

## 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

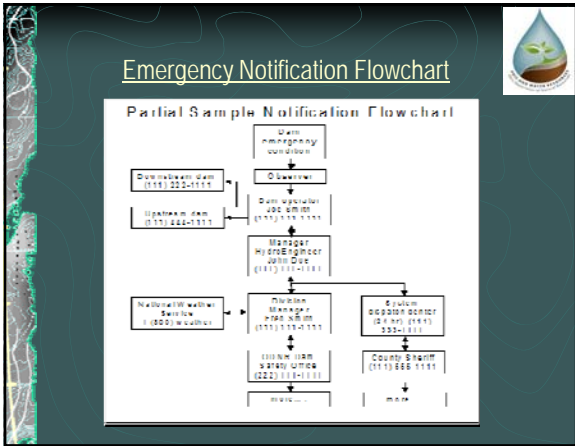
- Dam owners who are not regulated may also want to consider having a plan to help in saving their dam and in reducing their liability

## 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 overtopping of the dam crest	<b>EMERGENCY - UNSAFE</b> 1. Initiate EMERGENCY NOTIFICATION 2. Initiate 24-hour surveillance program	⚠
MUNICIPALS	Water flowing through or underneath the dam		⚠
RESPONSE	Change in downstream slope with visible erosion and/or increasing flow	<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	Excess pore water pressure or flow	<b>DEFICIENT</b> 1. Contact a qualified Professional Engineer 2. Check during weekly inspection and note changes in the condition	⚠
	Search of soils below the dam face that indicate erosion		⚠
	Presence of cracks near the dam toe or foundation		⚠
CONDUITS/PIPES	High level of vibration that does not abate	<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 dam crest		⚠
	Reduction of the crest		⚠
	Flow bypassed with visible water and debris in downstream		⚠
	Downward or curving/levelling piping		⚠
	Flow below the dam with clear water		⚠
	High groundwater near downstream or foundation		⚠

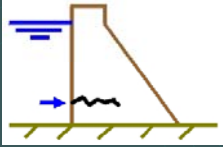
### Classification of Emergency Conditions

- 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


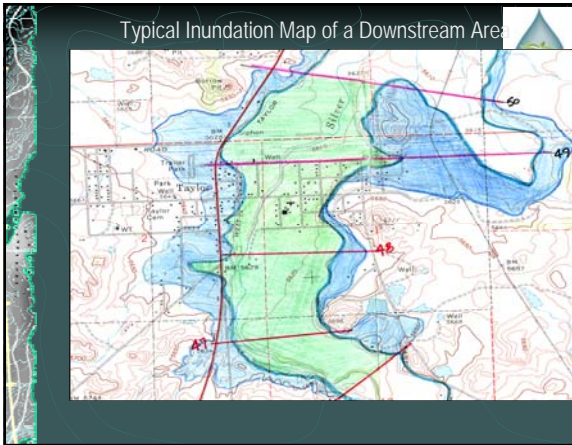
- ☛ worst case scenarios
- ☛ prepared by engineer (dam break analysis)

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

## 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??