


Photo courtesy of U.S. Fish & Wildlife Service

**Natural Floodplain Functions Alliance (NFFA)
BIMONTHLY WEBINAR SERIES PRESENTS:**


**The Naturally Resilient Communities
Project: Siting Guide & Case Studies
Mainstreaming of Natural
Infrastructure**



Nathan Woiwode
Project Manager
The Nature Conservancy


**May 18, 2017
2:00pm – 3:30pm CT**

NFFA Webinars Hosted By



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AGENDA



1. NFFA Federal Updates (15 min):
 - WOTUS (Jeanne Christie)
2. Quarterly Webinar Topic (45 min):
 - The Naturally Resilient Communities Project: Siting Guide & Case Studies Mainstreaming of Natural Infrastructure (Nathan Woiwode)
3. Webinar Q&A

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Photo courtesy of U.S. Fish & Wildlife Service

NFFA Update: Waters of the United States (WOTUS)



Jeanne Christie
Executive Director
Association of State Wetland Managers
jeanne.christie@aswm.org

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Photo courtesy of U.S. Fish & Wildlife Service

Natural Floodplain Functions Alliance (NFFA) BIMONTHLY WEBINAR SERIES PRESENTS:


The Naturally Resilient Communities Project: Siting Guide & Case Studies Mainstreaming of Natural Infrastructure



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Naturally **RESILIENT** Communities



Naturally **RESILIENT** Communities


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The Naturally **RESILIENT** Communities Partnership



Representing:

- 3000+ county governments
- 38,000+ planners
- 17,000+ floodplain managers
- 150,000+ engineers
- On-the-ground work in all 50 states



Naturally **RESILIENT** Communities

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Our Goal: Mainstream the Use of Nature-Based Solutions to Flooding



Cape May, New Jersey



Seawall at Galveston, Texas

MAPPING OCEAN WEALTH

COASTAL PROTECTION

Nature is the first line of defense for coastal communities.

Coastal communities, planners, engineers and investors should integrate natural solutions into coastal infrastructure projects.

Mapping Ocean Wealth demonstrates what the ocean does for us today so that we maximize what the ocean can do for us tomorrow.

oceanwealth.org @ocean_wealth

The Nature Conservancy

OYSTER REEFS
save communities **\$85,000** per year per hectare when used in place of artificial breakwaters

MANGROVES
REDUCE 66% of wave height – easing erosion and flood risk





CORAL REEFS
REDUCE 97% of wave energy – acting as a barrier from storms


CORAL REEFS provide the first line of defense for **63,000,000 PEOPLE GLOBALLY**

NATURAL BARRIERS save money and reduce impacts of storms, erosion and flooding to coastal communities

WHY NATURE-BASED SOLUTIONS?

Smart nature-based solutions give communities high returns on their investments in flood risk reduction strategies. They provide:

-  Healthier Environments
-  Improved Social Ties
-  Healthier Communities
-  Stronger Economies

 Naturally **RESILIENT** Communities 16

Naturally **RESILIENT** Communities: Three Case Studies

- 
Project GreenShores
Pensacola, FL
- 
Greenseams Program
Milwaukee, WI
- 
Riverfront Park
Nashville, TN

