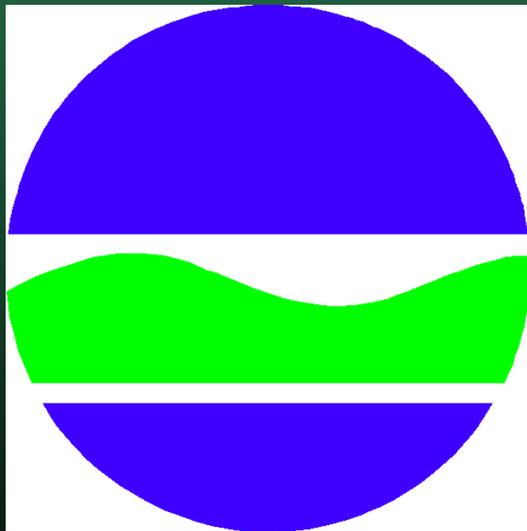


Dam Emergency Planning Workshop



Alon Dominitz, P.E.
Dam Safety Section
518-402-8151

NYS Department of Environmental
Conservation

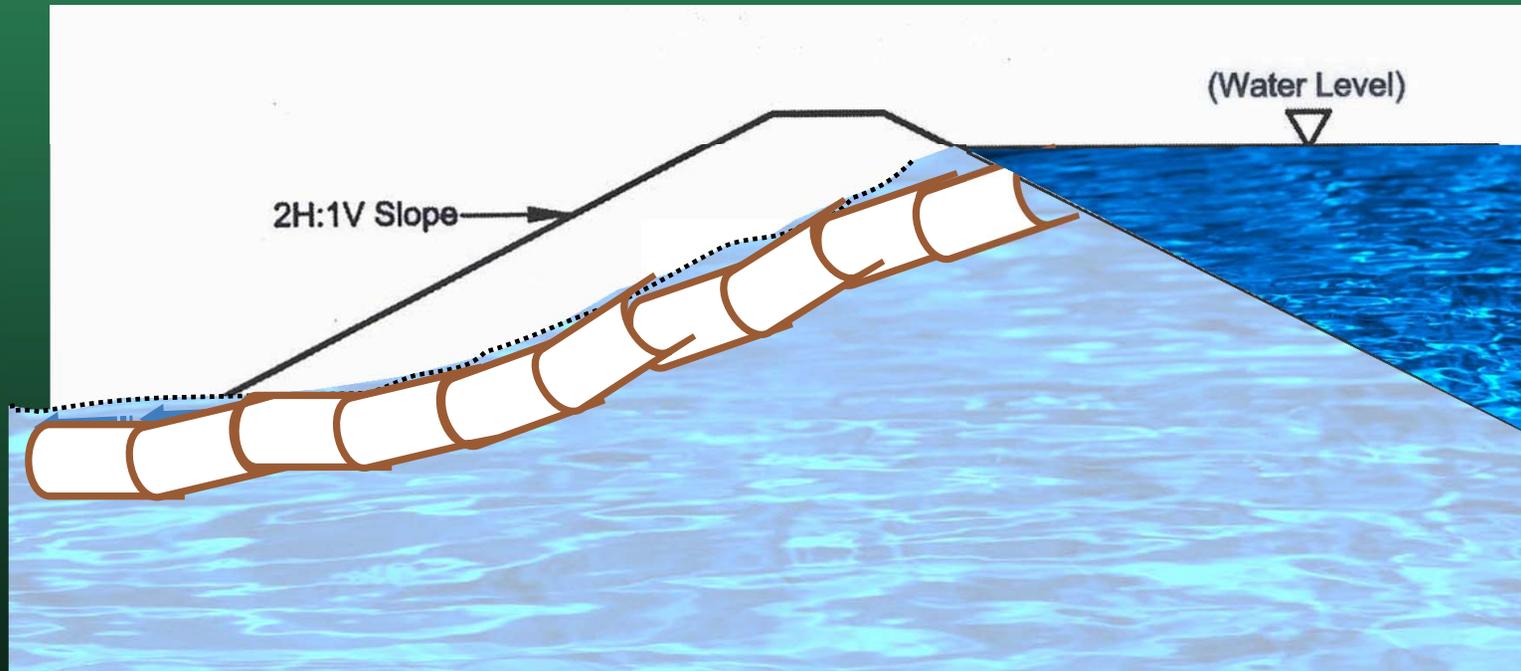


Dams Sometimes Fail

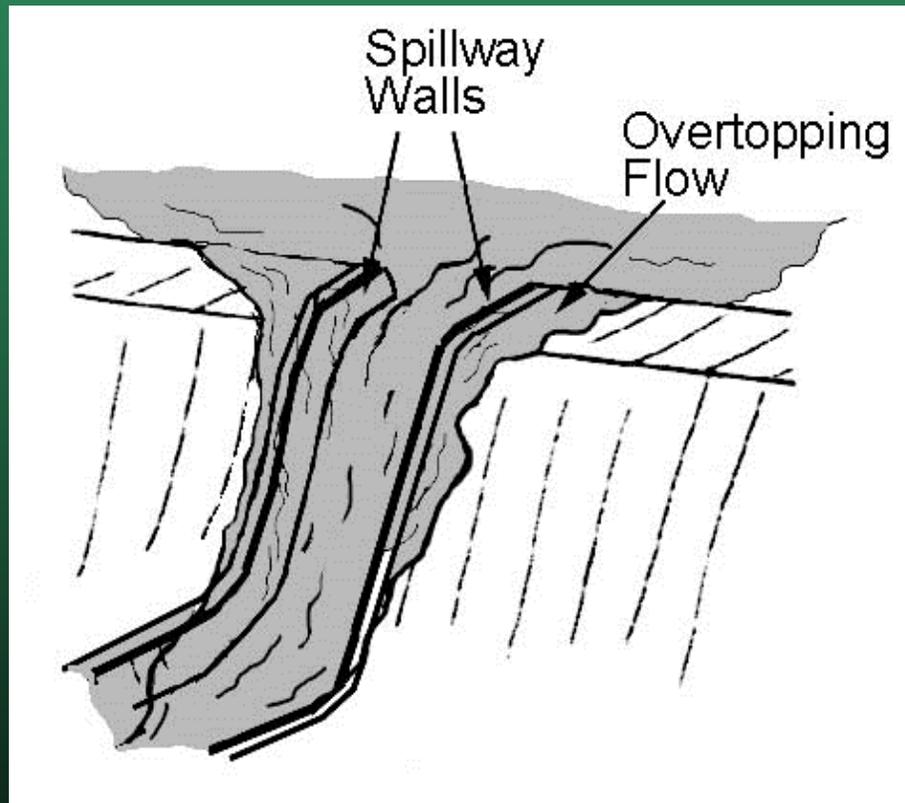
- 300 ft High Teton Dam, Idaho - 1976



Seepage/Piping



Inadequate Spillway Capacity



Undermining of Spillway Toe



Leakage Around Outlet Pipe



Internal Erosion Along Pipes





Spring Creek Dam 2009

NYS Department of Environmental
Conservation





Hadlock Pond Dam 2005 – Millions in damage, no fatalities

NYS Department of Environmental
Conservation



Iowa July 24, 2010

EMERGENCY ALERT SYSTEM

**DAM BREAK
WARNING**



Department of Environmental
Conservation



Dam Emergency Responsibilities

DAM OWNER

- Detection
- Notification
- Prevent sudden release of water

GOVERNMENT

- Warning
- Evacuation
- Recovery (impacted area)

Dam Safety program oversees owner, advises governments



Emergency Action Plans

- Uniform Planning Process
- Decades-old industry standard for High Hazard dams
- Required for Federal Energy Regulatory Commission (FERC) dams
- Part of FEMA's "Model State Dam Safety Program"
- Over 60% of High Hazard dams in NY had EAP's before the new regulations, but many are over 10 years old



NYS EAP Requirements

Class C – full EAP

- Engineer inundation map
- 1 or more notification flowcharts
- Other provisions: preparedness, exercising, etc.
- About 400 dams statewide
- Due August 19, 2010

Class B – “EAP lite”

- Rougher inundation map
- Simple notification flowchart/ list
- About 800 dams statewide
- Due August 19, 2011



