows and stormwater runoff, similarly trapped behind the in-water barriers.

<sup>30</sup> See, [6 NYCRR § 490.4](#). The range represents the 10<sup>th</sup> to 90<sup>th</sup> percentile of SLR scenarios; Horton et al., *New York City Panel on Climate Change 2015 Report*, 2015, at p.41.

<sup>31</sup> The U.S. Geological Survey estimates of the average monthly freshwater flow from the Hudson River from 1947 through 2006 show that most years have at least one month where that flow exceeds 50,000 cubic feet per second, and the peak month of April 1993 was estimated at 89,000 cubic feet per second. Peak daily flows would be higher, and the values above do not include contributions from other sources (e.g., Bronx River [Aquehung], Passaic River, combined sewage outfalls, wastewater treatment plants).

<sup>32</sup> Available at <https://www.nyclimatechange.org/resources/resource::1600/nyc-flood-hazard-mapper>. Last visited April 27, 2021.

***Greater emphasis for on-shore measures, incorporating natural and nature-based features***

Riverkeeper believes the implementation guidance for section 203(a)(4) of WRDA 2020 needs to instruct the Corps to give proper consideration for more than one alternative based on on-shore measures, and to incorporate NNBF to the maximum extent practicable.

The previous version of the NYNJHAT Study only included one alternative based on on-shore measures, which only included fourteen features across the 2,150-plus square mile study area. Eight of those features were in the New York City area while the remaining six were in communities along the Hudson River. That alternative did not represent a serious attempt to see how cost-effective shoreline-based measures would be to protect the study area.

Numerous community groups, elected officials and other stakeholders are already working on local, shoreline-based measures designed to prevent flooding—and which also provide concurrent social benefits, such as open space and parkland. Coastal protection reliant on shoreline-based floodwalls and levees, including beaches, dunes and waterfront parks, combined with strategic retreat from some low lying areas, 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.

On-shore measures have substantial benefits over in-water barriers: they can be implemented concurrently in locations found to be most optimal for each type of measure; can be implemented far more quickly, and built first in the communities and areas at greatest risk; can be modified as needed over time as sea level rises and storms intensify; can be layered so the failure of one component does not compromise the entire system;<sup>33</sup> cost a fraction of the construction price estimated for in-water barriers; 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, New York-New Jersey Harbor, and tributaries; and will not decimate ecosystems.

Developing on-shore measures would also provide meaningful points of engagement with shoreline and other affected communities. Riverkeeper requests that these opportunities be recognized within the implementation guidance for section 203(a)(4)(B) of WRDA 2020, to ensure that the Corps properly engages these communities as they develop their designs. Similarly, the development of on-shore measures will also provide meaningful points of engagement with the local governments of these shoreline communities. This could provide an opportunity for the Corps to educate local governments about local land-use measures that could be advantageous to enact before the next significant storm. This would be particularly advantageous for smaller communities with smaller staff. Most municipalities will welcome information that allows them to make better-informed decisions. In addition, some conversations would turn to complications for implementing the suggestions, and some of those complications might be relevant for designing effective protections. Riverkeeper believes that each dollar spent informing local governments will be more than repaid in reducing federal response costs during and after the next significant storm event.

Nonstructural approaches such as flood-proofing, raising structures, and planned retreat should also be pursued and reflected in the Corps' plans, and augment or be augmented by all of the other post-Hurricane Sandy resilience projects planned and underway. This multilayered approach, combined with a

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<sup>33</sup> For example, floodproofing in Manhattan conducted by New York's Metropolitan Transportation Authority after Hurricane Sandy consists of approximately 4,000 flood measures and appears to work very well, but "if just one barrier at a subway entrance were to fail, it would be almost like the other 3,999 odd barriers weren't there." *Here's How NYC Transit System Is Prepping For Sea Level Rise—And Why It May Not Be Enough*, Gothamist, N. Kensinger, April 2021. Available at: [gothamist.com/news/heres-how-nyc-transit-system-is-prepping-for-sea-level-rise-and-why-it-may-not-be-enough](https://gothamist.com/news/heres-how-nyc-transit-system-is-prepping-for-sea-level-rise-and-why-it-may-not-be-enough). Last visited May 7, 2021.

public engagement process that includes all of the impacted communities, will result in a more flexible and affordable resiliency plan that does not externalize the serious costs and impact of protecting the New York-New Jersey Harbor and tributaries on neighboring communities or on the water bodies that are its lifeblood.

Riverkeeper also believes the implementation guidance for section 203(a)(4) of WRDA 2020 should direct the Corps to incorporate NNBF to the maximum extent practicable. Projects incorporating NNBF tend to be less expensive to build and maintain, and when properly designed, produce dynamic systems that have the potential to adapt with climate change. Grey infrastructure or artificial structures like in-water barriers, artificial breakwaters, groins, seawalls, berms, and pumps must be consistently maintained. In stark contrast, many types of NNBF can be self-sustaining when developed properly. For example, planting appropriate, self-sustaining, native vegetation on dunes can prevent erosion and maintain dune structure in the face of storms, while reducing the need for future beach nourishment.

***Riverkeeper looks forward to assisting the Corps to develop effective solutions***

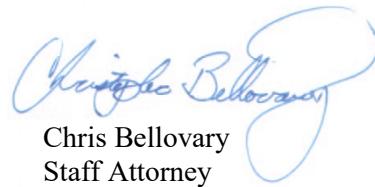
Developing solutions for flooding related to relative sea-level rise; low-frequency, high-intensity precipitation events; storm surge; individually and in concert; in a study area that includes a high-volume, quickly flowing river that is adjacent to dozens of municipalities and has bi-directional tidal flow 150 miles inland is a challenge worthy of the Corps. Having the nation's most populous metropolitan area at the mouth of that river, with its most densely populated core bisected with tidal straits, and the adjacent, eastward-facing, funnel-shaped sound only add to that complexity. This is a difficult project, and as a result, it is very important to have well-considered implementation guidance. Riverkeeper requests the ASA(CW) to engage non-Federal stakeholders and circulate drafts of the implementation guidance for section 203(a)(4) of WRDA 2020 for informal review and recommendations<sup>34</sup> before submitting its recommendations received to Congress.<sup>35</sup>

In addition to the comments within this letter, Riverkeeper respectfully submits the attached additional comments and recommendations, as requested by the Assistant Secretary of the Army for Civil Works via the federal register Docket Identification No. COE-2021-002. If you have any questions about the contents of this letter, please feel free to contact me at [pgallay@riverkeeper.org](mailto:pgallay@riverkeeper.org) or Chris Bellovary of my staff at [cbellovary@riverkeeper.org](mailto:cbellovary@riverkeeper.org).

