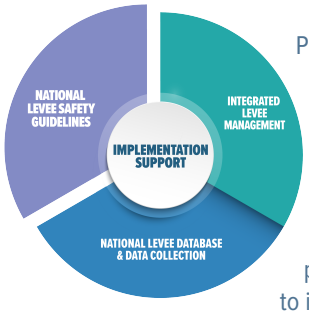
## PROGRAM OVERVIEW

*The U.S. Army Corps of Engineers (USACE) and the Federal Emergency Management Agency (FEMA) are leading a national discussion to develop an integrated framework for managing reliable levee systems to minimize risk to people and reduce property damage from floods in order to reduce disaster suffering and improve community resiliency in areas behind levees.*

*There are four major components that are intended to work together to accomplish the goals of the program:*

- *National Levee Safety Guidelines*
- *Integrated Levee Management*
- *National Levee Database and Data Collection*
- *Implementation Support*

# National Levee Safety Guidelines
# *Purpose and Scope Overview*




Levees in the United States are built by various governmental agencies or by private property owners, often using different standards, materials, and flood scenarios. To compound this, most of our Nation's levees are decades old and were built without the benefit of modern engineering practices. Currently, there is no recognized comprehensive set of practices for levees. As a result, there is no common approach for understanding the predictability of levee performance or managing levees nor is there a single resource available that represents current best practices to address the reliability of levees and resiliency of communities behind these levees.

## PURPOSE AND SCOPE OF THE NATIONAL LEVEE SAFETY GUIDELINES

The goal of the National Levee Safety Guidelines is to serve as a national resource of voluntary, best practices to help achieve nationwide consistency in improving the reliability of levees and resiliency of communities behind levees throughout the United States. The guidelines will be developed with stakeholder input and are intended to be used by a broad audience from multiple disciplines and sectors. The intent of the guidelines is for,

» Levee owner/operators to have a common resource of practices,

» Local officials and communities to have a common resource for best practices in floodplain management, hazard mitigation planning and emergency management,

» The private sector to have an available reference document; and,

» Federal, state, regional, and tribal organizations to use in association with their levee safety programs.

Primary topics in the National Levee Safety Guidelines are anticipated to range from basic concepts and terminology to consistent approaches for the life cycle of a levee. Strategies to reduce flooding impacts to people, property, and the environment – to include risk management and risk communication – are intended to also be included.

**Includes Full Life Cycle of a Levee:** The National Levee Safety Guidelines are intended to apply to all phases of a levee's life cycle: planning, site investigation, design, construction, operation and maintenance, inspection, risk assessment, risk management activities in the floodplain behind the levee, emergency preparedness and response, rehabilitation, and levee removal.

**Scalable and Adaptable:** Levees throughout the Nation vary greatly due to ownership, benefits provided to the community, local climate and watershed conditions, design, and availability of materials used for construction. Therefore, it is important to make the National Levee Safety Guidelines as useful as possible to the widest number of stakeholders and situations. To achieve this, risk-informed concepts are being proposed as a way to help users effectively scale their efforts as well as adapt them to local conditions.

**Future Updates:** Periodic updates to the National Levee Safety Guidelines will be based on stakeholder feedback, advances in science and technology, and changes in legislation.

## STEPS IN DEVELOPING THE NATIONAL LEVEE SAFETY GUIDELINES

The National Levee Safety Guidelines will be developed through a collaborative effort of federal, state, tribal, and private sector professionals with expertise spanning the

## STAKEHOLDER FEEDBACK

### WINTER 2021 — PHASE 1: GATHERING INITIAL INPUT ON PURPOSE & SCOPE

**WE WANT TO HEAR FROM YOU ON** *the purpose and scope of the National Levee Safety Program to include:*

- Best practices for levees (design, management, community resiliency, etc.)
- The different roles and responsibilities related to levees
- What data and resources are needed to build a common understanding of levee benefits and risks

**BEFORE WE MEET WITH YOU DURING PHASE 2,** *we will engage experts to:*

- Collect and analyze all feedback received during initial scoping (Phase 1)
- Develop additional options and approaches for each of the program's key components (National Levee Safety Guidelines, National Levee Database & Data Collection and Integrated Levee Management)

### FALL 2022 — PHASE 2: SOLICIT FEEDBACK ON PRIORITIES & OPTIONS

**LET'S DISCUSS WHAT WE LEARNED** *during initial scoping (Phase 1) and consider some additional options:*

- Sample Guidelines chapter/content, emerging issues, and cross-cutting themes
- Options and incentives to promote improved oversight and coordination
- Levee data collection strategy

**BEFORE WE MEET WITH YOU DURING PHASE 3,** *we will engage experts to:*

- Collect and analyze feedback received during Phase 2
- Develop draft products

### FALL 2023 — PHASE 3: SOLICIT FEEDBACK ON DRAFT PRODUCTS

**WE WOULD LIKE YOU TO REVIEW** *our draft products for key elements of the program:*

- National Levee Safety Guidelines
- Model Levee Safety Program Guide
- 5-year Implementation Plan

### MAIN ACTIVITIES

- In-person stakeholder meetings across the U.S. and territories, leveraging locations with disadvantaged communities
- Virtual webinars
- Announcements in the Federal Register

disciplines and subject matter of the guidelines. To ensure the guidelines are technically feasible and accurate, a technical review of the guidelines will be performed by an independent, non-federal organization with scientists, engineers, and other experts. All interested stakeholders will have opportunities to provide input for the guidelines development during the stakeholder engagement process outlined above.

