Flood Recovery for the Long Term.

Eric Lynn, Flood Risk Management Program Manager, USACE-NWK

This fourth issue of The River Crest focuses on recovery in the disaster response cycle. Webster’s Third New International Dictionary defines recovery as “restoration or return to any former and better state or condition.” When it comes to flood recovery we often desire a quick return to the “former state.” We typically focus on the short-term; rebuilding levees to pre-flood condition and restoring and reopening flooded homes and businesses. How often do we stop to ask if the “former state” is actually a “better state?”

Floods will happen. We spend a lot of time and effort preparing our responses, but we know we won’t always come through unscathed. Why not implement recovery actions that improve our communities to a better state, not just put things back the way they were? Effective flood recovery should mitigate future risks and prepare for the next event response.

The USACE levee rehabilitation program repairs damaged levees, but there are also many tools and resources available to help guide longer term recovery. This River Crest provides descriptions and links to multiple State and Federal agency recovery planning tools, assistance, and historic lessons learned. Recovery can be speedy yet focus only on a single project, or planned broadly to encompass the entire community. Broad and strategic recovery planning helps the community develop long-term risk resilience.

Some of the resources and programs described here are not flood specific, but within the broad arena of disaster recovery, these resources are fully applicable to flood recovery.

- The State of Missouri disaster recovery page was created following recent historic flooding in Missouri as “a single source to help Missourians easily find the information and disaster-related resources that you may need any time disaster strikes.”
- FEMA Pre-Disaster Recovery Planning Guide for Local Governments helps recovery preparation by developing pre-disaster recovery plans that engage members of the whole community, develop recovery capabilities across governmental and nongovernmental partnerships, and creates an organizational framework for comprehensive local recovery efforts. Whether a levee district is a part of local government or not, the levee district is part of the local community. Recovery begins and ends at the local level and needs local leaders prepared to develop and implement recovery plans.

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Plan for Recovery Before You Need It

  The NDRF guide “provides a flexible structure that enables disaster recovery managers to operate in a unified and collaborative manner. It also focuses on how best to restore, redevelop and revitalize the health, social, economic, natural and environmental fabric of the community and build a more resilient Nation.” The framework consists of six Recovery Support Functions, each managed by a different Federal agency. A complete disaster recovery plan for a community will address as many of these functions, agencies, and programs as possible.

  This toolkit is a compilation of guidance, case studies, tools, and training to assist local communities in managing long-term recovery post-disaster.

  This report presents case studies from different communities with common themes and keys to success, including “Prepare and Plan for Recovery”, “Engage the Community”, “Develop Partnerships”, and others.

  The EPA Smart Growth program provides technical assistance to communities to prepare and recover from natural disasters. Information and publications on this site describe their available resources and highlight EPA involvement in flood recovery in several communities around the nation.

Is The Same Place the Best Place?

In most cases of flood damaged levees, post-flood levee rehabilitation efforts focus on repairing or rebuilding the levee in the same location. Is this always the best option? Depending on the nature and location of the damage it may not be. During recovery from the 2011 flood, several levees along the Missouri River were setback from their original location when reconstructed. When constructed on higher ground a new levee requires less material and the wider floodplain allows increased flow conveyance and reduced flood surface elevations. A setback levee is less prone to flood damages, reducing future costs for operations and maintenance and emergency operations. There can also be other benefits depending on the location. Examples of levee setbacks include Missouri River Unit L-575 in Fremont County, IA, and also at river mile 557. While this recovery option will not work for all cases of a damaged levee, it is an alternative with documented long-term benefits worth considering.

We don’t have to wait for floodwaters to recede to think about recovery, just as recovery doesn’t end when the hole in the levee is filled.
Fast-Track of Borrow Areas on the Upper Mississippi

Abstracted and updated from a 2016 article by Chris Koenig from the USACE St. Louis District

The USACE flood response process includes determining suitable borrow area locations used to provide suitable levee repair material for during and after flood events. Each site must be analyzed to meet levee and National Environmental Policy Act requirements, which takes time. USACE St. Louis District has developed a Fast Track to Borrow Tool that is an interagency project which has been functionally tested, but not yet been tested against live conditions, and is currently operated by USACE only.

FTBT allows comprehensive flood response within the St. Louis District watersheds to minimize response time and reduce costs. The tool accelerates compliance with standard borrow processes: research, data collection, State Historic Preservation Office consultation, emergency response review, real estate review, geo-technical review, cultural resources review, and contracting review. This information is now easily compiled, filtered, and navigated for immediate consideration and action to determine appropriate borrow areas and some pre-approved borrow areas.

FTBT is created through geographic information systems to provide a standard levee district map and base coordinates indicating the district boundaries; FTBT also contains layers of cultural resources, pertinent levee district, geo-technical, and real estate information.

USACE and stakeholders will use this tool to assist in prioritizing and selecting borrow areas during and after a flood event.

The current standard process takes up to 75 days per borrow site. Using FTBT accelerates the borrow process, borrow location determination(s), and will reduce response time by weeks. This tool is intended to lower risks associated with flood event response and reduce costs by creating a path to a quicker borrow selection process and subsequent clearance.

The tool takes a unified approach, and once proven, can be exported to other USACE Districts and applied to any levee district.

