

FEMA BRIC FY21 Analysis: Nature-Based Solutions

Completed by: Emily Donahoe, Policy Specialist for Resilient Coasts & Floodplains, National Wildlife Federation

Summary

On Aug. 1, 2022, FEMA announced that [53 competitive projects were selected](#) for the second annual Building Resilient Infrastructure and Communities (BRIC) national competition “based on the highest composite score until the funding amount available” was reached.

Total amount funded: \$993.47 million.

Filtering for projects FEMA tagged as nature-based solutions (NbS), there are 17 out of 53 projects (\$358,190,000 total) that FEMA identified as having nature-based project components. This is compared to FY2020, where [FEMA claims](#) that 18 out of 22 projects included nature-based project components.

- [FEMA defines NbS](#) as, “sustainable environmental management practices that restore, mimic, and/or enhance nature and natural systems or processes and support natural hazard risk mitigation as well as economic, environmental, and social resilience efforts”
 - FEMA provides NbS projects up to 10 points (out of 115) in the [Technical Criteria](#) evaluation

Based upon a best-judgment review of the BRIC FY21 [project summaries](#), **7 projects that FEMA tagged as NbS contain NbS as a primary or significant project component (representing \$107,770,000), and 10 projects tagged by FEMA as NbS appear to have NbS as a smaller component or it is unclear (representing \$250,420,000).** These conclusions are limited to the broad information available in the project summaries provided by FEMA. The exact dollar amounts allocated to specific nature-based components cannot be determined at this time.

- Projects that FEMA tagged as NbS are located in the following states:
 - California (5)
 - Connecticut (1)
 - Florida (1)
 - Massachusetts (1)
 - New York (3)
 - North Carolina (1)
 - Oklahoma (1)
 - Pennsylvania (1)
 - South Carolina (1)
 - Virginia (1)
 - Wisconsin (1)
- 10 out of 17 projects that FEMA tagged as NbS are identified as Justice40 projects

An additional 9 projects were not tagged by FEMA as NbS, but include nature-based components (\$31,533,188).

- Projects not tagged by FEMA as NbS, but include nature-based components are located in the following states:
 - Connecticut (1)

- Nebraska (1)
- North Carolina (5)
- South Carolina (1)
- Wyoming (1)
- 5 out of these 9 projects not tagged as NbS, but contain nature-based components are identified as Justice40 projects
- FEMA’s tags assigned to projects that are not tagged as NbS but have nature-based components include: Clean Water Protection; Habitat Conservation; Erosion Protection; Public Park Improvement; Creek and Floodplain Restoration; Air Quality Protection; Community Resilience; Climate Resilience; Infrastructure; Wastewater Safety; Partnerships to Enhance Outreach; Rural Economic Protection;

Taken together, the selected FY21 BRIC projects include 26 projects with nature-based components (totaling \$389,723,188), 15 of these projects are identified as Justice40, and the projects are located in the following states:

- North Carolina (6)
- California (5)
- New York (3)
- Connecticut (2)
- South Carolina (2)
- Florida (1)
- Massachusetts (1)
- Nebraska (1)
- Oklahoma (1)
- Pennsylvania (1)
- Virginia (1)
- Wisconsin (1)
- Wyoming (1)

Opportunities for Improvement

- Improve the FEMA tagging system to be more uniform and appropriately include all relevant projects that have nature-based components (e.g., include projects that are currently only tagged as habitat conservation, creek and floodplain restoration, etc.)
- Include more detailed project descriptions to provide funding break downs for nature-based components vs. traditional/grey infrastructure components
- Clarify definitions for nature-based solutions to easily identify which project components are considered nature-based.

Detailed Analysis

7 projects FEMA tagged as NbS have NbS as the primary or significant project component (representing \$107,770,000):

- [South Florida Water Management, Florida: Flood Mitigation with Living Levee, Shoreline and Pump Station Repairs](#) - \$50 million to combat increased flood risk and sea level rise
 - NbS: installing a living shoreline
 - FEMA Tags: Florida; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
 - Identified as a Justice40 project
- [Orange County, CA: Nature-Based Shoreline Adaptation Project](#) - \$9.8 million to implement a nature-based shoreline adaptation project
 - NbS: deployment of a hybrid, vegetated dune covering to raise shoreline elevation and restore habitat with native plantings
 - FEMA Tags: California; Erosion Protection; Habitat Conservation; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
- [New York, NY: Clinton House/East Harlem Community Stormwater Resiliency](#) - \$8.36 million to implement a nature-based flood control and multi-functional open space solution to mitigate impacts of extreme rainfall
 - NbS: detention and retention basins to manage up to 1.78 million gallons of rainfall runoff, and address extreme heat mitigation using multi-functional open spaces
 - FEMA Tags: New York; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
 - Identified as a Justice40 project
- [New York, NY: Breukelen Houses Stormwater Protection](#) - \$19.84 million to implement multi-functional nature-based solutions to increase flood resilience and reduce extreme heat
 - NbS: using innovative design to create multi-functional spaces, including providing a subsurface space to manage rainfall runoff, green infrastructure, and resilient plantings
 - FEMA Tags: New York; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
 - Identified as a Justice40 project
- [Fair Bluff, NC: Fair Bluff Park Phase 2](#) - \$2.44 million to remediate the floodplain of the Lumber River
 - NbS: Acquire and demolish 51 commercial properties and remediate the area to its natural hydrologic condition
 - FEMA Tags: North Carolina; HMGP FY21 Selections; Nature-Based Solutions; Rural Economic Protection; Building Resilient Infrastructure and Communities (BRIC)
 - Identified as a Justice40 project
- [Conway, SC: Utilizing the Natural Environment and Parks for Flood Reduction](#) - \$2.17 million to protect a vulnerable population center from increased flood and stormwater intensity

