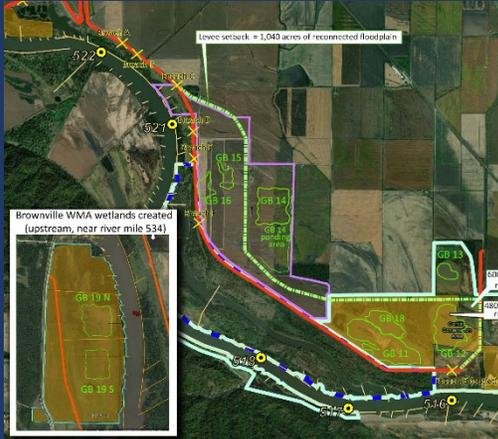


# Quantifying Ecological Benefits of Levee Setbacks

## Engineering With Nature® Research Task

MULTIAGENCY KICKOFF WORKSHOP  
27 JUNE 2022



L-536 Missouri River levee setback project



**Above:** Dave Crane and Michelle Bourne (right) lead multiagency discussion on measuring ecological benefits of levee setbacks.

**Below:** Michelle Bourne contemplates alignment of natural and engineering processes while observing wetlands at the L-536 project site.



### Background

Flood-control projects such as levees are part of the nation's aging infrastructure. After repeated flood damage and repairs, repairing in place becomes challenging—especially with the possibility of more frequent or extreme flood events associated with climate change—Levee setbacks represent an alternate approach.

A new Engineering With Nature® (EWN®) research task (RT) aims to produce levee setback design guidance, and this multiagency workshop, conducted on 27 June 2022, helped kick it off. The workshop brought together potential collaborators to identify levee setback opportunities and constraints, data sets, data gaps, and metrics for meaningfully quantifying the ecosystem services that can result from levee setback projects. It featured subject matter experts who are actively conducting research and identifying ways to advance levee setback projects in the US Midwest region.

The multiagency partner group came together to consider and identify opportunities for using EWN principles to support the sustainability and resilience of the flood-risk management, navigation, and ecosystem-restoration missions associated with levee setbacks. The workshop was conducted and facilitated by the US Army Corps of Engineers' (USACE) EWN staff. Workshop participants included a diverse group of USACE and US Army Engineer Research and Development Center (ERDC) personnel, resource managers, scientists, engineers, and stakeholders.

The workshop gathered potential USACE collaborators to identify how further research can help promote the increased use of levee setbacks to achieve USACE mission objectives. Participants completed a preworkshop questionnaire, allowing for a streamlined, efficient workshop. Workshop participants also identified and aligned complementary research and monitoring programs so that all partners can synchronize and leverage each other's efforts.



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## Guest speakers

**Matt Chambers** University of Georgia, “Scaling Levee Setbacks: A Case Study on the Wabash River, USA”

**Rod Lammers, PhD** Central Michigan University, “Modeling Hydraulic Effects of Levee Setbacks”

**Dan Buhr** University of Georgia, “Quantifying the Water Quality Benefits of Levee Setbacks”

## Multiagency workshop participants

- Iowa Department of Natural Resources
- Nebraska Game and Parks Commission
- Missouri Department of Conservation
- US Fish and Wildlife Service
- US Geologic Survey
- Natural Resources Conservation Service
- Multiple USACE Districts, ERDC, and Missouri River Recovery Program
- The Nature Conservancy
- Central Michigan University
- University of Georgia
- University of Missouri
- Retired USACE subject matter expert

## For more information

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[EngineeringWithNature.org](http://EngineeringWithNature.org)

## Workshop outcomes and research approaches

- Using existing modeling and ecosystem and water-quality monitoring data as the foundation to focus EWN levee setback research efforts
- Developing a suite of cost-effective metrics to best quantify the multiple benefits associated with levee setback projects
- Using existing levee setback projects on the Missouri River as test beds for comparing pre- versus post-levee setback benefits, in both dry and wet years
- Identifying data and information for broad use to develop general guidelines for levee setback projects, while acknowledging and identifying what makes each levee setback project unique
- Identifying synergies among stakeholders and collaborators to develop path forward for collecting additional data and information to leverage across parties

## Vision

USACE and EWN seek to collaborate with a broad multiagency team to develop engineering guidance, standards, and priorities for levee setback projects. The guidance will link specific project features to engineering, ecological, economic, and social benefits to further encourage and facilitate implementation of future levee setback projects.

## What's next?

The EWN RT team will use information discussed during the workshop to focus field data collection, modeling, and analysis efforts in partnership with multiple federal, state, nongovernmental organization, and academic collaborators. Initial data collection and synthesis of existing information will lay foundation for science-based design guidance.

