Updates on FEMA Region V Levee Process
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Outline

• FEMA Levee Overview
• Roles and Responsibilities
• FEMA Levee Processes
• Levee Guidance Updates
What is defined as a Levee?

44 CFR 59.1

- **Levee** – a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding.

- **Levee System** – a flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices.
Levee System

Legend
System ID
1505000034
1505000036
150500161
150500164
150500173

Map showing the levee system with various colored lines representing different system IDs.
Levee Characteristics

A levee must be:

- Design and engineered as a levee
- Has an identified owner
- Operated, maintained and inspected as levee
Illinois Counties with Levees

69 Counties in Illinois with levee systems
FEMA Region V Overview

- **Region V**
  - Six States (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin)
  - 524 Counties
  - 12 USACE Districts
  - 1,191 levee systems

- **Illinois**
  - 572 levee systems
  - 69 of 102 counties contain levees
Levee Roles
FEMA’s View of Levees (Risk)
FEMA’s Role - Levees

• FEMA’s role is mapping levee-related flood risk and “accredits” levees for mapping purposes only.

• FEMA only accredits levees based on the certification documentation provided by the community or other interested party

• FEMA does not own, operate, maintain, inspect, or certify levees or flood control systems
Levee Accreditation

Once FEMA receives levee certification package from a community, levee owner:

- FEMA performs a “completeness” review
- FEMA accredits levees based on certification submittal findings received
- FEMA reviews against 44 CFR 65.10
- FEMA accreditation review checklist is included in February 2018 Levee Guidance
Levee Certification

Certification documentation should:

- Document that levee or flood control system *meets Federal design, construction, maintenance, and operations standards* to provide protection from a flood of 1% annual chance or greater
  - Standards are outlined in 44 CFR Section 65.10
- Be based on investigations and review of the current levee condition by a registered professional

FEMA Flood Insurance Rate Maps (FIRMs) are based on *current conditions* and *reflect the existing risk.*
Complying with 44 CFR 65.10: Mapping of Areas Protected by Levee Systems

44 CFR Section 65.10

• 65.10(a) – General
• 65.10(b) – Design Criteria
• 65.10(c) – Operations Plans and Criteria
• 65.10(d) – Maintenance Plans and Criteria
• 65.10(e) – Certification Requirements
Complying with 44 CFR 65.10 (b): Design Criteria

- 65.10(b)(1) – Freeboard
- 65.10(b)(2) – Closures
- 65.10(b)(3) – Embankment Protection
- 65.10(b)(4) – Embankment and Foundation Stability
- 65.10(b)(5) – Settlement Analysis
- 65.10(b)(6) – Interior Drainage
- 65.10(b)(7) – Other Design Criteria
Analysis and Mapping Procedure for Non-Accredited Levee Systems

• Approach Document
  • Finalized July 2013

• Operation Guidance
  • Finalized September 2013
  • Superseded by February 2018 Levee Guidance

FEMA
Analysis and Mapping Procedure for Non-Accredited Levee Systems

• **Interactive stakeholder engagement** throughout the analysis and mapping process:
  - FEMA will engage community officials and decision makers in a collaborative discussion

• **A suite of analysis and mapping procedures** of the hazard associated with levees will be reviewed with the interested parties
  - Intention is to recognize of the uncertainty associated with hazard identification behind levees
  - New Development – Allows communities to **split a levee system into distinct reaches** that are analyzed based on the attributes of the specific reach
Applying Procedures to Individual Reaches

**Natural Valley Procedure**
- Don’t know anything about
- Not maintained
- No owner
- No structural analysis

**Overtopping Procedure**
- Barely overtops & is armored: community chooses to do extra evaluation for overtopping

**Structural-Based Inundation Procedure**
- Overtops but not armored

**Sound Reach Procedure**
- Has required freeboard

**RiskMAP**
- Increasing Resilience Together
So...What Could the Final Map Look Like?

1. Natural Valley
   (Difference between Natural Valley and SFHA - Zone D)
2. Interior Drainage (SFHA)
3. Landside Hazard (SFHA)
4. Flooding Source (SFHA)
Phase 1

10 Project Includes Potential Levee

20 Should structure be analyzed as a levee?

No

30 Do Not Process as Levee

Yes

110 Follow Procedures for Accredited Levee Systems

Meets 44CFR65.10

100 Initial Accreditation Evaluation

 Provisionally Meets 44CFR65.10

120 Follow Procedures for Provisionally Accredited Levee Systems

200 Levee Data Collection and Stakeholder Engagement

300 Local Levee Partnership Team

600 Flood Hazard Analysis and Mapping

500 AR/A99

Phase 2

410 Additional Data Collection (if Necessary)

400 Levee Analysis and Mapping Plan

Phase 3

610 System-Wide Procedures
- Interior Drainage
- Natural Valley Zone D

620 Levee Reach Procedures
- Sound Reach
- Freeboard Deficient Reach
- Structural-Based Inundation Procedure
- Natural Valley Procedure