Sincerely,



Paul Gallay  
President and Hudson Riverkeeper  
Riverkeeper, Inc.



Chris Bellovary  
Staff Attorney  
Riverkeeper, Inc.

Cc: U.S. Senator Charles Schumer (NY)  
U.S. Senator Kirsten Gillibrand (NY)  
U.S. Senator Richard Blumenthal (CT)  
U.S. Senator Christopher Murphy (CT)  
U.S. Senator Bob Menendez (NJ)  
U.S. Senator Cory Booker (NJ)

<sup>34</sup> See, 33 U.S.C. § 2202(c)(2), see also, WRDA 2020 § 124.

<sup>35</sup> See, 33 U.S.C. § 2202(d).

U.S. Representative Lee Zeldin (NY-01)  
U.S. Representative Andrew Garbarino (NY-02)  
U.S. Representative Thomas Suozzi (NY-03)  
U.S. Representative Kathleen Rice (NY-04)  
U.S. Representative Gregory Meeks (NY-05)  
U.S. Representative Grace Meng (NY-06)  
U.S. Representative Nydia Velázquez (NY-07)  
U.S. Representative Hakeem Jeffries (NY-08)  
U.S. Representative Yvette Clarke (NY-09)  
U.S. Representative Jerrold Nadler (NY-10)  
U.S. Representative Nicole Malliotakis (NY-11)  
U.S. Representative Carolyn Maloney (NY-12)  
U.S. Representative Adriano Espaillat (NY-13)  
U.S. Representative Alexandra Ocasio-Cortez (NY-14)  
U.S. Representative Ritchie Torres (NY-15)  
U.S. Representative Jamaal Bowman (NY-16)  
U.S. Representative Mondaire Jones (NY-17)  
U.S. Representative Sean Maloney (NY-18)  
U.S. Representative Antonio Delgado (NY-19)  
U.S. Representative Paul Tonko (NY-20)  
U.S. Representative James Himes (CT-04)  
U.S. Representative Frank Pallone (NJ-06)  
U.S. Representative Albio Sires (NJ-08)  
U.S. Representative Donald Payne Jr. (NJ-10)  
U.S. Environmental Protection Agency, Long Island Sound, Director Mark Tedesco  
NY Department of Environmental Conservation, Commissioner Basil Seggos  
CT Department of Energy & Environmental Protection, Commissioner Katie Dykes  
NJ Department of Environmental Protection, Acting Commissioner Shawn LaTourette  
New York City, NY, Mayor Bill de Blasio  
New York City, NY, Comptroller Scott Stringer  
U.S. Army Corps of Engineers, Interim Chief Eric Bush  
U.S. Army Corps of Engineers, Director Alvin B. Lee  
U.S. Army Corps of Engineers, Deputy District Engineer Joe Seebode  
U.S. Army Corps of Engineers, Chief Paul Tumminello  
U.S. Army Corps of Engineers, Director Joe Vietri  
U.S. Army Corps of Engineers, Project Manager Bryce Weismiller



### **Attachment: Additional Specific Comments and Recommendations**

Riverkeeper provides the following comments to the Office of the Assistant Secretary of the Army for Civil Works (OASA-CW) and U.S. Army Corps of Engineers (Corps) to assist OASA-CW and the Corps in drafting the Implementation Guidance for the Water Resources Development Act of 2020 (WRDA 2020).

Many of the sections in WRDA 2020 are closely interrelated and for each section being evaluated the OASA-CW should consider the interrelations between these sections for context and to prevent conflicting guidance. As examples:

- Recommendations of project alternatives that provide multiple benefits, including ecosystem restoration and flood risk management. *See*, WRDA §§ 110, 113, 115, 116, 124, and 125.
- Requirements to consider the total benefits of project alternatives, including equal consideration of economic, environmental, and social benefits. *See*, WRDA §§ 110, 113, 115, 116, and 125.
- Considerations for economically disadvantaged communities. *See*, WRDA §§ 117, 118, and 125.

Where multiple sections are closely interrelated, such as the examples above, a single cross-cutting guidance document may be the best way to ensure clear, internally consistent guidance.

#### ***§ 102 Authorization of Appropriations for Navigation***

WRDA 2020 made significant changes to the Harbor Maintenance Trust Fund (HMTF), which increases the availability of those funds with the expectation of a significantly larger disbursement of funds than we have seen in recent years. The HMTF is typically used to fund the dredging of federal navigation channels to design depth with disposal of the dredged material at the lowest cost. There is an existing backlog in navigational maintenance dredging around the country, so we will likely see a significant amount of clean dredge sediments, and WRDA 2020 places a high value on and encourages maximizing beneficial reuse of those sediments.<sup>36</sup>

Funds from the HMTF can also be used at a donor port, a medium-sized donor port, or an energy transfer port for environmental remediation related to dredging of ports, harbors, and Federal navigation channels.<sup>37</sup> Many of the eligible ports have a large backlog of remediation that still needs to be implemented from prior dredging of those ports. The increased availability of clean, dredged sediments also makes this a particularly good time to address these backlogs. Riverkeeper believes the implementation guidance for sections 101, 102, and 125 of WRDA 2020 should direct the Corps to actively seek out remediation projects for eligible ports and implement those projects to the maximum extent possible.

