



Dam and Levee Safety: Using Risk-Informed Decision Making

"As we saw in the record flood events of 2011, levee systems and dams built by USACE deliver incredible benefits to the nation...our infrastructure safety programs assure that we deliver those benefits in a socially, economically, and environmentally responsible manner where life safety is paramount."

—Steve Stockton, Director of Civil Works

The U.S. Army Corps of Engineers' [dam](#) and [levee safety programs](#) use a risk informed approach to make investment decisions, communicate the benefits and risks of the infrastructure, and work with stakeholders when solutions are required. Risk concepts bring together information from infrastructure design, construction, operations, analytical techniques, and experienced-based expert judgment, to answer key questions regarding priorities, urgency of action, and type of action. Risk information complements traditional engineering approaches and enables USACE to assess changes over time.

This understanding allows USACE to make decisions and provide advice that is more credible and appropriate, and to consistently characterize, communicate and take justifiable action through better [risk management](#) decisions. In addition, assessing the entire USACE inventory of dams and levees allows us to identify the highest risk systems first and then advise on or implement risk management decisions to more efficiently reduce risk across the entire portfolio.

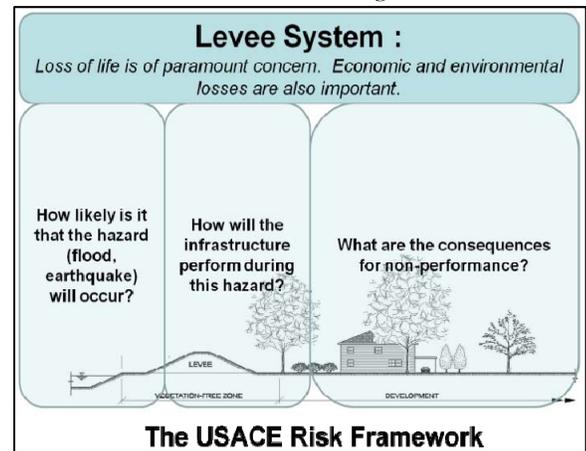
Central to this approach is how USACE assesses and quantifies inundation risk. Key questions include:

- What is the range of possible undesirable events (flood, storm or earthquake, etc.),
- How will the infrastructure perform in the face of these events,
- What are the consequences if the infrastructure doesn't perform well—life-loss of paramount concern, and
- What is the likelihood and severity of undesirable or adverse consequences?

USACE uses [Dam Safety](#) Action Classification (DSAC) and [Levee Safety](#) Action Classification (LSAC) systems to guide key risk management decisions. In making DSAC and LSAC assignments, USACE considers only the incremental risk, which is defined as the inundation risk to floodplain occupants and properties that may arise due to the presence of a dam or levee system.

In communicating risk, USACE considers an additional inundation scenario where the dam or levee functions as intended under normal operation without breach (non-breach risk) for events that exceed the containment capacity. Together, non-breach risk and incremental risk equal residual risk (the risk that remains), emphasizing that dams and levees do not completely eliminate inundation risk, which is an important aspect of our safety programs.

USACE completed the screening level assessment of all dams in 2009, assigned a DSAC to each and is using the information to set priorities and drive action. USACE is currently conducting a screening level risk assessment of its levee system portfolio and making initial LSAC assignments.



Key Messages	Facts & Figures
<ul style="list-style-type: none"> • Life safety is paramount. • Living with dams and levees comes with risk—know your risk. • Living with dams and levees is a shared responsibility—know your role. • Know your risk, know your role and take action to reduce your risk. • Dams and levees reduce risk; they do not eliminate risk. • Flood risk is dynamic and changes over time. 	<ul style="list-style-type: none"> • USACE's Levee Safety Program comprises approximately 14,700 miles of levees, or approximately 2,300 systems. • Some 14 million people live or work behind USACE levees. • USACE's Dam Safety Program comprises 694 dams. • Damages prevented: \$28.1 billion in damages in 2010. • Damages prevented per \$1 invested (adjusted for inflation) 1928 – 2010, \$7.17. • Visit http://www.usace.army.mil for more information.