- NbS: implement a 7.8 acre constructed stormwater wetland that will detain and retain runoff from the watershed; construct a community park to provide community amenities; floodplain restoration project to restore the Crabtree Swamp and its floodplain
- FEMA Tags: South Carolina; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
- [Imperial Beach, CA: The Living Levee Project](#) - \$15.16 million to implement a flood risk mitigation project to improve resilience to sea level rise
 - NbS: implement a living levee and stormwater retention and wetland system to mitigate current flooding hazards and future sea level rise hazards, and preserve coastal resources
 - FEMA Tags: California; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
 - Identified as a Justice40 project

10 projects FEMA tagged as NbS have smaller NbS elements added onto their projects, or the project descriptions are unclear (representing \$250,420,000):

- [County of Nevada, CA: Fire Resiliency Project](#) - \$31.01 million for infrastructure and nature-based solutions to provide critical protection from wildfires for vulnerable communities
 - NbS: near-home defensible space vegetation management, landscape level fuel modification
 - FEMA Tags: California; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC); Climate Resilience
- [Virginia Beach, VA: Eastern Shore Drive Drainage Improvement Project](#) - \$25.14 million to implement infrastructure, nature-based solutions, and community outreach/education to improve resilience against chronic flooding
 - NbS: rain garden, meadow plantings, bank restoration
 - FEMA Tags: Virginia; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC); Community Resilience
- [Tulsa, OK: Improving Infrastructure to Protect Residential and Commercial Facilities](#) - \$19.58 million to improve resilience to flooding, heat, and water quality
 - NbS: detention ponds and culverts, planting trees, limiting development
 - FEMA Tags: Oklahoma; Hazard Mitigation Grant Program (HMGP); HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
 - Identified as a Justice40 project
- [Sacramento River West Side Levee District, CA: Floodplain Restoration and Levee Resiliency Project](#) - \$18.92 million to implement a combination of nature-based solutions and levee hardening to protect the Grimes community against flooding
 - NbS: restoring the Sacramento River floodplain's riparian habitat, reducing erosive forces
 - FEMA Tags: California; Erosion Protection; HMGP FY21 Selections; Nature-Based Solutions; Rural Economic Protection; Building Resilient Infrastructure and Communities (BRIC)

- Identified as a Justice40 project
- [Philadelphia, PA: Flood Protection with Improved Sewer Systems and Nature-Based Solutions to Prevent Future Flooding](#) - \$25.01 million to build infrastructure and enhance the city's quality of life
 - NbS: incorporate “green streets infrastructure,” stormwater planters, and tree planting
 - FEMA Tags: Pennsylvania; Clean Water Protection; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
 - Identified as a Justice40 project
- [New York, NY: Seaport Coastal Resiliency Project](#) - \$50 million to reduce flood risk to Historic South Street Seaport
 - NbS: The project will use “innovative design and engineering strategies to... improve access to the waterfront, implement green and nature-based solutions to improve marine habitat and address the urban heat island effect.”
 - FEMA Tags: New York; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
- [Meriden, CT: Meriden Harbor Brook Flood Resilience](#) - \$11.17 million to reduce recurring flood damage
 - NbS: provide floodplain and habitat enhancements, and provide waterfront trail systems
 - FEMA Tags: Connecticut; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
 - Identified as a Justice40 project
- [Madison, WI: Pheasant Branch Tributary Greenway](#) - \$6.03 million to mitigate flood risks with an infrastructure project with nature-based components
 - NbS: expanding floodplain capacity and “including nature-based solutions”
 - FEMA Tags: Wisconsin; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
- [Boston, MA: Equitable Climate Resilience at Boston's Moakley Park](#) - \$24.06 million to implement an earthen berm and stormwater management improvements to protect an environmental justice neighborhood
 - NbS: coastal landscape elements to mitigate flooding impacts
 - Identified as benefiting an environmental justice community
 - FEMA Tags: Massachusetts; HMGP FY21 Selections; Nature-Based Solutions; Public Park Improvement; Building Resilient Infrastructure and Communities (BRIC)
- [Kern County, CA: Enhancing Drought Management with Groundwater Storage](#) - \$39.5 million to enhance drought management and groundwater storage
 - NbS: restoring an over-drafted aquifer and improve local habitats
 - FEMA Tags: California; Clean Water Protection; HMGP FY21 Selections; Nature-Based Solutions; Building Resilient Infrastructure and Communities (BRIC)
 - Identified as a Justice40 project