 Naturally **RESILIENT** Communities 17



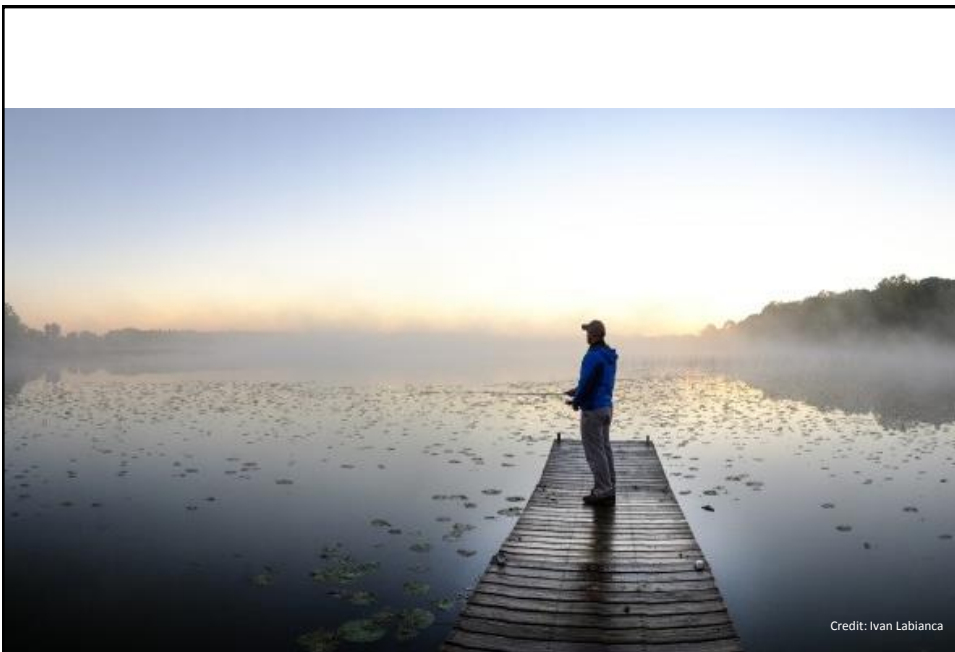


Wauwatosa, WI – Late 90's



Naturally **RESILIENT** Communities

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Credit: Ivan Labianca

Naturally **RESILIENT** Communities


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Three Important Questions

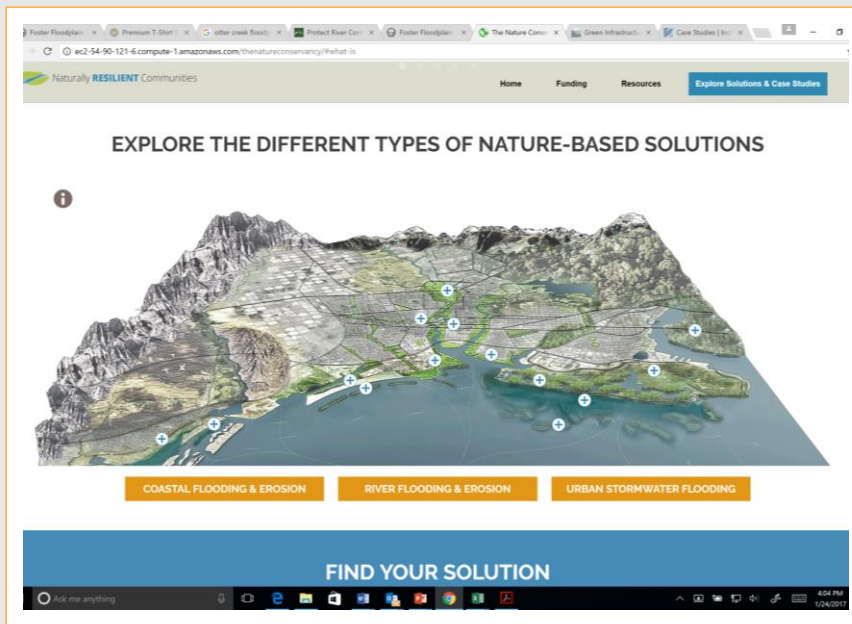
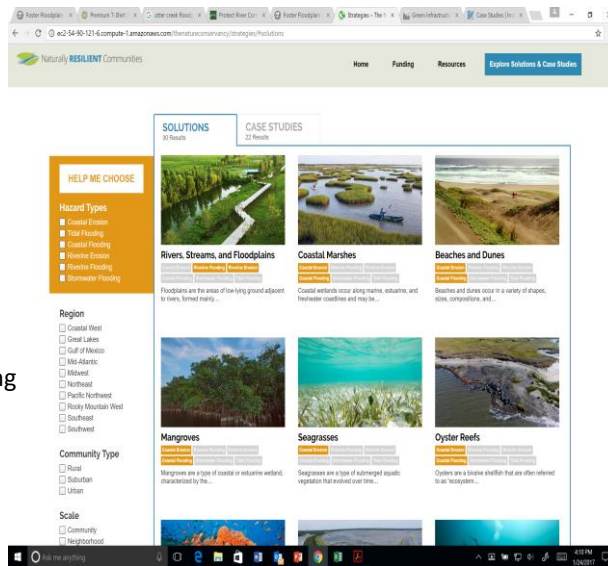
- Who makes the decision to pursue a nature-based project?
- What are their needs/challenges?
- What information can we provide to help them be successful?