To underline the point, coastal wetlands provide valuable protection against coastal storms and are estimated to have reduced property damage by more than \$625 million during Hurricane Sandy, with

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<sup>36</sup> *See*, WRDA 2020 §§ 124-25.

<sup>37</sup> *See*, 33 U.S.C. § 2238c(c).

an average damage reduction of about 10% in each state.<sup>38</sup> They also serve an important ecological function as critical habitat for a wide range of species. However, sea level is rising faster than most of our coastal marshes can accrete sediments. Between fish stocks falling across the world and the effect of climate change on the coastal storms, we cannot afford to lose more of our coastal marshes. Riverkeeper encourages the OASA-CW to prepare implementation guidance for sections 101, 102, and 125 of WRDA 2020 that encourages and prioritizes the beneficial reuse of clean dredge sediments generated from the increased availability project funding from the HMTF in habitat restoration and other coastal resiliency projects.

In Specific Comment § 110(a), below, Riverkeeper discusses how every single iconic species in the Hudson River is in decline. The Corps is directly responsible for part of those declines, from habitat loss from the various navigational maintenance dredging and deepening projects in the New York-New Jersey Harbor and Hudson Federal Navigation Channel, and the migratory path restrictions from the system of locks operated by the Corps north of Troy certainly is not helping. Riverkeeper urges the OASA-CW to develop implementation guidance for sections 101, 102, and 125 of WRDA 2020 that encourages the use of the HMTF and clean dredge sediments for funding environmental remediation and habitat restoration and other coastal resiliency projects at eligible ports to reverse these population declines as well as to reduce the risk (or in some cases, prevent an increased risk) from coastal storms.

#### **§ 110(a) Implementation of Water Resources Principles and Requirements; In General**

Having the Army update its procedures to implement the 2013-2014 PR&G<sup>39</sup> will result in far-reaching public benefits to society as a whole, and Riverkeeper was pleased when it read that the OASA had already started on the implementation guidance for that work.<sup>40</sup> To ensure the Corps shares that same sense of urgency, Riverkeeper requests the implementation guidance for section 110 of WRDA 2020 and for the PR&G contains clear milestones and deliverables to ensure these procedures are promptly updated. If the OASA-CW lacks sufficient information to specify a timeline, Riverkeeper requests the OASA-CW to issue guidance that directs the Corps to develop a schedule with clearly defined milestones and deliverables.

The updated PR&G set a common interagency policy for evaluating federal water resource investments. Under the updated PR&G, the objective of water resource development projects is to “maximize public benefits, with appropriate consideration of costs,”<sup>41</sup> where “[p]ublic benefits encompass environmental, economic, and social goals, include monetary and non-monetary effects and allow for the consideration of both quantified and unquantified measures.”<sup>42</sup> This represents a significant advancement that will help improve the public benefits received from water resource development projects, and will better align with Title 33, Chapter 26 (Water Resources Development), and Title 42, Chapter 19B (Water Resources Planning) of the United States Code.<sup>43</sup>

The Corps is the primary federal agency involved in federal construction to help reduce flood risks, and funding those projects requires flood risk reduction benefits to exceed project costs, so how the Corps chooses to value costs and benefits is of great importance. Riverkeeper notes that on a macro

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<sup>38</sup> See, *The Value of Coastal Wetlands for Flood Damage Reduction in the Northeastern USA*. Narayan, et al. Sci Rep 7, 9463 (2017). Available at [doi.org/10.1038/s41598-017-09269-z](https://doi.org/10.1038/s41598-017-09269-z). Last visited May 3, 2021.

<sup>39</sup> See, WRDA § 110(e). *Principles and Requirements for Federal Investments in Water Resources* (P&Rs), Council on Environmental Quality, March 2013, and *Interagency Guidelines*, Council of Environmental Quality, Dec. 2014.

<sup>40</sup> See, *Memorandum for the Commanding General regarding Comprehensive Documentation of Benefits in Decision Documents*, ASA(CW) R.D. James, January 5, 2021.

<sup>41</sup> P&Rs at page 3, section 2, paragraph 3.

<sup>42</sup> *Idem*.

<sup>43</sup> E.g., 33 U.S.C. § 2281(a), 42 U.S.C. § 1962–3.

scale, the current Net Economic Development (NED) method for determining the selection of alternatives during water resource planning leads to rural water resource development projects being favored over urban projects, as labor and construction costs are generally higher in urban areas.

Of larger concern however is what happens when considered on a smaller scale. The NED cost-benefit analysis places determinative value on property value, exacerbating existing racial, economic and social inequities. Under the current methods for evaluating costs and benefits, because houses in wealthier neighborhoods cost more than houses in poorer neighborhoods, wealthier neighborhoods receive greater protection. This is an inequitable result, even before considering that less wealthy neighborhoods are often at greater risk of flooding.

Neighborhoods with less wealth are disproportionately communities of color and others who have been historically underserved, marginalized, and adversely affected by persistent inequality. As a result, the Corps' current methods for evaluating projects may result in sacrifice zones—areas where historically marginalized communities are undervalued and unprotected from environmental hazards, such as coastal flooding and sea-level rise.

The Corps' NED cost-benefit analysis fails low-income communities and communities of color in two critical ways: 1. it does not account for the equitable distribution of benefits and burdens and 2. it ignores dimensions of equity related to the project's cost.<sup>44</sup> First, the Corps does not evenly—or equitably—distribute benefits, such as protection against storm surge, and burdens, like impact of flooding and habitat loss. As stated, this approach puts already vulnerable communities at greater risk of displacement than affluent neighborhoods. The Corps should use a multi-criteria analysis that factors in race, income, and housing stability as indicators of equity when considering burden distribution. A distributional cost-effectiveness analysis, which considers equity indicators in relation to cost and time and is often employed in the public health field, is one example of a method that accounts for burden distribution. Second, the cost of the project does not take into account historical patterns of federal actions that have consolidated vulnerable communities in flood-prone areas or the cost of displacement risk for marginalized populations when considered alongside more affluent communities. Without consideration of additional costs to impacted neighborhoods, the analysis is failed to be skewed towards certain outcomes that view areas as low-cost irrespective of the impact.

