

WRITTEN STATEMENT FOR THE RECORD

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THE ROLE OF NATURAL AND NATURE-BASED FEATURES IN WATER RESOURCES PROJECTS

BEFORE THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
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Thank you, Chairman Carper, Ranking Member Capito, and members of the committee for the opportunity to testify on "The Role of Natural and Nature-Based Features in Water Resource Projects."

My name is Julie Ufner. I am President of the National Waterways Conference, Inc. (NWC or Conference). Prior to coming to the Conference, I served as the Associate Legislative Director for Environment, Energy and Land Use at the National Association of Counties (NACo) for 17 years. NWC would like to thank both Chairman Carper and Ranking Member Capito for their leadership, along with this committee for its long-standing tradition of cooperation and collaboration in addressing our nation's critical water resources needs.

About NWC

Established in 1960, NWC is the only national organization to advocate in favor of national policy and laws that recognize the vital importance of America's water resources infrastructure to our nation's well-being and quality of life. Supporting a sound balance between economic and human needs and environmental and ecological considerations, our mission is to effect common sense policies and programs, recognizing the public value of our nation's water resources and their contribution to public safety, a competitive economy, national security, environmental quality and energy conservation.

Conference membership is comprised of the full spectrum of water resources stakeholders, including flood control associations, levee boards, waterways shippers and carriers, industry and regional associations, port authorities, shipyards, dredging contractors, regional water supply districts, hydropower producers, engineering consultants and state and local governments. Many of our members are Non-Federal Sponsors (NFS) of U.S. Army Corps of Engineers (USACE or Corps) civil works projects, responsible for significant financial commitments for the construction and maintenance of these projects. They work diligently and collaboratively with our federal partners to ensure the nation can reap the multiple benefits provided by these investments.

Natural and nature-based infrastructure can play a role in water infrastructure.

We know from experience that where effective flood risk management infrastructure is in place, whether gray, green, or a combination of both, communities tend to experience a lesser degree of physical harm and economic damage during inland and coastal flood events. As we strive for more resilient development of our watersheds, it is important to consider investment in holistic water

management systems that address desired risk reduction in extreme events over the life cycle of the project. Not only will such an approach save taxpayer money, but it will also mitigate the difficult decisions later on how to address devastation, and whether and where to rebuild.

The three most recent Water Resources Development Acts (WRDAs), WRDA 2016, 2018, and 2020, include provisions regarding the consideration of NNBF in project development. As Congress and stakeholders consider the effectiveness of these provisions, and as the nation grapples with how to make its infrastructure more resilient, some context and background is helpful to ensure that infrastructure investments can deliver their benefits as intended. Through its Civil Works program, the Corps is responsible for the development, maintenance, and oversight of much of the nation's water resources infrastructure. This includes navigation, flood risk management, ecosystem restoration, hydropower, water supply, recreation, and environmental stewardship, as well as providing emergency response services.

As part of the project development process, the Corps considers environmental issues primarily in the planning phase, which is the central element of the feasibility study process. This process provides an organized approach to the conceptualization of projects that is responsive to local, state and national needs, premised upon the project's contribution to national economic development while protecting the environment. In addition to the complex, and often lengthy internal review process, Corps' studies are also subject to extensive external reviews, including under the National Environmental Protection Act, at the first stage of the process.

A meaningful review of the recent WRDA provisions relating to NNBF must consider the input and experiences of those on the front lines, on the ground, including flood control districts, levee boards, emergency managers, port operators, to name a few. In that regard, NWC would like to offer some insight from our members.

A successful example of NNBF hails from the dredging world. Since the Water Resources Reform and Development Act of 2014, there has been a heightened focus on the beneficial use of dredged material, recognizing the mutual benefits that can be accrued by both navigation and ecosystem restoration. In fiscal year 2021, the USACE New Orleans District worked to maintain the authorized channel dimensions on the Mississippi River Ship Channel of 50 feet, yielding 30.5 million cubic yards (mcy) of material. The district used the dredged sediment to create 2,334 acres in the environmentally sensitive bird's foot delta (mouth of the Mississippi River). This helps protect the river against storm surge and encroachment by the Gulf of Mexico. Since 2009, the program has restored over 13,000 acres of environmental sensitive and economically important

Mississippi River Delta and Southwest Pass areas. This is one of the largest wetland restoration projects in the world and is a key example of building with nature and adapting to the challenges of coastal resilience.

While natural and nature-based features can be an important tool in the toolbox for water resource challenges, there are limitations.

Overall, there is a consensus among our members that the use of NNBF is a good idea when appropriate. It is a concept taken seriously in the field by water resources management, but they caution, it is not appropriate in all circumstances. When the project situation is well-suited, NNBF can be incorporated into the overall project design, perhaps in combination with other best practices. The NNBF should be monitored closely to determine how they provides flood protection and hold up over time.