Both require coordination with local EM's





Dam EAP Components

1. Notification *

1. Emergency Notification Flowchart(s)
2. Emergency Notification Information Form



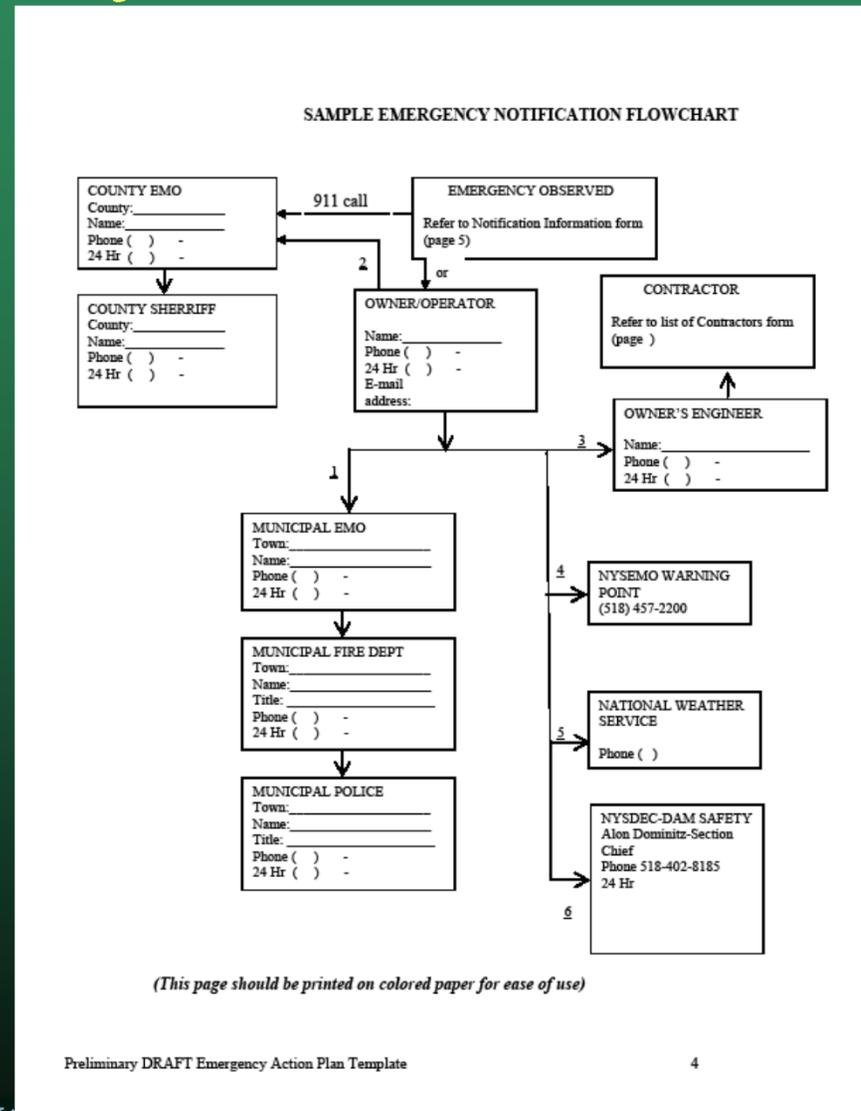
Dam EAP Components (cont'd)

2. Purpose and Scope
3. Site Description
4. Emergency
Detection, Evaluation,
and Classification
5. General
Responsibilities
6. Preparedness
- 7. Inundation Maps**



I. Emergency Notification

* Emergency Notification Procedures/ Flow Chart



Notification Information

I. Emergency Notification

Notification Information:

Dam Emergency Information for the Emergency Condition Level (Advisory, Warning, Emergency, or Breach)

Name of person reporting the emergency: _____

Affiliation: _____

Phone Number: _____

Dam Name & NYS-DEC ID #: _____

Location of dam:

County: _____

Municipality: _____

Stream: _____

Road(s): _____

Time and Date of Dam Emergency: _____

Type of Emergency: _____

Phone appropriate parties: *[refer to the Emergency Notifications Flow Chart, page #]*

"This is (your name, title & affiliation).

You are being contacted per the Emergency Action Plan for the (name of dam).

Please be advised: A Dam (Advisory, Warning, Emergency, or Breach) Condition has been identified at (name of dam).

Observation was at (time and date).

The situation is (explain the condition)."

[Refer to Site Description, page #, for directions to the dam]

Important !!! If you cannot contact an organization or individual promptly, proceed to the next contact on the Notification Flowchart. Try to re-contact the unavailable or busy number after you have contacted all others.

* Notification Information Form



Notification Information Form

Dam Emergency Information for the Emergency Condition Level (Advisory, Warning, Emergency, or Breach)

Name of person reporting the emergency: _____

Affiliation: _____

Phone Number: _____

Dam Name & NYS-DEC ID #: _____

Location of dam:

County: _____

Municipality: _____

Stream: _____

Road(s): _____



Notification Information Form

Time and Date of Dam Emergency: _____

Type of Emergency: _____

Phone appropriate parties: *[refer to the Emergency Notifications Flow Chart, page #]*

“This is (your name, title & affiliation).