Federal regulations allow federal entities to use the value of a statistical life (VSL) in cost-benefit evaluations.<sup>45</sup> A wide range of federal agencies (e.g. DHHS, DHS, DOL, DOT, EPA) use VSL for cost-benefit evaluations of proposed safety or pollution control regulations. While most agencies develop their own calculations, some instead simply rely on the VSL determination of a federal agency that does similar work. The Corps already considers statistical lives lost and life loss consequence<sup>46</sup> as a factor in determining which alternatives make to the alternatives analysis, those statistical lives saved or lost do not play a role in the Corps' NED cost-benefit analysis.

The Corps' flood risk management work might most closely resemble work done by the Federal Emergency Management Agency (FEMA). As of July 31, 2020, FEMA was using a VSL of \$7.5 M

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<sup>44</sup> From *Risk to Resilience: The Cost-Benefit Analysis Methodology, Working Paper 1*, page 6. Reinhard Mechler (IIASA) & The Risk to Resilience Study Team (2008). Available at [www.preventionweb.net/files/8088\\_WP1highres1.pdf](http://www.preventionweb.net/files/8088_WP1highres1.pdf). Last visited May 4, 2021.

<sup>45</sup> See, Circular A-4 at 8.b (Fatality Risks), OMB, September 2003. Available at [www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A4/a-4.pdf](http://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A4/a-4.pdf). Last visited May 6, 2021.

<sup>46</sup> See, ER 1105-2-101, *Risk Assessment for Flood Risk Management Studies*, Corps, July 2019. Available at [www.publications.usace.army.mil/Portals/76/Users/182/86/2486/ER%201105-2-101\\_Clean.pdf](http://www.publications.usace.army.mil/Portals/76/Users/182/86/2486/ER%201105-2-101_Clean.pdf). Last visited May 6, 2021.

per person.<sup>47</sup> If the Corps was to include VSL in its cost-benefit and federal interest calculations, that would be one way to reduce the inequities of the current system as communities in high flood risk areas would be more likely to receive protections, as you would expect, in contrast to the current system, where inequitable results occur fairly frequently.

Riverkeeper believes VSL is a blunt instrument when it comes to the inequities within the Corps' current cost-benefit analysis. A proper solution will require more nuance than VSL alone provides. That said, the Corps may want to consider the use of VSM as an interim step, while it takes the time to craft a more equitable solution.

Riverkeeper requests the OASA-CW to develop implementation guidance for section 110 of WRDA 2020 ensure the Corps' updated procedures for implementing the updated PR&G:

- incorporate principles of environmental justice
- avoid having people at greater risk with fewer resources receive less protection
- value people over property
- use a multi-criteria analysis that would use race, income and housing stability as indicators of measuring equity.

Riverkeeper requests the OASA-CW to prepare implementation guidance for section 110 that can push the Corps to correct the existing inequities, to the maximum extent possible.

There are several areas where the Corps' cost-benefit evaluations fail to meet the directives of 42 U.S.C. § 1962–3(a)(3), which Riverkeeper would like to see addressed by the OASA-CW in its implementation guidance.

The first is that while the Corps' methods value natural and nature-based features (NNBF) against how well they can achieve the same purposes as man-made physical structures, the Corps' current valuation does not take into account how many ecosystem services they provide in addition to their core function. Those values should be recognized, particularly now, as climate change is placing increasing pressure and uncertainty upon the ecosystems that surround us. Such a policy change would help protect and restore the functions of natural systems and to mitigate unavoidable damage. Riverkeeper requests the OASA-CW to issue implementation guidance for section 110 of WRDA 2020 ensure the Corps' updated procedures for implementing the updated PR&G place value in all of the ancillary benefits that natural or nature-based alternatives provide that structural alternatives lack.

The second is that, despite the policy of the United States for all water resources projects to restore the functions of natural systems, the Corps' cost-benefit evaluations do the opposite. For the most part, ecosystems only factor into the Corps' cost-benefit evaluations to the point they provide immediate economic benefit. So, while an active fishery has value, a depleted fishery has little value, and endangered species have none. How does that align with the policy of all water resources projects to restore the functions of natural systems, when the current cost-benefit analysis undervalues the systems that need restoration? Just as restoring lost or impaired functions of degraded ecosystems for ecosystem health is important, protecting the functions of healthy ecosystems is just as important. Similarly, the Corps needs to properly consider the actual positive and negative impacts of the “no action alternative,” as taking no action does not necessarily mean that things will remain as they are, particularly in areas highly impacted by sea-level rise.

Riverkeeper requests the OASA-CW to issue implementation guidance for section 110 of WRDA 2020 that ensures each alternative properly assesses the positive and negative benefits to the

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<sup>47</sup> See, FEMA Benefit-Cost Analysis (BCA) Toolkit 6.0 Release Notes, FEMA, July 2020. Available at [www.fema.gov/sites/default/files/2020-08/fema\\_bca\\_toolkit\\_release-notes-july-2020.pdf](http://www.fema.gov/sites/default/files/2020-08/fema_bca_toolkit_release-notes-july-2020.pdf). Last visited May 6, 2021.

environment.<sup>48</sup> Riverkeeper believes that in flood risk reduction projects that involve depleted ecosystems and threatened or endangered species, the Corps needs to closely consider how the alternatives can produce environmental outputs that offset the past environmental harms. This is of particular importance to Riverkeeper, because every single iconic species in the Hudson River is in decline, endangered, depleted, or unfit for human consumption because of pollution, over-exploitation, bycatch, habitat loss, habitat alteration, and the various normal ailments (e.g. disease, parasites) that have far more debilitating effects upon weakened populations. Both species of sturgeon in the Hudson River have been around for 285 million years, but it is only in the last 140 years that they have been brought to the edge of extinction. The extinction of any species is a loss of great esthetic, ecological, educational, historical, recreational, and scientific value to this Nation and its people.<sup>49</sup> Water resource development projects have a significant impact on the health of the Hudson River, and we need the Corps' updated procedures for implementing the 2013/2014 PR&G for water resources projects to better protect and restore the functions of natural systems and mitigate any unavoidable damage to natural systems.<sup>50</sup>

### **§ 112(a) Project Consultation; Reports Required**

If the reports required under section 112(a)(1)-(2) of WRDA 2020 have not been submitted at the time the implementation guidance is issued, the Corps will have ignored yet another Congressional deadline. If that occurs, the implementation guidance for section 112 should include a timetable with defined deliverables to ensure the Corps carries out its obligations.