## POTENTIAL CONTENT OF THE NATIONAL LEVEE SAFETY GUIDELINES

Based on an extensive literature review and consultation with other federal agencies, USACE has prepared the following list of topics as a starting point for discussion in developing the National Levee Safety Guidelines:

### *UNDERSTANDING LEVEE FUNDAMENTALS*

This topic would provide basic terminology and contextual information that is pertinent to all other topics within the guidelines and can help provide consistency for public awareness efforts and training materials. Specifically, it would include:

- Key definitions
- Levee features, embankment compositions, and associated structures
- Common ways that levees can fail
- How levees function within the floodplain alone and in conjunction with other flood risk management infrastructure

### *MANAGING FLOOD RISKS IN COMMUNITIES*

This topic would provide a basic decision-making framework related to community goals for floodplain management, flood risk tolerance, and resiliency and how levees may or may not fit into those goals. Specifically, it would include:

- Key principles of managing flood risk within communities and the floodplain
- Approaches, applications, and related information for managing flood risks

### *ESTIMATING FLOOD RISK, WHILE ACCOUNTING FOR THE LEVEE*

This topic would provide technical procedures for estimating flood and levee related risks. Specifically, it would include:

- Importance of risk assessments
- Approaches for estimating flood loadings, levee performance, and consequences of flooding
- Understanding risk assessment results
- Roles and responsibilities for estimating flood risks
- Frequencies of risk assessments

### *MANAGING LEVEE RELATED RISKS*

This topic would outline risk management principles, promoting the use of a consistent framework, providing guidance on key decisions and management actions for each phase of the levee life cycle. Specifically, it would include:

- Framework for risk informed decision-making
- Addressing critical situations that require rapid response
- Prioritization of routine activities
- Planning to implement larger mitigation measures

### *DAY-TO-DAY OPERATION & MAINTENANCE OF LEVEES*

This topic would provide a reference guide for operating and maintaining levee features, developing an operation and maintenance plan, and establishing operating budgets. Specifically, it would include:

- Preventive maintenance techniques
- Operation and maintenance practices before, during, and after a flood
- Common operations and maintenance challenges/solutions
- Operation and maintenance plans
- Operational safety and security procedures
- Monitoring and oversight of levee alterations led by outside entities (e.g., permitting)

### *PREPARING FOR, MANAGING, AND OPERATING A LEVEE DURING EMERGENCIES*

This topic would provide information on planning, preparing, responding, and recovering from a flood. Specifically, it would include:

- Approaches to monitor and mitigate levee distress during floods
- Methods for emergency warnings and alerts
- Planning, developing, testing, and implementing emergency action plans
- Effective utilization of inundation maps
- Monitoring, collecting, and storing levee performance data during floods and applications for post-flood management activities
- Identifying mitigation opportunities to reduce future flood risk

### *DESIGNING A NEW LEVEE*

This topic would describe the planning and design process for a new levee. Specifically, it would include:

- Determination of flood risk reduction and levee performance objectives
- Development and evaluation of alternatives for new levees
- Components of planning (hydraulic modeling, subsurface and geotechnical modeling, consequence estimation)

- Site investigation and laboratory testing
- Design practices for levees and floodwalls
- Levee performance analysis
- Instrumentation plans and operations and maintenance plans

### *CONSTRUCTING A NEW LEVEE*

This topic would address the levee construction process including good practices to use prior to, during, and at the end of levee construction – emphasizing practices that promote good levee performance, resilience, and serviceability. Specifically, it would include:

- Construction practices to promote safety and security
- Minimizing environmental impacts during construction
- Quality assurance and quality control activities

### *REHABILITATING AN EXISTING LEVEE*

This topic would provide information on factors/alternatives that should be considered when rehabilitating an existing levee. Specifically, it would include:

- Common rehabilitation types including challenges and solutions
- Practices that promote good levee performance, resilience, and serviceability
- Monitoring and mitigating risks during levee rehabilitation

### *REMOVING AN EXISTING LEVEE*

This topic would provide information on factors/alternatives that should be considered when removing an existing levee. Specifically, it would include:

- Evaluation of watershed and flooding impacts
- Removal techniques and disposal of material

### *Enhancing Flood Resiliency of Communities Behind Levees*

This topic would provide information on actions that can be taken to mitigate damages from flooding should a levee breach or overtop. Specifically, it would include:

- Involvement of dam and levee professionals in community flood risk management activities and decisions
- Warnings, alerts and evacuation planning and execution
- Public health and safety considerations
- Needs of disadvantaged communities
- Minimizing community recovery time and cost
- Reducing damage to property and releases of pollution

- Minimizing damages and maintain services of public infrastructure and lifelines (e.g., roads, water, sewage, police, emergency services, etc.)
- Benefits of insurance for financial recovery

### *RISK COMMUNICATION IN COMMUNITIES WITH LEVEES*

This topic would explain the importance of and techniques on how to communicate levee risk. Specifically, it would include:

- Principles and objectives of communicating risk
- Developing a risk communication and engagement plan
- Key milestones where risk communication is important
- Audience/partner identification and interests
- Best practices of written materials
- Approaches for effective face-to-face communication

### *CROSS-CUTTING TOPICS*

There are several topics that are anticipated to be interwoven throughout the entirety of the National Levee Safety Guidelines publication, where appropriate, including the following:

- Climate variability
- Environmental considerations
- Documentation, data management and the National Levee Database
- Roles and responsibilities
- Natural and beneficial functions of floodplains