The collage features four distinct images: a red button with the word 'easy' in white; the word 'GOALS' written in large, colorful letters (G in red, O in blue, A in green, L in blue, S in green) hanging from a clothesline with wooden clothespins; a photograph of a flooded road with a car in the distance and a large fish jumping out of the water in the foreground; and a person standing on a grassy hill holding up a large, colorful, abstract shape that resembles a rainbow or a splash of paint, with the text 'USE YOUR imagination' written on it.

30 Strategies

- Natural Systems
 - e.g. Oyster reefs
- Habitat Restoration
 - e.g. Floodplain restoration
- Stormwater Infiltration
 - e.g. Bioswales
- Land use planning
 - e.g. Planning and Zoning
- Infrastructure Adaptation
 - e.g. Flood friendly culverts

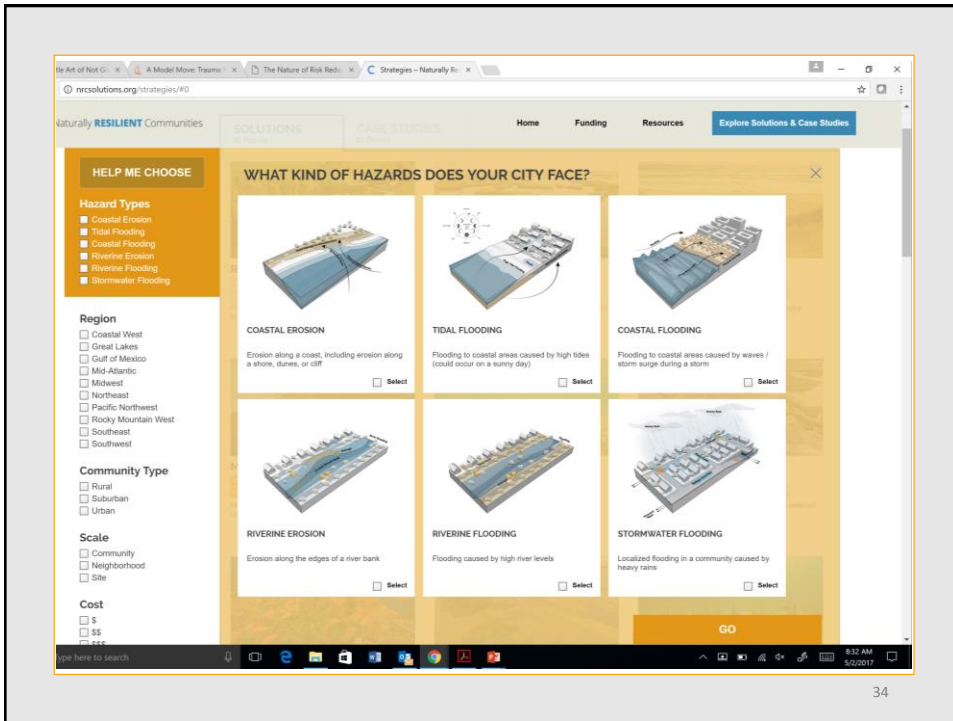


The screenshot shows a web browser window displaying the 'Naturally Resilient Communities' website. The page title is 'EXPLORE THE DIFFERENT TYPES OF NATURE-BASED SOLUTIONS'. A sidebar on the left is titled 'COASTAL HAZARDS' and contains the following text: 'Coastal flooding occurs either as a result of storms, causing wide ranging impacts, or regular tidal cycles, resulting in more frequent, low impact flooding in low lying areas. Coastal erosion is the collapse or loss of land along coastal areas as a result of floods or regular waves.' Below the text is a 3D map of a coastal area with several blue plus signs indicating solution locations. At the bottom of the map are three orange buttons: 'COASTAL FLOODING & EROSION', 'RIVER FLOODING & EROSION', and 'URBAN STORMWATER FLOODING'. A blue banner at the bottom of the page says 'FIND YOUR SOLUTION'. The browser's taskbar at the bottom shows the time as 11:47 AM on 4/5/2017.

