

## Emergency Action Plans – 101



## Definition of an EAP

An EAP – is a document that identifies:

- Potential emergency conditions that could occur at a dam
- Actions to minimize property damage or loss of life resulting from a dam failure
- Provides guidance for emergency response



## Who Needs an EAP?

- Every Class I, II, & III dam is required to have an EAP - per Ohio Administrative Code Rule 1501:21-15-07
- Dam owners who are not regulated may also want to consider having a plan to help in saving their dam and in reducing their liability



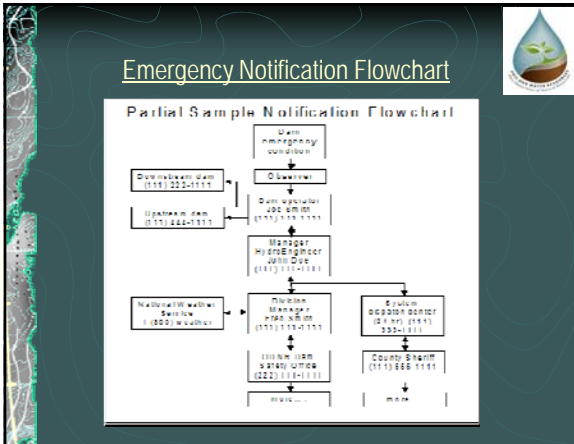
## ICODS EAP Outline

- I. Notification Flowchart
- II. Statement of Purpose
- III. Project Description
- IV. Emergency Detection, Evaluation, and Classification
- V. General Responsibilities
  - A. Dam Owner
  - B. Notification
  - C. Evacuation
  - D. Termination and follow-up
  - E. EAP coordination
- VI. Preparedness
- VII. Inundation Maps
- VIII. Appendices
  - Appendix A: Investigation and Analyses of Dam Break Floods
  - Appendix B: Plans for Training, Exercising, Updating, and Posting EAP
  - Appendix C: Site-Specific Concerns
  - Appendix D: Approval of the EAP



## Section I: NOTIFICATION FLOWCHART

- Very important part of the plan!
- Lists who to notify in an emergency
- Contains Names, titles, phone numbers
- Should be brief, simple, easy to follow
- Emergency & non-emergency conditions



## Section I: NOTIFICATION FLOWCHART

### Who should be listed on the flowchart?

- Dam Owner
- Federal, State, Local Agencies (County EMA)
- ODNR, Dam Safety Program
- Residents & property owners downstream
- National Weather Service (NWS)
- News Media



## Emergency Detection, Evaluation & Classification

EMERGENCY DETECTION, EVALUATION, AND CLASSIFICATION		Use in Conjunction with Part 4 of this Document	
CONDITION NOTED		ACTION TAKEN	
UNDESIRABLE	Monitoring or minor change of the condition	⚠️	<b>EMERGENCY - UNSAFE</b> 1. Initiate EMERGENCY NOTIFICATION 2. Initiate 24-hour surveillance program
MUNICIPALS	Water flowing through or underneath the structure	⚠️	
RESPONSE	Change in downstream slope with possible erosion and/or structural failure	⚠️	<b>NON-EMERGENCY - UNSAFE</b> 1. Contact a qualified Professional Engineer immediately 2. Initiate daily surveillance
	Change in downstream slope with clear water	⚠️	
SLOPE FAILURES	Water level in downstream slope or toe	⚠️	<b>DEFICIENT</b> 1. Contact a qualified Professional Engineer 2. Check during weekly inspection and note changes in the condition
	Search of data shows the structure that has failed	⚠️	
	Failure of concrete crest near the structure	⚠️	
CONDUITS/PIPES	Reduction of the crest	⚠️	<b>DEFICIENT</b> 1. Contact a qualified Professional Engineer 2. Check during weekly inspection and note changes in the condition
	Cracks (linear or transverse) in the concrete crest	⚠️	
	Reduction of the crest	⚠️	<b>DEFICIENT</b> 1. Contact a qualified Professional Engineer 2. Check during weekly inspection and note changes in the condition
	Cracks (linear or transverse) in the concrete crest	⚠️	
	Reduction of the crest	⚠️	<b>DEFICIENT</b> 1. Contact a qualified Professional Engineer 2. Check during weekly inspection and note changes in the condition
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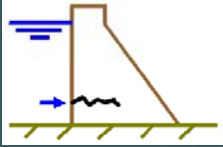
## Classification of Emergency Conditions