9 projects were not tagged by FEMA as NbS, but the projects have NbS components
(representing \$31,533,188):

- [Greenville, NC: St. Andrews Drives Critical Infrastructure Protection and Stream Restoration](#) – \$3.45 million for stream restoration and stabilization improvements to reduce erosion and flood risks
 - NbS: restoring and enhancing the floodplain and riparian ecosystem’s natural functions
 - FEMA Tags: North Carolina; Creek and Floodplain Restoration; HMGP FY21 Selections; Infrastructure Hazard; Building Resilient Infrastructure and Communities (BRIC)
- [Meriden, CT: Building Removal and Greenway Development to Reduce Flooding Impacts and Improve Town Aesthetics](#) - \$303,188 for building removal and greenway development to reduce flooding impacts
 - NbS: demolishing and removing existing buildings and substructures that cause flooding, and deconstruction of paving and parking areas to construct a greenway and maintain the property as open space and public trail
 - FEMA Tags: Connecticut; Air Quality Protection; HMGP FY21 Selections; Public Park Improvement; Building Resilient Infrastructure and Communities (BRIC)
 - Identified as a Justice40 project
- [Papio-Missouri River Natural Resources District, NE: The West Papio Regional Basin 4](#) - \$5.34 million to construct a dam and water control basins, with a few NbS components
 - NbS: provide a 17.3-acre lake for fishing and paddle sport recreation, a walking trail with connectivity to the surrounding neighborhoods, and 60 acres of green space using a native seed mix to provide wildlife habitat
 - FEMA Tags: Nebraska; Clean Water Protection; Habitat Conservation; HMGP FY21 Selections; Building Resilient Infrastructure and Communities (BRIC)
- [Lander, WY: Structure Relocation and Property Acquisition](#) - \$2.09 million to acquire and relocate property and implement floodplain restoration.
 - NbS: property acquisition and relocation to restore habitat and the natural floodplain functions
 - FEMA Tags: Wyoming; HMGP FY21 Selections; Rural Economic Protection; Building Resilient Infrastructure and Communities (BRIC); Infrastructure
- [Siler City, NC: Blood Run Pump Station Relocation](#) - \$5 million to demolish and relocate the pump station outside of the 100-year floodplain in conjunction with streambank enhancement
 - NbS: demolish and reconstruct the pump station in tandem with streambank enhancement to restore the floodplain
 - FEMA Tags: North Carolina; HMGP FY21 Selections; Rural Economic Protection; Wastewater Safety; Building Resilient Infrastructure and Communities (BRIC)
 - Identified as a Justice40 project
- [Pollocksville, NC: Building Elevations to Restore the Town’s Commercial Corridor](#) - \$1.08 million to mitigate future flood damage with a combination of green and grey infrastructure improvements

- NbS: Hybrid green and grey infrastructure improvements to mitigate the risk of repetitive flood damage
- FEMA Tags: North Carolina; HMGP FY21 Selections; Partnerships to Enhance Outreach; Rural Economic Protection; Building Resilient Infrastructure and Communities (BRIC)
- Identified as a Justice40 project
- [Mount Pleasant, SC: Old Village Draining Improvement](#) - \$5.68 million to implement green infrastructure and nature-based solutions to increase flood resilience to low-lying areas
 - NbS: incorporate nature-based solutions through restoration and install green infrastructure, including restoring roadside grass swales to provide bioretention, positive drainage, conveyance of stormwater and filtering to remove pollutants; implement low-impact development solutions to protect, restore, or mimic natural water cycle including bioswales, permeable pavements, green streets and alleys, and green parking
 - FEMA Tags: South Carolina; HMGP FY21 Selections; Wastewater Safety; Building Resilient Infrastructure and Communities (BRIC)
- [Gastonia, NC: Critical Infrastructure Restoration and Stream Protection](#) – \$5.98 million to rehabilitate a creek bank to lessen impacts of highwater during flood events
 - NbS: using nature-based solutions and materials to stabilize and rehabilitate approximately 8,000 linear feet of Duharts Creek; using bio-engineered structural enhancements, natural fiber matting, and revegetation with native plants
 - FEMA Tags: North Carolina; HMGP FY21 Selections; Wastewater Safety; Building Resilient Infrastructure and Communities (BRIC); Infrastructure
 - Identified as a Justice40 project
- [Fayetteville, NC: Flood Protection with Improved Drainage Infrastructure](#) - \$2.61 million to improve infrastructure and use green infrastructure to protect vulnerable communities from flooding
 - NbS: vegetation and green infrastructure will be examined during final design to provide additional benefits; consideration of local ecosystems to coexist with existing infrastructure and bolster sustainability
 - FEMA Tags: North Carolina; HMGP FY21 Selections; Building Resilient Infrastructure and Communities (BRIC); Infrastructure
 - Identified as a Justice40 project