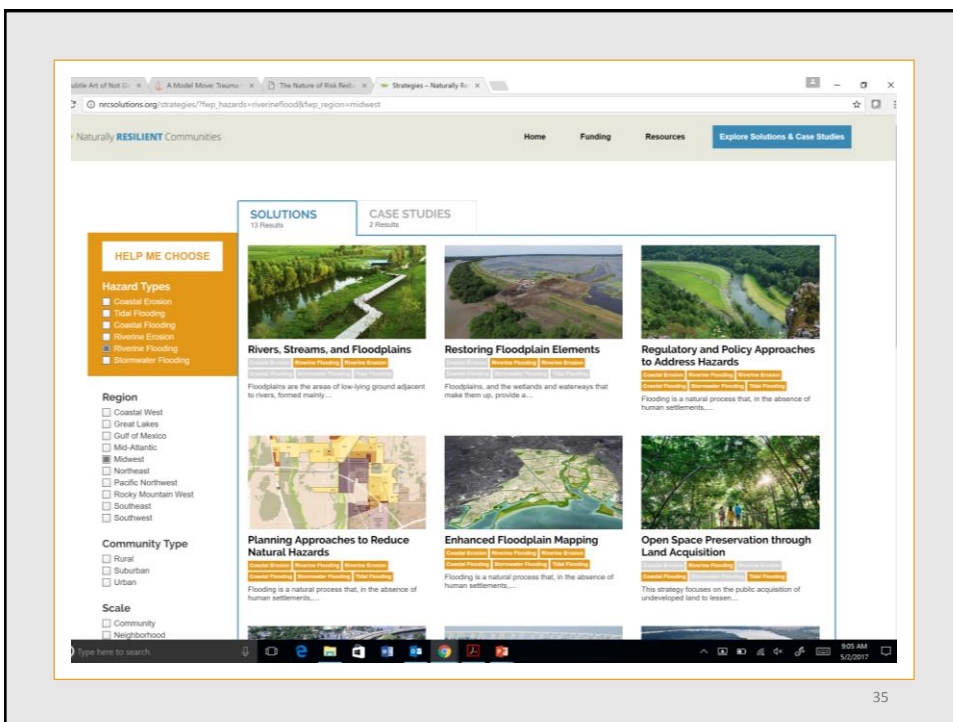
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The screenshot shows the same website as above, but with the 'OPEN SPACE PRESERVATION' sidebar selected. The sidebar text reads: 'Open Space Preservation creates opportunities for recreation while also reducing the potential for development in vulnerable areas. LEARN MORE'. The 3D map and buttons at the bottom are identical to the previous screenshot. The browser's taskbar at the bottom shows the time as 11:17 AM on 4/5/2017.

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Open Space Preservation through Land Acquisition

This strategy focuses on the public acquisition of undeveloped land to lessen or prevent the impacts of flooding on a community's assets. In general, the strategy requires the following steps: (1) identification or mapping of available open space, (2) prioritization of parcels, and (3) acquisition of property.

Acquisition of land can take a number of forms. Municipalities may purchase land from willing sellers outright, and there are many communities that have dedicated funds to land preservation. Donation of private land to a land trust, which is then transferred to public ownership, is another common method of land acquisition for municipalities. However, this strategy tends to be most suitable for ex-urban, suburban, or rural locations vulnerable to flooding with large amounts of open space. The practice may be more difficult for urban areas with developed waterfronts that may have lost habitat and natural coastal features. However, some larger cities have had success reclaiming and revitalizing former landfills and wetlands.

Land acquisition as a flood management strategy is most effective on a large scale, though targeted acquisition of flood prone parcels or areas that are likely to flood in the near future can effectively mitigate some flood impacts. This strategy tends to be most suitable for ex-urban, suburban, or rural locations vulnerable to flooding with large amounts of open space. The practice may be more difficult for urban areas with developed waterfronts that may have lost habitat and natural coastal features. However, some larger cities have had success reclaiming and revitalizing former landfills and wetlands.

