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[Dam-Failure-ISG-Public-Mtg-2013-02-21.pdf](#)

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Jim,

Attached are the slides and working table of contents from the February 21, 2013, public meeting. Please let me know if you have any questions. Thanks.

Ed Miller  
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**U.S. NRC**

UNITED STATES NUCLEAR REGULATORY COMMISSION

*Protecting People and the Environment*

# **NRC Interim Staff Guidance on Estimating Flooding Hazards Due to Dam Failure**

Ken See and Joe Kanney

February 21, 2013

1. Introduction
2. Background
3. Screening and Simplified Methods
4. Hydrologic Failure
5. Seismic Dam Failure
6. Sunny-Day Failure
7. Dam Breach Modeling
8. Levee Breach
9. Flood Wave Routing



- Based mainly on guidance and technical references developed by federal agencies
  - FEMA
    - Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failure
    - Selecting and Accommodating Inflow Design Floods for Dams
    - Earthquake Analysis and Design of Dams

## – USACE

- Safety of Dams – Policy and Procedures
- Engineering Design – Design and Construction of Levees
- Engineering Design – Retaining and Flood Walls

## – USBR

- Dam Safety Risk Analysis Best Practices Training Manual

## – Others

- State of Colorado Dam Breach Analysis Guidelines

# Staff Position Topics (in Process)

- Interfacing process with dam owners/regulators
- Screening and simplified modeling approaches
- Hydrologic failure
  - Assumptions regarding spillway/turbine capacity
    - Turbines in operation
    - Blocking by debris
  - Starting reservoir water level assumptions
  - Failure criteria for embankment dams when overtopped
  - Gate failure/miss-operation leading to flooding
  - Hydrostatic loading
  - Treatment of multiple failures from single storm event

# Staff Position Topics (in Process)

- Seismic
  - USGS (2008) Seismic Hazard Curves vs Site-Specific Ground Motions
  - Site-specific vs generic amplification factors/functions
  - Treatment of multiple dam failures due to single seismic event

# Staff Position Topics (in Process)

- Sunny-Day Failure
  - Starting water surface elevation
  - Non-failure probability criteria
  - Base flow assumptions



# Staff Position Topics (in Process)

- Dam Breach Modeling
  - Justification for model selection
  - Sensitivity analysis

# **NRC ISG Schedule**

- 2/21/13 – Public Meeting w/ NEI
- 3/1/13 – Draft to NEI
- 3/8/13 – Draft for Public Comment
- TBD – Public Meeting
- 4/30/13 – Issue Final ISG

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