



# LEVEE SAFETY CONNECTIONS

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**KNOW YOUR LEVEE** *Communities across the nation rely on levees to reduce the impact of flooding on their residents' homes and businesses. Spring flooding this year was the worst it has been in decades. Hurricane season is just beginning. Both remind us how much we rely on levees. It should also remind us that our levees are aging, that we have far from a complete handle on the location and condition of our nation's levees other than those enrolled in U.S. Army Corps of Engineers Levee Safety Program. While we rely on levees, there is no national inventory of levees – we do not know the number of levees, their location, or their condition. The National Committee on Levee Safety (NCLS) has recommended a one-time inventory and inspection of all the nation's levees to populate the National Levee Database, and improve the understanding of and planning for flood risks in all communities. With such information, communities can better understand and reduce risks to their population (including evacuation when necessary), critical infrastructure, property and the natural environment.*

## Spotlight on Levee Safety: Record Flooding

The last three months have provided ample examples of the importance of reliable levees for the nation. Melting runoff from mountain snows and ten times greater than average rainfall resulted in record flooding along much of the lower Mississippi River, from Illinois and Missouri down through Louisiana. The lower Mississippi River flowed at levels not seen since the catastrophic floods of 1927, 1937, and 1973; and Missouri River flows are expected to increase to record highs by mid-June and then remain high until mid-August, testing many levees and safety practices throughout the summer of 2011.



15 June 2011: OMAHA, Neb. - A view of the Missouri River (U.S. Army Photo / Carlos J. Lazo)

During the past few months, hundreds of people have put in thousands of hours walking the levees, identifying sand boils and other

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## The National Levee Safety Program through the Lens of Experience

On April 6, the National Committee on Levee Safety and 44 invited representatives from all levels of government, the private sector, academia, and community groups who have responded to, lived through, and studied the levee-related impacts of Hurricane Katrina held a workshop in New Orleans about the recommendations for a National Levee Safety Program.

### "Complacency is as powerful as Mother Nature."

*Tim Doody, President, Southeast Louisiana Flood Protection Authority – East*

In their comments and reactions to the recommendations for a National Levee Safety Program, participants underscored the critical importance of risk communication for individuals, communities, and the nation – and taking action based on a better understanding of risk. While implementation of all the full suite of recommendations faces many challenges, participants urged moving toward better information about the location and condition of levees, sharing that information broadly, understanding and communicating risks, and raising awareness and identifying resources to address risks to public safety.

## TEST YOUR LEVEE IQ

The average age of levees in the U.S. is:

- a. 21 years
- b. 54 years
- c. 90 years
- d. Nobody knows

Look for answers to Test Your Levee IQ in the next issue of *Levee Safety Connections*.

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A Publication From The National Committee On Levee Safety

For more information or to provide an idea for an article, please e-mail [contact@leveesafety.org](mailto:contact@leveesafety.org).



### NCLS Learns from Dutch Experience

A delegation from NCLS traveled to the Netherlands at the end of April and held a series of meetings to learn about the Dutch experience, share information on levees in the U.S. and the recommendations for a National Levee Safety Program, and explore policy, communications, and technical overlaps between the organizations. The U.S. delegates left their four-day visit better understanding the philosophies and specifics of Dutch flood risk-reduction, a greater appreciation of the challenges the Dutch face, and a realization that there are many similarities and some differences.

Delegates from both countries felt continued dialogue would be beneficial. Below are a few highlights:

- A visit to the Defland Waterboard (a historic regional government agency dedicated to flood protection) provided examples of how a coastal levee can be incorporated with local government economic development needs as well as providing a good example of federal, regional and local government collaboration;
- Discussions with a public/private Expertise Network for Flood Protection provided an example of how the Delta Programme solicits expert technical and policy advice and provided a fascinating example of how the people of the Netherlands are talk-



*Top: The NCLS visits the reinforcement works of the coastal defense in The Hague in the Netherlands. A levee is constructed under the boulevard and the beach.*

*Bottom: A representative of the Waterboard of Delfland presents the approach of the coastal reinforcement project.*

ing about the technical feasibility and challenge of communicating new levee standards and levels of protection; and

- Appreciation of how the Dutch are combining their traditional structural approach to flood risk reduction (e.g., dikes, levees, storm surge barriers) with an increased appreciation for and emphasis on programs like “Make Room for Rivers” in riverine areas which suffered major floods in 1993 and 1995, and are also looking to more integrated approaches to address ongoing water supply needs together with flood risk reduction.

## Japanese Earthquake-Damaged Levees Inspected

Approximately 6 weeks after the terrible March 11, 2011 Tohoku Offshore Earthquake and consequent tsunami in Japan, three engineers completed a brief tour and inspection regarding the performance of levees in the area. One of the engineers, Les Harder of HDR Engineering, Inc., is a member of the National Committee on Levee Safety. The other two members of the team were Keith Kelsen of William Lettis and Associates, and Tadahiro Kishida, Assistant Professor at Chiba University. The three were part of a team organized for the Geotechnical Extreme Events Reconnaissance (GEER) program. The purpose of the GEER program is to document the performance of earth structures and issues related to geotechnical engineering following important earthquakes and other disasters to advance research and practice.