630 Flooding Source Procedures

700 Integrate into the Mapping Process

Best Practices & Implementation Review Process

Covered by previous FEMA Guidance

Covered by new Guidance Document
Guidance for Flood Risk Analysis and Mapping

Levees

February 2018
Guidelines and Standards for Flood Risk Analysis and Mapping

This page provides Federal Emergency Management Agency (FEMA) guidelines and standards for flood risk analysis and mapping activities under the Risk Mapping, Assessment and Planning (Risk MAP) Program.

The guidelines and standards define the implementation details of the statutory and regulatory requirements for National Flood Insurance Program (NFIP) mapping. They describe how FEMA performs Risk Projects, Letters of Map Change (LOMC), and related coordination activities. They are intended for mapping professionals and Coordinating Technical Partners (CTPs) under the Risk MAP Program.

The guidelines and standards are organized in a hierarchy. Standards are mandatory FEMA policy. They are divided into two categories: Program Standards and Working Standards.

Program Standards—Define important elements of the Risk MAP Program. Exceptions to program standards can be granted only by program leadership.

Working Standards—Established under the Risk MAP Program, working standards are intended to help users implement the Program Standards. Working standards are approved and updated by the Risk MAP Program. These standards may be subject to change at any time. They are intended to provide additional guidance to users on best practices and other essential elements.

Excellence—A recommended approach to meet the Risk MAP standards. Acceptable approaches are not limited to this. Recommended approach or other methods may be used if they meet or exceed the standards.

Best Practices/Lessons Learned—Any method, in addition to guidance, that helps to meet or exceed Risk MAP standards. Best practices are shared by FEMA Regions and users of the Risk MAP Program. They are intended to help users meet the standards more efficiently.

February 2018: Levee Guidance Transformation

Chapters:
1. Levee Overview
2. Glossary
3. Levee Data Inventory
4. Accredited Levee Systems
5. Provisionally Accredited Levee Systems
6. Non Accredited Levee Systems
7. Non-levee reaches and Non-levee features
8. FEMA and Other Federal Agency Coordination
February 2018: Levee Guidance Transformation

- **New or Significant Changes:**
  - Inclusion/development of guidance on:
    - Levee data inventory
    - Clarification of accreditation requirements
    - Mapping considerations for non-levee features
    - FEMA and Other Federal Agencies coordination; focus on USACE
    - References to resources outside of FEMA’s Risk MAP program

- **Notes:**
  - Transforms and supersedes existing Risk MAP program guidance on:
    - Provisionally Accredited Levees
    - Analysis and mapping of non-accredited levees
  - Does not replace:
    - Levee Seclusion guidance
    - Zone A99 and Zone AR Determinations guidance
    - Levee-Specific Non-Regulatory Flood Risk Dataset guidance already available
  - Related templates are also being updated as part of this transformation
February 2018 : Levee Guidance Transformation

• Chapter 3 – Levee Data Inventory
  • National Levee Database
  • Identification of Levees
  • FEMA Regulatory Levee Data
  • Tracking Levee Accreditation Status
  • Reporting Levee System Updates
  • Levee Data Storage Requirements
USACE – National Levee Database

https://levees.sec.usace.army.mil
February 2018: Levee Guidance Transformation

- Chapter 4 – Accredited Levee Systems
  - 44 CFR 65.10 Requirements
  - Additional Levee Accreditation Considerations
    - Levee System at Tie In Considerations
    - Other Federal Agency Submittals (USACE Risk Assessments)
    - Continued Accreditation
    - Expiration of Data Certification or Endorsement
    - Updated Modeling along an Accredited Levee
    - Noted Structural of Maintenance Deficiencies
- Levee Accreditation Reviews
- Accredited Levee Mapping and Notes
February 2018: Levee Guidance Transformation

- Chapter 4 – Levee Tie in Considerations

Figure 6: Levee System Tying into Non-Levee Reach
February 2018 : Levee Guidance Transformation

- Chapter 7 – Non-Levee Reaches and Non-Levee Features
“Levees reduce the risk of flooding. But no levee system can eliminate all flood risk. There is always the chance that a flood will exceed the capacity of a levee, no matter how well it was built. Levees do not always perform as intended. In fact, levees sometimes fail even when a flood is small.”

— American Society of Civil Engineers
Questions?

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