

# Climate Change and Management of Aging Earthen Levees and Embankments



Aging dams and levees are at increased risk of failure due to climate change

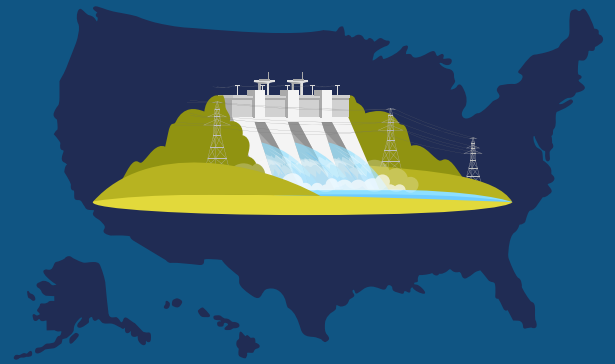
The failure of earthen dams and levees can lead to problems in

- ✗ Flood defense
- ✗ Water supply management
- ✗ Electrical power networks

## There are over 90,000 dams in the US alone

- Over 50% are privately owned
- Average age of the dams is over 50 years

To prevent the potential failure of small dams and levees, a holistic approach incorporating the effects of climate change must be adopted



### Past

- Evaluate past cases of embankment infrastructure failures



Primary modes of dam and levee failure resulting from extreme climatic events and overloading include

- Slope instability
- Underseepage
- Uplift
- Through seepage
- Overtopping

### Present

- Identify key stakeholders
- Survey existing dams and levees



These data can guide key stakeholders (e.g., dam owners, policy makers, and civil engineers) in existing dams and levees, and those under construction to

- Implement validated models
- Analyze preventive measures such as rapid drawdown

### Future

- Develop foolproof prediction models
- Strategize mitigation in case of embankment failures



This allows for consistent monitoring of geotechnical infrastructure in response to climate change

Remote-sensing technologies can be applied to mitigate potential failure aftermaths

Effective management of dams and levees during climate change events can be achieved through concerted efforts by stakeholders to learn from previous cases and apply accurate prediction models