While inspecting the performance of levees, the team found that while most levees performed well, there were hundreds, if not thousands, of limited reaches where minor to major structural damage was caused by foundation liquefaction. Since the river levels were low at the time of the earthquake, no levees actually breached and caused inundation of the protected areas due to earthquake shaking. However, in the coastal areas, tsunami waves overtopped both the coastal and riverine levees and floodwalls, and caused tremendous damage and loss of life.

To find out more about the GEER Program, please visit <http://www.geerassociation.org/>.



27 April 2011: View of Slumped Hinuma River Left Levee Induced by Liquefaction



15 June 2011: Col. Robert Ruch (left), commander of the U.S. Army Corps of Engineers Omaha District, speaks with a local farmer during a public meeting held by the U.S. Department of Agriculture near Wehrspann Lake, Neb. Ruch and other officials from the Corps attended the meeting to answer Corps-specific questions. (U.S. Army Photo / Carlos J. Lazo)

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risks to their stability and raising levees as the flood crest has moved down the mighty Mississippi.

The US Army Corps of Engineers and the local levee districts oversee the levees on the lower Mississippi and the rivers that feed it as part of the Mississippi Rivers & Tributaries (MR&T) flood control system. For the first time in decades, the Corps has used all three floodways developed as part of the MR&T system. While use of these floodways unfortunately floods land and structures in easement areas, it does show that operating levees as a system (in this case a very large one) allows risk-informed decisions to be effectively made and communicated. By operating the MR&T system as designed, including the floodways, the value of this \$13.6 billion investment to our nation can be counted by what we have **not** lost: scores of lives, critical infrastructure for the energy industry and more than \$60 Billion in damages to homes and businesses. It also demonstrates the importance of non-Corps levees. Once you move beyond the mainstem river, private, temporary, and non-federal levees have played an important role in protecting farmland and individuals homes.

While it will take weeks for floodwaters to recede, and months beyond that to understand the damage of these historic floods, one thing is clear: without reliable levee systems and a public informed of their risks and empowered to protect themselves and their property, damages would have been much greater.

### NCLS Members on the Road

Members of the National Committee have recently shared their recommendations for a National Levee Safety Program with the following organizations:

- Society of American Military Engineers Joint Engineer Training Conference (May)
- Association of State Floodplain Managers Annual National Conference (May)
- Tribal Assistance Coordination Group (Bureau of Indian Affairs) National Workshop (May)
- Fort Bend Flood Management Association of Texas (May)
- National Flood Determination Association Annual Conference & Retreat (April)
- Family Farm Alliance Annual Meeting and Conference (February)

If your organization would like to hear from the NCLS, please contact Terry Zien at [contact@leveesafety.org](mailto:contact@leveesafety.org).

### TEST YOUR LEVEE IQ: ANSWERS

In the first issue of *Levee Safety Connections*, we asked:

**How many miles of levees are estimated to be within the United States?**

- a. 10,000 miles
- b. 50,000 miles
- c. 100,000 miles.** The NCLS estimates there may be more than 100,000 miles of levees in the nation with tens of millions of people living behind them.
- d. 500,000 miles

**True or False?**

All levees in the United States are under the jurisdiction of the US Army Corps of Engineers.

**False.** The vast majority of the levees across the nation are not part of any federal program. There are approximately 14,800 miles of levee enrolled in US Army Corps of Engineers programs (including those built by the Corps and locally maintained) and another 14,000-16,000 miles estimated to be operated by other federal agencies (US Bureau of Reclamation, National Resources Conservation Service).

### FEDERAL AGENCY UPDATE

For a National Levee Safety Program to be successful, existing federal programs must be aligned toward the promotion of levee safety. This section provides descriptions of some of the federal activities currently addressing levee safety.

**FEMA Revises “Without Levee” Approach** FEMA Administrator Craig Fugate recently announced the agency will replace the “without levee” modeling approach, which maps floodplains behind non-accredited levees as if there was no levee in place, with a suite of methodologies that are “technically-sound, credible and cost-effective.” FEMA will temporarily delay issuing Letters of Final Determination for communities whose levees do not meet accreditation requirements and who would benefit from the new approach. No changes to 44 C.F.R. Section 65.10 are expected.

**USACE holds Levee Safety Engineer Circular Workshops**

In May, USACE held the first of two workshops designed to gather input for an engineer circular which will provide guidance to the USACE Levee Safety Program. The workshop, held in Washington, DC was attended by 86 participants who gave ideas and input through discussions, questions and answers, and almost 300 comment cards. The second workshop is scheduled for Denver on 28-30 June. Registration information can be found at: <http://envr.abtassociates.com/LeveeSafety/>

### OPT IN — BE LEVEE AWARE

The NCLS has created an opt-in electronic mailing list to distribute *Levee Safety Connections* and information on the NCLS and its activities, as well as information on other levee-related activities. To sign up, follow the link on the “Contacts” page on the website.