

Engineering With Nature Project Fact Sheet



Engineering With Nature® (EWN®) Dogtooth Bend Resilience Support

Background

The Len Small Levee at Dogtooth Bend, Illinois (Mississippi River) has breached multiple times since its construction in the 1940s, with resulting damage to agriculture, roads, and residential properties. Following these repeated flood events, federal, state, and local agencies such as USACE, the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS), and the Illinois Department of Natural Resources, as well as NGOs such as The Nature Conservancy have gotten involved to address and rectify the breaching, flooding, and damages issued under their respective authorities and programs. Because each agency has different authorities, a partnership was formed to determine common goals and a holistic solution and approach to inform the Dogtooth Bend non-structural mitigation and resilience plan.

Objectives

Short-term objectives include quantifying and communicating broad and diverse project benefits, developing and promoting relationships between different government agencies and NGOs, developing lessons learned for future multi-agency opportunities, and supporting research and analysis while informing an ongoing non-structural mitigation plan. Long-term objectives are to narrow the gap between theory and practice by providing empirical evidence from in-field implementation, reliable modeling data for floodplain restoration, and easy-to-use lessons-learned and documents from the Dogtooth Bend partnership. The culmination of these efforts can create a template for use by other similar projects.

Approach

Activities are structured around 4 key themes including (1) Planning for Water, which includes hydrodynamic, sediment, and nutrient transport modeling to evaluate how natural processes can inform habitat restoration while delivering infrastructure value in the form of flood risk management and maintaining navigation channel stability, (2) Planning for Species which includes pre- and post-restoration monitoring to measure overall effects on the flora and fauna of the region, (3) Planning for People, which includes an economic benefit study to evaluate impacts of tax base loss due to land easements and compares to benefits such as fewer road repairs after floods, reduced flood damage, increased tourism, and nutrient sequestration, and (4) Planning for the Future, which includes developing an engagement case study playbook for agencies, stakeholders, and landowners interested in implementing similar projects, as well as a science symposium to present outcomes from modeling, monitoring, and economic research.

Outcomes

This project will leverage lessons learned from a traditional USACE-led PL 84-99 focused structural mitigations in big river environments and extract recommendations for future nonstructural multi-agency / partner projects in similar geographic, geophysical, and economic contexts. Enhanced social, economic, and environmental benefits associated with nonstructural flood risk reduction measures and floodplain restoration will be documented and promoted through project partners and EWN®.



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