For example, the Santiago Canyon Road at Modjeska Erosion Project 2018 (Orange County, California), used natural processes to successfully redirect flows from a severely eroded roadway. Due to the nature-based design, no mitigation was required, and the county saved at least $80,000, primarily because the project provided a permanent solution with minimal ongoing costs. In contrast, another project in the same county (Lane Channel Vegetated Slope Project) had a much higher installation cost. Additionally, the engineers raised concerns that the overall design may not be effective long-term.

We would also suggest that there needs to be a common understanding of the words "natural and nature-based features." Terminology is important because NNBF terms are related to other popular water management concepts – green infrastructure, sustainability, resiliency, living shorelines, low impact development and others – which can cause confusion. Collectively, we need to be aware what NNBF is and is not and what it can and cannot do. Likewise, we must recognize the difference between "what might be a good idea" and "what we have actually seen work" in practice. That way, local communities, stakeholders, non-federal sponsors, and federal leaders will be better poised to incorporate NNBF into water infrastructure, if the feature meets local needs.

When used effectively, nature-based solutions are frequently part of a multi-feature design, where the feature is a component of the overall larger project. While there is much to be sorted out in terms of NNBF basic effectiveness, it should be part of the toolbox as we explore improved approaches toward resilient flood risk reduction. The practice of NNBF will mature over the next

several years and we will gain better understanding of its overall effectiveness across a range of inland and coastal regimes.

Additionally, NNBF improvements must be considered with long-term strategies, which are already in place, because no one situation fits all communities. The key is to work closely with the local communities to determine the best solutions for the area. The City of Dallas works closely with its federal and state partners to determine how best to incorporate NNBF and other infrastructure into its existing and pending water infrastructure projects. After significant flooding in 1989 and 1990, the city worked with USACE to create the "Chain of Wetlands," a 270-acre wetland with water management capabilities with environmental benefits. Since then, the city has continued to work collaboratively with the Corps and other federal agencies to build upon its NNBF successes.

WRDA 2020 authorized the Norfolk Coastal Storm Risk Management Project, which offers another example of successful collaboration with the local community. The study was a comprehensive investigation of flood risk management problems and solutions in the City of Norfolk which came about because of findings from a larger effort, the North Atlantic Coast Comprehensive Study, which was authorized by Congress after Hurricane Sandy in October 2012, to identify and address flood risks of vulnerable coastal populations in that region. Ultimately, the now-authorized project is a $1.4 billion investments in the City of Norfolk, providing structural, nonstructural, and natural and nature-based solutions to reduce storm damages in the event of coastal storms, while accounting for sea level change.

The study process provides insight into how such collaborative efforts can yield positive results. The Corps partnered with the city to assess not only how to reduce coastal storm risk, but also to build resiliency by implementing strategic approaches that address frequent tidal flooding risk, major storms and the impact on residents and economic activity. A few key takeaways from the process can instruct future planning efforts. First, quantifying green infrastructure was difficult, suggesting that further research is needed to justify the inclusion of some options in a federal project. In response to this challenge, the city intends to move forward on community resilience efforts on a local scale, addressing needs beyond the scope of the Corps study. For instance, in addition to the infrastructure improvements proposed in the study, the city plans to use nonstructural measures such as increased freeboard requirements for new structures and floodproofing. Equally important is the recognition that coastal resilience planning and preparedness do not end with the Chief's Report, but must continue to evolve, in a proactive rather than reactive approach.

Harris County Flood Control District (HCFCD) has implemented multiple channel improvement projects for flood damage reduction and major maintenance using natural stable channel design features. Natural stable channel design was selected over traditional infrastructure design alternatives to compensate for environmental impacts associated with the projects (thereby facilitating permitting) and to provide an enhanced and sustainable channel design that works with a channel's natural fluvial and physical character. Though the process and lessons learned from adding trees and other vegetation to the design, HCFCD is using computer modeling to determine cost savings from "additional benefits" that trees provide. In the coming year, the district will be able to provide data on cost-savings.

However, HCFCD notes, due to the various types of natural streams of all shapes and sizes that they work on, the overall price per linear foot (LF) associated with stream restoration efforts should always be compared against the type of work being done, the constraints they are having to work around and the overall size of the system.

In another example, Lake Charles Harbors and Terminal District (LCHTD) in Louisiana partners with the Corps to use dredged material from the channel to create wetlands whenever there are available funds. In the past, the NFS was required to pay 100 percent of the additional cost to build the wetlands, rather than using disposal sites along the channel. According to LCHTD, one project several years ago cost over $20 million to create 600 acres because of the cost to pump the material 12 miles to the marsh creation site. Through these efforts, in total 3,900 acres of wetlands have been created. LCHTD was only able to participate since the funds were provided by the state of Louisiana, otherwise, the costs would be prohibitive for the port.

Moreover, in more densely populated areas, our members note that there are many constraints that affect project design. In many instances, existing infrastructure in the form of public utilities, private utilities, roadway infrastructure, limited available right-of-way, and other public interests such as trails, parks, and other multi-purpose use desires must be balanced within the design of the project. In other instances, homes and businesses are enjoined in urban areas, and there is nowhere to build NNBF, since the cost of land is high. These constraints ultimately may limit the project design in some way or may have impacts on the overall cost of the project.