Acquisition of open space serves the dual role of explicitly protecting valuable habitat and coastal features, and implicitly removing vulnerable land from the development market. Coastal floodplains tend to be places of extraordinary high ecological diversity. Wetland floodplains are integral parts of estuarine and coastal systems, and where coastal

HAZARDS ADDRESSED
 Riverine Flooding
 Coastal Flooding
 Tidal Flooding

REGIONAL CONSIDERATIONS
 Northeast
 Mid-Atlantic
 Southeast
 Gulf of Mexico
 Midwest
 Great Lakes
 Southwest
 Rocky Mountain West
 Coastal West
 Pacific Northwest

RELATED CASE STUDIES
 Rush Creek Property Rehabilitation Project, Arlington, TX
 Mingo Creek, Tulsa, OK

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The Napa River Basin, California

Project Details

- Location: The City of Napa, Napa County, California (CA)
- Population: 80,000 (Urban)
- Cost: \$900 million (ongoing)
- Strategies: Property Buy-outs, Setback Levees, Establishing Flood Bypasses, Flood Water Detention areas, Flood Friendly Culverts and Bridges, Restoring Floodplains, Open Space Preservation, Waterfront Parks
- Benefits: Flood Mitigation, Habitat Restoration, Water Quality, Recreation, Parks, Tourist Attraction Potential, Fish Spawning + Habitat

Challenge

In February of 1986, a flash flood took three lives, damaged 245 homes and 120 businesses, caused the evacuation of approximately 7,000 people, and left 25,000 people without power for several days. In total, Napa County suffered an estimated \$100 million in property damages. While Napa County has been plagued by significant flood events ever since settlers began inhabiting the areas along Napa Creek and Napa River over 150 years ago, the 1986 disaster solidified the importance of enacting a flood mitigation strategy for the community, so that future weather events would not produce the same costly outcomes.

History

The Napa River travels 50 miles from Mt. St. Helena to the San Pablo Bay and connects to 47 tributaries, making it the West Coast's most significant estuary system. The Napa plays a key role in maintaining the region's bio-diverse

HAZARDS ADDRESSED
 Riverine Flooding

REGIONAL CONSIDERATIONS
 Coastal West

COMMUNITY TYPE
 Urban

RELATED SOLUTIONS
 Moving People OUT of Hazardous Property Situations
 Setback Levees

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Naturally RESILIENT Communities

Solution:
OPEN SPACE PRESERVATION THROUGH LAND ACQUISITION

Description of Solution
 This strategy focuses on the public acquisition of undeveloped lands to lessen or prevent the impacts of flooding on a community's assets. In general, the strategy requires the following steps: (1) identification or mapping of available open spaces, (2) prioritization of parcels, and (3) acquisition of property.

Acquisition of land can take a number of forms. Municipalities may purchase land from willing sellers outright, and there are many communities that have donated lands to land preservation. Donation of private land to a land trust, which is then transferred to public ownership, is another common method of land acquisition for municipalities. However, it may occur, land acquisition strategies can be challenging in areas experiencing high development pressure. For municipalities experiencing growth, the cost of the multiple purchase of land can be high, especially along the coast.

Land acquisition as a flood management strategy is most effective on a large scale, though targeted acquisition of flood-prone parcels or areas that are likely to flood in the near future can effectively mitigate some flood impacts. This strategy tends to be most suitable for urban, suburban, or rural locations vulnerable to flooding with large amounts of open space. The practice may be more difficult for urban areas with developed waterfronts that may have lost habitat and natural coastal features. However, some large cities have had success acquiring and restoring former landfills and wetlands.

Acquisition of open space serves the dual role of explicitly protecting valuable habitat and coastal features, and implicitly removing vulnerable land from the development market. Coastal floodplains tend to be places of extraordinarily rich ecological diversity, where flooding is an integral part of existing natural systems, and where coastal features offer natural protection against flooding, the value of an undeveloped floodplain is clear.

Siting Considerations
 Protecting a community from flooding through open space preservation is often a large scale proposition. At smaller scales, the benefits effectively preserved or restored coastal features, wetlands, and other natural floodplain functions are far more limited. Additionally, any habitat preserved as part of this strategy is likely to require a sustainable functioning ecosystem that may be difficult or impossible to replicate.