### **§ 113 Review of Resiliency Assessments**

#### **(a) Resiliency Assessment**

Riverkeeper believes that section 113 of WRDA 2020 will require detailed implementation guidance. Before we consider the effects, we should start with the measure itself. While the 2019 revisions to the Corps' method for calculating sea-level rise<sup>51</sup> improves upon the 2013 methods that it replaces, the Corps' guidance remains problematic. The Corps' method presents three relative sea-level rise scenario curves – Low, Intermediate, and High, which represent the historical trend, an intermediate projected rise, and a worst-case projected rise. However, the Corps' methods do not provide an estimate of the likelihood of any of these scenarios, and as a result, the Corps' relative sea-level rise estimates cannot be used in a probabilistic risk assessment<sup>52</sup> or to produce a more sophisticated cost-benefit analysis.

The Corps' methods of estimating relative sea-level rise have another problem, as the likelihood of the Corps' Low sea-level change (SLC) scenario being accurate is essentially zero. Sea-level rise projections based on climate models forecast sea-level rise will accelerate over time due to positive feedback loops<sup>53</sup> and delayed responses.<sup>54</sup> Despite this, the Corps' Low-SLC projection uses a linear

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<sup>48</sup> See, *Memorandum for the Commanding General regarding Comprehensive Documentation of Benefits in Decision Documents*, at 6.c.; ASA(CW) R.D. James; January 5, 2021.

<sup>49</sup> Endangered Species Act § 2(a)(3).

<sup>50</sup> 42 U.S.C. § 1962–3(a)(3).

<sup>51</sup> Engineering Regulation (ER) 1100-2-8162, *Incorporating Sea level Changes in Civil Works Programs*, June 2019, and Engineering Pamphlet (EP) 1100-2-1, *Global Changes – Procedures to Evaluate Sea Level Change: Impacts, Responses, and Adaptation*, June 2019.

<sup>52</sup> See, ER 1105-2-101, *Risk Assessment for Flood Risk Management Studies*, U.S. Army Corps of Engineers, July 2019, at 8.b.: “The ultimate goal of a risk assessment is a comprehensive approach in which the values of all key variables, parameters, and components of flood risk management studies are subject to probabilistic analysis.”

<sup>53</sup> E.g. albedo reduction from melting ice, albedo reduction resulting from increased vegetation following permafrost melt, desertification, increased number and intensity of forest fires, permafrost and peat decomposition, rainforest drying, sublimation of methyl hydrate deposits, warmer oceans absorb less carbon dioxide, water vapor feedback.

extrapolation of historical trends, which underestimates the lower bound for SLC projections. Designing around an impossibly low SLC estimate is not a valid design scenario. If the Corps has ever implemented a design based on its Low-SLC scenario, it would be wise to reassess that design. If the Corps has *never* implemented a design based on its Low-SLC scenario, then the Corps only has two viable design scenarios, where the Low-SLC scenario should be either revised to provide a meaningful third scenario or eliminated as a waste of taxpayer dollars.

While incorporating local land subsidence or isostatic rebound with a global sea-level change does partially adjust a global model to the region, it is not as precise as a properly prepared regional model that is based on the best available, peer-reviewed science and data. While the Corps' guidance allows for other models to be prepared alongside the Corps' models, Riverkeeper requests the implementation guidance for section 113(a) of WRDA 2020 to explicitly direct the Corps to use peer-reviewed regional models in place of the Corps models when the regional model is more reliable.

**(b) Assessment of Benefits from Addressing Sea-Level Rise and Inland Flooding Resiliency in Feasibility Reports**

The implementation guidance for evaluations under section 113(b) of WRDA 2020 should require that when evaluating feasibility studies that only address hurricane and storm damage, the valuation should identify any cost-neutral or negligible-cost design changes that could reduce other forms of flooding.

**§§ 114-115 Small Flood Control Projects; Flood Protection Projects**

Riverkeeper recommends the implementation guidance for sections 114 and 115 of WRDA 2020 ensure adequate setbacks for levee construction. Proper setbacks allow floodwaters to spread out, reducing flow velocity, erosion, and scour. Reducing floodwater height reduces pressure on the levee and the associated risk to life and property. Further, proper setbacks allow those areas of the floodplain to serve their natural functions and provide for a healthier and dynamic river system.

**§ 116(b) Feasibility Studies; Review of Natural and Nature-Based Features, Summary Analysis**

This section requires the Corps to evaluate the long-term benefits of natural or nature-based alternatives for projects developed under 33 U.S.C. § 2282 that contain a flood risk management or hurricane and storm damage risk reduction element. In addition to the physical benefits non-nature-based, structural features provide, such as flood storage and shoreline erosion control, NNBF such as wetlands, oyster beds, and submerged aquatic vegetation also provide important water quality benefits.

Intertidal wetlands provide water quality benefits that include filtration and sediment retention, nutrient and CO<sub>2</sub> uptake, chemical sequestration and detoxification, and groundwater recharge. Oyster beds filter plankton, nitrogen, suspended sediment, and chemical contaminants from seawater. Submerged aquatic vegetation, such as seagrass beds, provide filtration, nutrient uptake, pathogen control, regulation of dissolved gasses, including CO<sub>2</sub> respiration and oxygenation. All of these important water quality benefits should be considered when evaluating the long-term benefits of NNBF alternatives to structural features for flood control.

