

# USACE Flood Fighting Basics

October 21, 2015

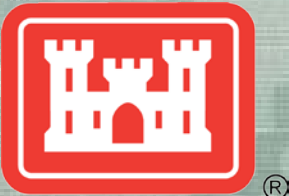
**Paul Schimelfenyg**

Dam and Levee Safety Program Manager

USACE San Francisco District

[Paul.Schimelfenyg@USACE.ARMY.MIL](mailto:Paul.Schimelfenyg@USACE.ARMY.MIL)

[Phone: 415-503-6916](tel:415-503-6916)



US Army Corps of Engineers  
**BUILDING STRONG**<sup>®</sup>



**CORNERSTONE OF THE SOUTHWEST!**

# IT CAN HAPPEN HERE!



Pajaro River 1998



Novato Creek 2014



Middle River 2004



Missouri River 2011



# STEP 1 PRE-FLOOD PREPARATON

- Maintenance
- Emergency Action Plan
  - ▶ Emergency Contacts Update
  - ▶ Surveillance
  - ▶ Evacuation Plan/Routes
  - ▶ Notification
  - ▶ Flood Fighting Methods and Supplies



# STEP 2 - EVALUATE THE RISKS

## ■ Overtopping

- Seepage
  - Erosion
  - Stability
- 
- Risk = (probability something bad will happen x the consequences)



# STEP 3 – FLOOD FIGHTING

- Step 3A – Overtopping Solutions
  - ▶ Earth Fill
  - ▶ Sandbags
  - ▶ Flashboards and Fill or Sandbags
  - ▶ Geotubes
- Step 3B – Seepage Solutions
  - ▶ Sandbags
  - ▶ Sheetpile
  - ▶ Flatten Landside Slope with Fill
  - ▶ Seepage Berms



# STEP 3 – FLOOD FIGHTING (CONT.)

- Step 3C – Erosion Solutions
  - ▶ Sandbags
  - ▶ Plastic Sheeting with and without Sandbags
  - ▶ Moveable Panels
  - ▶ Deflection Weirs
  - ▶ Stone
- Step 3D – Stability Solutions
  - ▶ Stone Fill on Waterside Toe
  - ▶ Earth Fill on Landside Toe



# REFERENCES

- Levee Owner's Manual (USACE)
- Emergency Investigation Team Workshop
- Emergency Preparedness Guidelines for Levees (DHS)
- Emergency Flood Fighting Methods (CA DWR)
- Levee Threat Monitoring Guidelines (CA DWR)
- Flood Preparedness Guidelines for Maintaining Agencies (CA OES)
- Emergency Preparedness and Management (International Levee Handbook – Chapter 6)



# QUESTIONS

- 1) If the National Weather Service forecast indicates that the floodwaters will stay in the channel, which type of flood fighting methods should a levee owner be considering?
- 2) If steady El Nino conditions occur and the floodwaters are near the top of the levee and rising, which type of flood fighting methods should a levee owner be considering?
- 3) If your levee design is for a 20-year storm, and the National Weather Service predicts a 20-year storm, which type of flood fighting methods should a levee owner be considering?