Regional Considerations

Mid-Atlantic
Southeast
Gulf of Mexico
Midwest
Great Lakes
Southwest
Rocky Mountain West
Central West
Pacific Northwest
West
Utah

Cost: \$ 15
Community Type: Urban

SHARE
 f t in

Download PDF

RELATED CASE STUDIES

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Naturally RESILIENT Communities

Home Funding Resources Explore Solutions & Case Studies

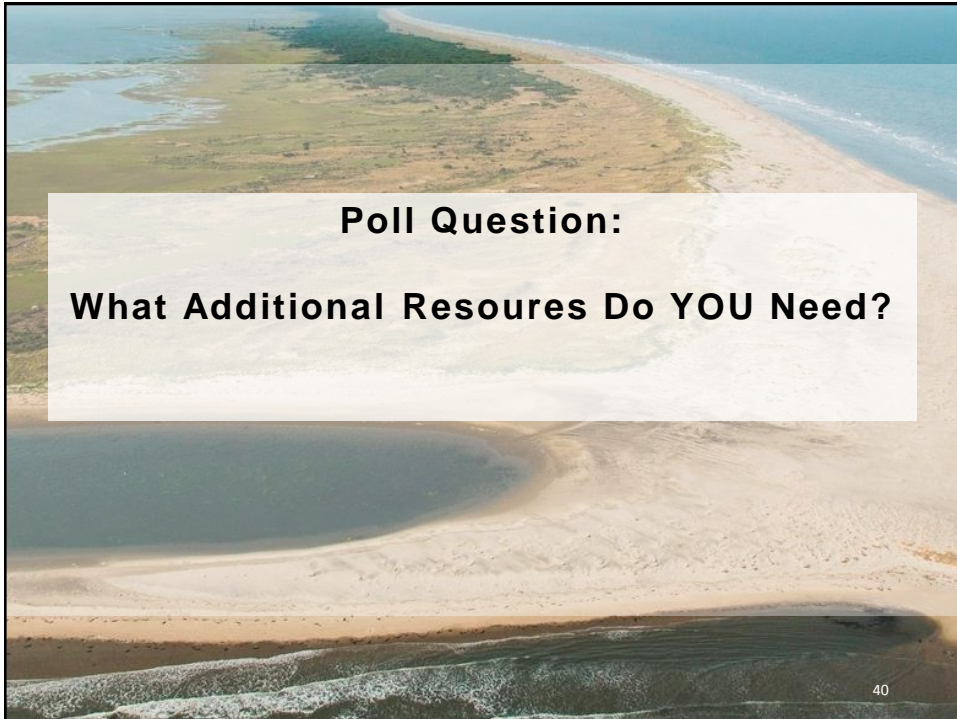
USING NATURE TO ADDRESS FLOODING

We've created this guide of nature-based solutions and included case studies of successful projects from across the country to help communities learn more and identify which nature-based solutions might work for them.

WHAT ARE NATURE-BASED SOLUTIONS?

Nature offers a powerful set of tools for addressing hazards like flooding and erosion. Nature-based solutions use natural systems, mimic natural processes, or work in tandem with traditional infrastructure to address these specific hazards. Communities across the

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Nate Woiwode

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Planning Information Exchange (PIE)
QUARTERLY WEBINAR SERIES PRESENTS:

Naturally Resilient Communities

May 30, 2017 | 1:00 – 2:30pm

Registration: <http://bit.ly/1FRXBhXCT>



Nate Woiwode (The Nature Conservancy), Katie Hagemann (Miami-Dade County Office of Resilience), Karen Sands (Milwaukee Metropolitan Sewerage District), Jacob Pedersen (Pierce County, Washington), and Jill Dixon (Sasaki Associates) will discuss how green infrastructure can play a crucial role in helping to reduce flood risk while providing a variety of additional benefits.

NFFA Webinars



Natural Floodplain Functions Alliance (NFFA) Webinars

<http://www.aswm.org/watersheds/natural-floodplain-function-alliance>

-OR-

<http://bit.ly/243JqTp>