Wetlands and submerged aquatic vegetation are often very effective sediment traps, which the majority of our coasts could use to help offset the relative sea-level rise. They sequester carbon in the living vegetation as well as in litter, peats, organic soils, and sediments. "Wetland soils contain some

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<sup>54</sup> E.g. the response time for ice sheets is estimated to be on the order of centuries. See, *Climate change and trace gases*, Phil Tran Roy Soc 365: 1925–1954, J. Hansen, et al., May 2007. Available at [doi.org/10.1098/rsta.2007.2052](https://doi.org/10.1098/rsta.2007.2052). Last visited May 5, 2021.

of the highest stores of soil carbon in the biosphere.”<sup>55</sup> Further, eight percent of the world’s greenhouse gas emissions come from the production of concrete,<sup>56</sup> so there is value in reducing the amount of concrete required for a project.

These water quality and climate-related benefits are often unacknowledged in cost-benefit analyses, leading to natural or nature-based alternatives being undervalued in feasibility reports. Riverkeeper requests the implementation guidance for section 116(b) of WRDA 2020 requires the Corps’ summary of the long-term costs and benefits of natural or nature-based features to require the Corps to properly consider their societal and environmental benefits.<sup>57</sup>

#### **§ 118 *Pilot Programs on the Formulation of Corps of Engineers projects in Rural Communities and Economically Disadvantaged Communities***

Specific Comment § 102, above, discusses a way in which projects for resolving outstanding environmental remediation at eligible ports<sup>58</sup> could be funded by the HMTF. Riverkeeper suggests that the Corps should screen any feasibility studies proposed under section 118 of WRDA 2020, excluding the 10 feasibility studies selected, to determine if the proposed projects are located in eligible ports and contain elements that could be similarly funded. If such projects exist, those projects should be referred to the District office to work with the applicant to revise the original proposal for submission as an environmental remediation project funded under the HMTF.

#### **§ 124 *Sense of Congress on Multipurpose Projects***

Section 124 of WRDA 2020 clarifies that Congress expects the ASA(CW) to coordinate with non-Federal interests in preparing implementation guidance to “maximize the development, evaluation, and recommendation of project alternatives” that can provide benefits beyond navigation, including through the use of natural or nature-based features and ecosystem restoration. Section 124 of WRDA 2020 should be referenced in any cross-cutting implementation guidance, and in any implementation guidance that advances the specified interests.

Riverkeeper believes that to implement section 124 of WRDA 2020, the OASA-CW will need to clearly define what is expected of the Corps to “maximize the development, evaluation, and recommendation of project alternatives for future water resources development projects that produce multiple project benefits, such as navigation, flood risk management, and ecosystem restoration benefits.”

#### **§ 125 *Beneficial Reuse of Dredged Material; Dredged Material Management Plans***

Section 125 of WRDA 2020 establishes national policy for the Corps to “maximize the beneficial use, in an environmentally acceptable manner, of suitable dredged material obtained from the construction or operation and maintenance of water resources development projects.” This could have far-reaching benefits, particularly at a time when most of our coasts are not keeping up with sea-level rise. The Corps dredges 200-300 million cubic yards of dredged material annually from over 12,000 miles of navigation channels, much of which is disposed of as waste. Instead of disposal, clean dredge material should be used to help our coastal cities and tidal environment adapt to sea level rise and improve the health of coastal ecosystems. Riverkeeper recommends that the OASA-CW develop detailed implementation guidance for each major provision within section 125 of WRDA 2020.

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<sup>55</sup> See, *Carbon storage in US wetlands*; Nat Commun 7, 13835; Nahlik, A., Fennessy, M. (2016). Available at [rdcu.be/cjw95](http://rdcu.be/cjw95). Last visited April 27, 2021.

<sup>56</sup> See, *Making Concrete Change: Innovation in Low-carbon Cement and Concrete*, Chatham House, Lehne, J., Preston, F. (2018). Available at [www.chathamhouse.org/2018/06/making-concrete-change-innovation-low-carbon-cement-and-concrete](http://www.chathamhouse.org/2018/06/making-concrete-change-innovation-low-carbon-cement-and-concrete). Last visited April 27, 2021.

<sup>57</sup> See, 33 U.S.C. § 701b–11(a); see also, 33 C.F.R. § 236.4(b).

<sup>58</sup> See, 33 U.S.C. § 2238c(c).

Unfortunately, the Corps current procedures only allow it to dispose of clean dredge material from maintenance dredging projects in the lowest cost, environmentally acceptable manner. At the same time, uncontaminated dredged sediment is often the most cost-effective source of sediment needed for coastal resiliency, habitat creation, and similar projects. The result is that the Corps pays money to dispose of sediments, and then the Corps needs to pay again, at a higher amount, to obtain sediments for other projects. Looked at as a whole, the end effect is a needlessly waste of taxpayer money, and the need to obtain clean sediment instead of the beneficial reuse of clean dredged sediment also ends up needlessly disturbing a borrow site.

The Corps should update its procedures to allow for the selection of alternatives other than the lowest cost, when the net benefit of an alternative is greater than the cost differential between that and the lowest cost alternative. Riverkeeper encourages the OASA-CW to develop implementation guidance that provides direction on how to calculate net benefits which properly considers long-term benefits (*see, Specific Comment § 116[b]*) and ancillary benefits, including as applied to the Federal Standard in section 125(a)(2)(B).

Riverkeeper believes the terms “beneficial” and “multi-benefit projects” need to be clearly defined, and defined broadly to maximize the use of uncontaminated dredged sediments in coastal resiliency, habitat creation and restoration, flood risk reduction, flood plain expansion, infrastructure protection, and other approved projects. Guidance for how the Corps should work with regional partners to identify and implement beneficial use projects would also be helpful, particularly for recurring operations and maintenance projects. The Corps will also need guidance for weighing between multiple projects in cases where the need for sediments is larger than the supply. Given the overall decline in fish stocks worldwide, Riverkeeper would like to see that guidance place an emphasis on habitat creation and restoration, followed by coastal resiliency.