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Fast Track to Borrow NEPA GIS

- National Levee Database
- Archaeological Surveys
- SSURGO Soil Units
- Parcel Information
- Previously Used Borrow Areas
- Historical Levee Damage
Nonstructural and Natural Levee Repair Approach in Iowa

Abstracted from the USACE Silver Jackets Iowa web page

The Iowa Flood Risk Management Team identified and coordinated a precedent-setting nonstructural alternative to full repair of the Louisa County, Iowa, #11 Levee District’s levee system, following the Midwest floods of June 2008.

The alternative is a combination of over 300 acres of Natural Resources Conservation Service flood plain easements with significantly reduced structural repairs to protect a state highway. The alternative required the cooperation of the levee’s public sponsor, the county and state mitigation agencies, USACE and Natural Resources Conservation Service to implement. This nonstructural alternative consisted of leaving five breaches in the lower end of the levee system open while repairing two breaches in the upper end of the system. The remaining increment of repaired levee will continue to provide flood deflection benefits for a major county road and approximately 400 acres of agricultural lands within the levee district. As implemented, the cost to PL 84-99 was estimated to be $187,000 less than the full structural repair. Read the full article on the Iowa Silver Jackets Page.

This alternative reconnects nearly 3,200 acres of previously isolated floodplain with the Iowa River as well as increasing flood storage benefits to downstream interests. As a result of collaboration, over 1200 acres of formerly protected area was returned to the floodway, gaining not only improved environmental habitat but increased flood storage capacity while continuing to protect an important state road.

Encouraged by this success, the Iowa FRMT is working to implement another nonstructural alternative with the Green Island Levee and Drainage District at the confluence of the Maquoketa and Mississippi Rivers (downstream of the [former] Lake Delhi Dam). USACE is providing assistance to NRCS for this project.
Flood Recovery: Advocating for Levee Repairs

Under Public Law 84-99 the federal government, specifically the Army Corps of Engineers, has the discretionary authority to repair levees which meet necessary requirements after they have been damaged by a declared flood disaster. It is important to avoid delays during the flood recovery process. Long delays leave those behind the levee with less protection. Crop Insurance rates increase dramatically, and additional high water events may lead to catastrophic local events in the unprotected area. Each project has its own characteristics and delays can be caused by different reasons. So, what can levee sponsors do to help reduce delay?

Sponsors must become advocates for their projects. Raising awareness is the key to pushing a levee rehabilitation project forward and must be done on different levels. First, notify the Corps to begin the process of seeking funding and repairing the damaged levee.

Educating the public and communicating through social media, newspapers, radio, and TV can all help people learn about the negative consequences of damaged levees. The Corps and FEMA both require a Federal disaster declaration before they can help. The State Governor can seek this declaration from the President. Sponsors may also engage congressional representatives in both the House and Senate. Phone calls, letters and site visits can all be part of educating elected officials about the damage and the repair need. Following the 1993 flood, Senator Kit Bond fought to get funding for levees across the state of Missouri. Local government officials can get involved as well. Sponsors should reach out with the goal that everyone understands the cost and value of flood risk management. The need for the public to be engaged and informed is even greater in today’s environment.

It is vitally important to raise awareness about the need for consistent and reliable levee repair, and continue to tell the story of levee districts as the critical front line in overall Missouri River flood risk management. Overlooking the value of the levee can work against funding for levee repairs.

Sponsors telling their story and spreading the word about their project are the keys to getting levees repaired. The Corps wants to help with rebuilding levees, but it requires hard work on the part of the sponsors to make sure everyone knows the problem, the cost and the urgent need to get levees repaired. Working with our elected officials and the Corps of Engineers in flood recovery is just one more example of the importance of building good relationships.
USACE Corner: National Levee Database Update

By Jennifer Wood, Kansas City District
Levee Program Safety Manager

The newly remodeled National Levee Database has been up and running since June 5th, and is handling more traffic than expected. It is now much easier to use with expanded data availability. The new NLD includes 14,500 miles of USACE associated levee systems, 15,000 miles from the FEMA mid-term levee inventory, and data from states and federal agencies.

The new NLD tracks levee and floodwall attributes useful for flood fighting, design, construction, operation, maintenance, repair and inspection and provides USACE risk information from all completed assessments of federal levees and all participating non-federal PL84-99 program levees. It’s available the public (floodplain managers, emergency management agencies, levee system sponsors and citizens who live or work behind a levee) on a useful map tool with real-time data such as stream gauges and weather radar. The goal is to increase understanding of flood risks to everyone involved so that steps can be taken to reduce risk before the flood or storm event occurs.

The new NLD has a feedback button in the upper right corner and is a living, dynamic information source. Please report problems and issues through the feedback button or contact your local USACE district.

The Levee Portfolio Report

Based on an assessment of USACE’s nearly 2,000 levee system portfolio, the publicly available Levee Portfolio Report looks at flood risk and benefits at a national level. This first report establishes a baseline for future analysis and allows us to measure the effectiveness of our risk management efforts. Interesting facts/findings from the report include: There are approximately 500 non-federal levee systems nationwide that are active in the PL84-99 program (26% of the total mileage in the USACE portfolio). The average age of USACE levees is about 50 years. The most common risk driver in levee performance is over-topping leading to levee breach. Approximately 11 million people live or work behind USACE levees and 86% of that population is concentrated behind 7% of the levees. 87% of the levees that USACE has screened have been classified as low risk. Improvements in emergency and evacuation planning are identified as the least expensive way to lower levee risks.