USACE Levee Safety Program Update

Eric Halpin, PE
Acting Administrator
National Levee Safety Program
November, 2 2015
The Continuing Levee Challenge

- The nation has thousands of miles of levees.
- Over 1/4 of the counties in the US have levees.
- ASCE gave a report card grade of “D-” to levees.
- Levees are aging and more stuff is being put behind them.
- Citizens living behind levees assume they are safe from flooding.
Path to a Safety Program

Pre-2005

• Annual Inspections
• Different criteria for non-Fed. vs Fed.
• Inconsistent application
• More “100 yr” levees
• No risk communication

Post-Katrina

Inventory

Assessments

Inspections

Levee Safety Program

“Business as Usual”

Hurricane Katrina/Rita

FY06 Supplemental

National Levee Safety Act
Goals for the Levee Safety Program

- Develop increased understanding of benefits and risks of levee systems
- Promote actions to manage risks
- Make transparent and credible decisions
- Make wise federal investment decisions
- Hold life safety paramount and reduce economic and environmental risks
How Do We Get There?

Risk Assessment
- Risk Identification
- Risk Estimation
- Characterization of Uncertainty

Risk Management
- Risk Evaluation
- Risk Management Options Assessment
- Prioritization of Recommendations
- Risk Management Option Selection
- Implementation
- Monitoring and Review

Risk Communication
Stakeholder Engagement
Communication of:
- Nature of Risk
- Uncertainties in Risk Assessments
- Risk Management Options

Implement the Risk Framework
Risk Assessment Input

- Likelihood of Loading
  - H&H Analyses
  - Historical Events

- Likelihood of Performance
  - Inspection Observations
  - Review of Design Criteria
  - Past Performance

- Consequences
  - Population at Risk
  - Economic Impacts
  - Emergency Preparedness
## Risk Characterization

### Levee Safety Action Classification

<table>
<thead>
<tr>
<th>Urgency of Action</th>
<th>Actions</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate (3)</td>
<td></td>
<td>Likelihood of inundation with associated consequences characterizes each class.</td>
</tr>
<tr>
<td>Low (4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal (5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Actions recommended for each class are commensurate with risks.

THE FOCUS IS MAKING RISK INFORMED DECISIONS!

THE FOCUS IS NOT THE LSAC NUMBER!
Building The Risk Expert

- Systems Thinker
- Integrator of and Expert in Multiple Disciplines
- Critical Thinker
- Decision Oriented
- Makes Case with Evidence

I'm kind of a big deal...
Sponsor Engagement

- The levee sponsor is responsible for operating and maintaining the levees.
- Levee sponsors are essential to
  - prioritize and implement actions.
  - successful communication.
Coordination Between FEMA and USACE

- Share information
- Identify direct links between levee related activities
- Coordinate policies
- Joint communication efforts
Dutch Partnership: Lesson's Learned
Risk to people and property associated with living near rivers and oceans is increasing:
- Degradation of existing defense structures
- Changing construction techniques
- Increase in population, climate change, etc

Large portfolio – limited funds
- How do you decide what to fix first?
Dike Investment Decisions

- **US** – Risk informed decisions
  - Risk-based
  - Prioritized via LSAC
  - Tolerable risk
  - Shared responsibility

- **Dutch** – Safety Standards
  - Probability-based
    - Cost-benefit/life safety basis
  - Pass/Fail
  - Focused on dike
Ongoing Program Updates
Levee Safety Program EC

- Principles
- Objectives
- Activities
- Metrics

**Risk Assessment**
- Risk Identification
- Risk Estimation
- Characterization of Uncertainty

**Risk Communication**
- Stakeholder Engagement
- Communication of:
  - Nature of Risk
  - Uncertainties in Risk Assessment
  - Risk Management Options

**Risk Management**
- Risk Evaluation
- Risk Management Options Assessment
- Prioritization of Recommendations
- Risk Management Option Selection
- Implementation
- Monitoring & Review
Design and Construction of Levees

EM 1110-2-1913

- Regional design approaches
- Risk-based potential failure modes to establish design objectives and approaches
- Performance expectations including operations, maintenance, flood-fighting efforts and associated documentation
Communication PGL

- 2500+ levee systems
- ~1200 ready for plans
- Coordination with multiple entities
- Ensuring information is current
- Comfort level for risk communication
Levee Evaluations for NFIP

- Guidance will address how Levee Safety Activities will be used to evaluate levees for the NFIP – scalable decision making
Rehabilitation Program Eligibility

- Inspection Rating ≠ Eligibility
- EP will be a guide to make eligibility determinations
- Requirements synchronized with Levee Safety EC
- Update to 33 CFR 203.10
Our Levee Safety Commitment

- Strong communication and engagement connect levee safety activities with our commitment to reduce risk to life and property.

- Our community of levee safety professionals works with others to ensure levee systems deliver intended benefits reliably and in a way that promotes greater risk awareness and shared responsibility for action.

- We want those who rely on levees to:
  - Know their risk—living with levees comes with risk
  - Know their role—living with levees is a shared responsibility
  - Take action to reduce risk
Questions?