Members note that as we build, rebuild and replace water resources infrastructure to account for future weather events, designs must be more robust and resilient with redundant protective, cost-effective measures to account for extreme rainfall, wind, flood levels and overtopping. As a result,

communities, where feasible, are using joint infrastructure (gray with green-nature based) to improve the overall life cycle cost and increase system reliability and resilience.

Recent flooding in the Upper Mississippi River Valley is taking place, in part, because the region is guided by the 1954 Flood Control Act, which has not been updated to reflect current weather conditions. To maintain effectiveness and resiliency, this natural material dredged sand levee system requires a design updates to fully meet Congress's and USACE's intent to prevent overtopping of sand levees. However, these USACE designed levees were created after the record 1947 floods and are currently seven feet below the current weather design (based on recent flood events). Consequently, what worked in 1954 with 100 percent natural sand levees, is no longer effective in preventing floods.

Additional information shared by nonfederal sponsors indicates that while many would like to include NNBF within their project design, they often are challenged by existing or even competing federal agency regulations. A good example of this is the Corps levee vegetation removal policy under P.L. 84-99. Under this policy, all vegetation, except grass, is to be removed from levees to allow for easier inspections and reduce the risk of weakening through root growth. Levees not in compliance with this policy would be ineligible for federal disaster assistance. However, by removing the vegetation, levee districts are then in direct violation of other federal and/or state laws and regulations which require vegetation for endangered or threatened species, leaving levee districts to choose between meeting Corps standards on vegetation and violating environmental laws or complying with Endangered Species Act provisions and foregoing federal disaster funds after flooding.

Furthermore, under the existing Corps permitting regime for the 2008 mitigation rule for mitigation banks, it is difficult to use natural and nature-based features within an existing project design for compensatory mitigation purposes. Instead, in certain parts of the country, the Corps prefers an offsite mitigation or in-lieu fee, rather than a natural based solution onsite. And, if such a project is undertaken as part of a larger non-USACE infrastructure project, the Corps typically requires an individual Section 404 permit, which requires a longer review than the Nationwide Permits. This can add expenses to a project, as well as lengthen the time to complete it, which is relevant if the project is using federal funds and has a certain amount of time to complete it.

Finally, in terms of the long-term viability of solutions to water resources that rely solely on NNBF, there is limited data on life cycle costs for NNBF projects. Where there is information, indications are that such costs will vary tremendously depending upon the location and the nature and extent of

the problem being addressed. In many instances, nonfederal project sponsors have found that a hybrid between NNBF and traditional mitigation/ protection/restoration measures (called green-gray projects) is most appropriate. Some anecdotal evidence indicates that costs are higher up-front, with reduced maintenance in the long term. Conversely, for some types of projects, the costs continue to be higher. We take from this that all options should be considered during the planning process, without any mandates or preferences up front. The thorough scientific and engineering analysis through the planning process will reveal the costs and benefits over a project's lifetime, typically a 50-year project performance. This complex process is intended to ensure that limited scarce resources are not wasted while providing flexibility to best meet the needs the project is seeking to address.

There are several ways that Congress can encourage the use of natural and nature-based features in water projects.

In response to Congress's directive for USACE to evaluate NNBF applications in previous WRDA bills, our members would like to offer several potential solutions on NNBF:

- **Ensure that federal agencies work collectively and collaboratively with NFS on all water resource project designs and redesigns.** We would encourage the federal government not to impose new and/or additional requirements or obligations at this time.
- **Change federal policies, regulations, and laws** to ensure consistency.
- **Support ongoing research and review of implemented NNBF** to quantify effectiveness and reliability. This research should include how and under what physical circumstances NNBF have provided flood risk reduction. That is, provide assessment of flood risk reduction by structural (traditional) versus non-structural, as well as determine how and to what degree NNBF is flood resilient, compared to other methods.
- **Complete and/or release to the public the NNBF USACE report that was authorized under WRDA 2016** and due to Congress in Feb. 2020.This report will give insight into how USACE will evaluate NNBF, nonstructural and structural features in flood risk and ecosystem restoration projects, offer an assessment of the costs, benefits and impacts of NNBF, and identify existing statutory or regulatory barriers that prevent NNBFs from being used more extensively.
- **Provide flexibility in water project designs** to allow USACE and the NFS sponsor to determine collectively which features—traditional or NNBFs—will work best in the projects design to meet the needs the project is seeking to address.

- **Allow NFS to utilize NNBF with wetlands mitigation** to promote nature-based infrastructure projects.

In conclusion

Throughout the testimony, we highlighted projects where our non-federal partners have successfully collaborated with the Corps to achieve multiple benefits and increase resiliency from water resources projects and pointed out some challenges to accruing those benefits. The Corps, other federal agencies and experts brings needed technical expertise to the table, and in return, our members can offer valuable feedback on strategies and policies that can work on the ground. We encourage the Corps to continue utilizing non-federal sponsors' resources, capabilities, and knowledge, as we tackle new challenges to support the resiliency of civil works projects.

Thank you for the opportunity to appear today to discuss NNBF and I am happy to answer any questions.