**(c) Five-Year Regional Dredged Material Management Plans**

Riverkeeper recommends the OASA-CW develop implementation for how the Corps is to develop the required regional dredged material management plans, including how these would relate to regional goals and existing dredged material management plans.

**§ 129(a) Missouri River Interception-Rearing Complex, Report.**

Given the imperiled state of sturgeon throughout the country, Riverkeeper agrees that completing a peer-reviewed report within the one-year timeframe allotted is important, and looks forward to reviewing the report when it is complete. Interception-rearing complexes should never be used to facilitate or allow development projects that otherwise would not be permitted. Maintaining existing critical habitat and natural recruitment methods is essential for the long-term survival of sturgeon.

**§ 202(a) Expedited Completions, Feasibility Reports**

**(47) Project for flood risk management, Rondout Creek-Wallkill River Watershed, NY**

Implementation guidance for section 202(a)(47) of WRDA 2020 should be issued that can ensure the flood risk management designs do not conflict with the tributary connectivity restoration work identified in the *Hudson River Habitat Restoration Ecosystem Restoration Feasibility Study*.

**§ 203(a)(4) New York and New Jersey Harbor and Tributaries Feasibility Study**

Many of Riverkeeper’s comments relating to the NYNJHAT Study are found in the body of the letter that included this attachment. The remainder of Riverkeeper comments on section 203 of WRDA 2020, most of which are in relation to other sections of WRDA 2020.

Riverkeeper requests the implementation guidance for section 203(a)(4) of WRDA 2020 require the final report to assess the potential effects of sea-level rise or inland flooding on relevant communities (WRDA 2020 § 113[a][1]), the degree to which flooding risks are exacerbated by conditions related to sea-level rise and inland flooding (§ 113[b][1]), and the expected benefits of the project relating to

sea-level rise or inland flooding, during the 50 years following the date of completion of the project (§ 113[b][2]).

Following Hurricane Sandy, many metropolitan areas within the Study Area commissioned inland and/or storm surge flood studies. To provide one example, the New York City Mayor's Office of Resiliency is currently undertaking a multi-year initiative to develop Future Flood Risk Maps (FFRMs)<sup>59</sup> based on the best available flood risk information, dynamic flood modeling, and latest climate data from the NYC Panel on Climate Change (NPCC). These studies will often be at a finer scale than those normally generated by the Corps, and incorporate types of details only the local government would be familiar with. Where such studies are at least as rigorous as those used by the Corps, the Corps can save taxpayer funding and receive a finer level of detail by incorporating those studies into its own work. At a minimum, discrepancies between high-quality regional or local studies and the Corps' work can serve to quickly identify areas where additional review may be warranted.

In Specific Comment § 102, Riverkeeper noted that funds from the HMTF can be used at donor ports<sup>60</sup> for environmental remediation related to dredging of ports, harbors, and Federal navigation channels. The Port of New York & New Jersey is a donor port for purposes of the HMTF. The implementation guidance for sections 125 and 203(a)(4) should direct the Corps to locate potential wetland restoration and coastal resilience mitigation projects that (a) can help further the objectives of the NYNJHAT Study, (b) are appropriate for resolving outstanding environmental remediation from prior dredging at the Port, which could (c) beneficially reuse clean sediments from navigational maintenance dredging and, (d) receive funding from the HMTF.<sup>61</sup>

In addition, the Study should be completed in accordance with the January 5, 2021 Policy Directive from the ASA(CW) to the Commanding General of the Corps, *Comprehensive Documentation of Benefits in Decision Document*.<sup>62</sup> Specifically, the study should fully account for the total benefits of project alternatives, including equal consideration of economic, environmental and social categories, and be applied to cost-benefit analyses required to support decision making, identify and consider objectives that are responsive to national, state, and local concerns when undertaking studies, including life-safety.

As stated in Specific Comment § 110(a), above, Riverkeeper believes the procedures to implement the 2013-2014 PR&G will improve the public benefits received from water resource development projects, and recommends the implementation guidance for section 203(a)(4) of WRDA 2020 specify that the Corps should apply the updated procedures to the NYNJHAT Study immediately after the procedures are approved, for decisions made from that point forward. In consideration of the scope of the Study and the Sense of Congress in section 124 of WRDA 2020, Riverkeeper also recommends the implementation guidance provide the Corps with the authority to reconsider recent decisions under the new procedures, when reconsideration is likely to lead to multiple project benefits, including through the use of NNBF, or otherwise increase the public benefits from the Study.

The entirety of Specific Comment § 116 also applies to this comment.

#### § 203(a)(4)(A)

WRDA 2020 altered the scope of the NYNJHAT Study from a study of how to protect the study area from flooding from coastal storms to how to protect the study area from multiple forms of flooding:

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<sup>59</sup> The final FFRMs will conform with FEMA standards to provide consistency in risk communication.

<sup>60</sup> 33 U.S.C. § 2238c(a)(3).

<sup>61</sup> Note: this might also be able to provide an alternative funding method for certain natural or nature-based features identified in the accelerated study discussed in the body of this letter.

<sup>62</sup> See, *Memorandum for the Commanding General regarding Comprehensive Documentation of Benefits in Decision Documents*, ASA(CW) R.D. James, January 5, 2021.

coastal storms, low-frequency precipitation events (e.g. stationary storms), and sea-level rise. As stated in Specific Comment § 113(a), above, the Corps' methods for estimating sea-level rise have some shortcomings, which include the lack of probability estimates for the scenarios, the inability to use them in a probabilistic risk assessment, or to the inability to otherwise incorporate them into the cost-benefit analysis.