- Monitor condition – Unusual situation noticed
- Watch Condition – Potential failure is developing
- Warning Condition – Failure is imminent or has occurred

## Monitor Condition

Possible Examples:


- Unusual Crack
- Spillway Obstruction
- Seismic Event
- Bomb Threat
- Shallow Slide



## Monitor Condition

Response:

- Refer to EAP
- Monitor and Investigate
- Notify Dam Safety
- Assess & Mitigate



## Watch Condition

Possible Examples:


- Rising/High Water Level
- Increased Seepage/Leakage
- Developing Erosion
- Settlement or Upheaval
- Sinkhole Develops
- Substantial Slide



## Watch Condition

Response:


- Refer to EAP
- Notify County EMA
- Notify Dam Safety
- Put Others On Alert
- Monitor & Investigate
- Assess & Mitigate



## Warning Condition

Possible Examples:

- Water Overtopping Dam
- Increased Cloudy Seepage
- Uncontrollable Erosion
- Actively Collapsing Sinkhole
- Spillway Collapsing
- Massive Slide Reaches Lake



## Warning Condition

Response:

- Refer to EAP
- Notify County EMA
- Begin Evacuation
- Notify Dam Safety
- Assess & Mitigate



## HAZARD AREA DELINEATION

Area impacted by dam failure

- worst case scenarios
- prepared by engineer (dam break analysis)

Areas to map

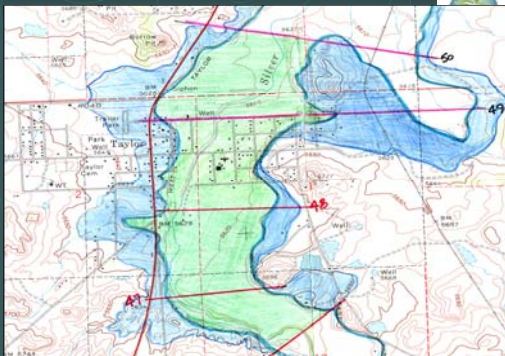
- endangered buildings & roads
- evacuation routes
- alternative routes to dam site
- "safe" areas for evacuation

## INUNDATION MAPS

- Required for Class I dams
- Dam owner must develop
- Helps develop notification flowchart
- Clarifies evacuation procedures
- Professional Engineer needed



Typical Inundation Map of a Downstream Area




Inundation Mapping



## Emergency Situation Roles


### Roles - Dam Owner

- Detects emergency situation
- Notifies authorities & those downstream – "Houston we have a problem"
- Knows history of the dam
- Provides access to site
- Has some emergency supplies & resources
- Takes action to save dam/eliminate hazard




### Roles – County EMA

- Assists in determining emergency level
- Assists in evacuations
- Notifies other authorities & parties
- Should have a copy of the EAP
- Assists in obtaining local resources
- Some emergency supplies & resources




### Roles – Sheriff, Fire, EMS & Others

- Access to site – uncooperative landowner
- Road closures/barricades
- Assists with evacuation
- Assists in obtaining local resources
- Some emergency supplies/resources
- Crowd control & overall site safety




### Roles – County Engineer

- Closure of county roads
- May provide heavy equipment
- Initial engineering evaluation of site



### Roles – ODNR Dam Safety

- Technical assistance during failure situation
- Authority to enter site
- Can issue orders & directives to owner
- Authority to assume control of dam until resolved



Questions??