In Specific Comment § 113(a), Riverkeeper requested the implementation guidance for that section direct the Corps to use regional models for relative sea-level rise when the regional model is more reliable. Within the study area, those regional models do exist.<sup>63</sup> The State of New York has codified its region-specific sea- level rise estimates in [6 NYCRR Part 490, Projected Sea-level Rise](#), which it updates every five years,<sup>64</sup> suitable for probabilistic risk assessments and cost-benefit analyses. Riverkeeper requests the implementation guidance for section 203(a)(4) of WRDA 2020 to require the Corps to use these more accurate models in place of the methods in ER 1100-2-8162 and EP 1100-2-1, which would save both time and taxpayer funds. It makes no sense to use the Corps' partially localized methods when more accurate regional-specific models exist.

If the ASA(CW) declines Riverkeeper's recommendation to direct the Corps to use the more accurate regional-specific models in place of ER 1100-2-8162 and EP 1100-2-1, then Riverkeeper makes the alternative request for the implementation guidance for section 203(a)(4) of WRDA 2020 to require the Corps to update any work from the prior NYNJHAT Study to conform with the projections generated under the most recent version of ER 1100-2-8162 and EP 1100-2-1.

#### § 203(a)(4)(B)

The implementation guidance for section 203(a)(4)(B) should also incorporate any guidance prepared for the community engagement provisions in section 112(c) of WRDA 2020.

#### § 203(a)(4)(C)

Due to its geographic size, complexity, and the expansion in scope, the NYNJHAT Study, as amended by WRDA 2020, is unlikely to be completed properly without a waiver of the Corps' 3×3×3 rule. As a result, the implementation guidance for section 203(a)(4)(C) should require the updated schedule and cost estimate be prepared in a manner appropriate for submission to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives, in accordance with section 1001(b)(1) of the Water Resources Reform and Development Act of 2014 (33 U.S.C. § 2282c[b][1]) and instruct the Corps to request such a waiver early in the process if such a waiver may be necessary.

As identified by the Congressional Research Service (CRS), “traditional structural measures are institutionally easier for USACE to implement, which disadvantages use of NNBFs, especially in situations and contexts that favor expediency or are time-constrained.”<sup>65</sup> In a footnote, CRS specifically identified the Corps' 3×3×3 rule as one of the time constraints they were referencing. “Although USACE has decades of experience planning and constructing structural levees and dams, and the authorities and policies to guide those measures, the agency’s guidance and experience with NNBFs are less well-developed. For example, implementing NNBFs may require USACE to work with more federal and nonfederal agencies, landowners, and other stakeholders than the agency would with structural measures.”<sup>66</sup>

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<sup>63</sup> E.g., [New York City Panel on Climate Change, New Jersey Climate Change Resource Center](#).

<sup>64</sup> See, [New York State Environmental Conservation Law § 3-0319](#).

<sup>65</sup> *Flood Risk Reduction from Natural and Nature-Based Features: Army Corps of Engineers Authorities* at page 17; Congressional Research Service; April 27, 2020. Available at [crsreports.congress.gov/product/pdf/R/R46328](#). Last visited May 5, 2021.

<sup>66</sup> *Idem*.

Riverkeeper believes that the NYNJHAT Study would be best served by a multi-layered approach with significant reliance on NNBFs, and WRDA 2020 places a strong value on the use of NNBFs.<sup>67</sup> In section 124 of WRDA 2020, Congress requested the Army use the provisions of WRDA 2020 to “maximize the development, evaluation, and recommendation of project alternatives that produce multiple project benefits, such as navigation, flood risk management, and ecosystem restoration benefits, including through the use of natural or nature-based features and the beneficial use of dredged material,” a process that can also add time and complexity to the process. As a result, Riverkeeper further requests the OASA-CW issue implementation guidance for section 203(a)(4)(C) that requires the New York District Office to request a waiver of the Corps’ 3×3×3 rule at the very beginning of the process.

**§ 509(b) Fish and Wildlife Service Asian carp eradication program.**

Asian grass carp have spread from the Mississippi River basin to the St. Lawrence River basin, and are present in each of the Great Lakes, with the possible exception of Lake Superior. Grass carp have reproduced in the Sandusky River, a tributary of Lake Erie, and Lake Erie has a particularly hospitable habitat for this invasive species.<sup>68</sup> Environmental DNA tests indicate the presence of Asian silver carp within Lake Michigan, presenting the distinct possibility that other silver carp and Asian bighead carp may soon follow.

The Erie Canal is a pathway in which invasive species in the Great Lakes have previously spread to the Hudson River and the Finger Lakes.<sup>69</sup> Riverkeeper believes that it is essential for an Erie Canal barrier and/or bypass system<sup>70</sup> to be constructed to prevent Asian carp from using that pathway to spread to the Hudson River, the Finger Lakes, and Lake Champlain. Riverkeeper believes that any implementation guidance prepared by the United States Fish and Wildlife Service should explicitly include barriers or flow interruptions to prevent further spread of Asian carp as components of the Asian carp eradication program.

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<sup>67</sup> Eleven sections of WRDA 2020 reference NNBFs, including Sense of Congress on Multipurpose Projects in section 124. See, WRDA 2020 §§ 114-16, 118-19, 123-24, 211, 213, 216, 230.

<sup>68</sup> *Ohio: Worrisome Carp Are Found in a Tributary of Lake Erie*; New York Times; Oct. 29, 2013. Available at [www.nytimes.com/2013/10/29/us/ohio-worrisome-carp-are-found-in-a-tributary-of-lake-erie.html](http://www.nytimes.com/2013/10/29/us/ohio-worrisome-carp-are-found-in-a-tributary-of-lake-erie.html). Last visited May 5, 2021.

<sup>69</sup> *Monitoring the Status and Expansion of Round Goby Populations in the Mohawk River/Barge Canal System*; USGS New York Water Science Center. Available at [www.sciencebase.gov/catalog/item/59f88488e4b063d5d309ef3f](http://www.sciencebase.gov/catalog/item/59f88488e4b063d5d309ef3f). Last visited May 5, 2021.

<sup>70</sup> The most effective barrier may be one similar to the Morris Canal in northern New Jersey (now closed) or the Elblag Canal in Poland, updated with modernized methods.