You are being contacted per the Emergency Action Plan for the (name of dam).

Please be advised: A Dam (Advisory, Warning, Emergency, or Breach) Condition has been identified at (name of dam).

Observation was at (time and date).

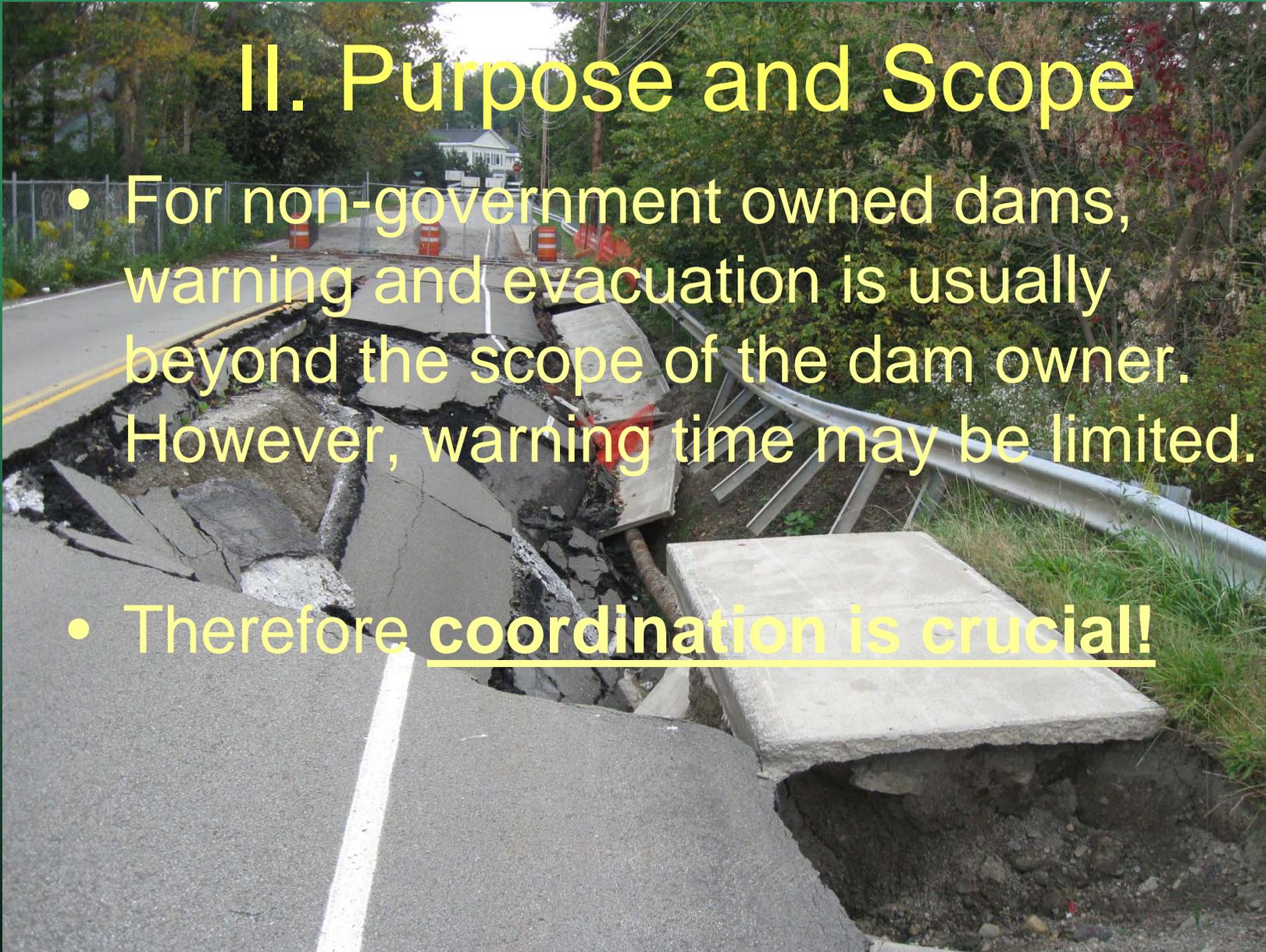
The situation is (explain the condition).”

[Refer to Site Description, page #, for directions to the dam]



II. Purpose and Scope

- For non-government owned dams, warning and evacuation is usually beyond the scope of the dam owner. However, warning time may be limited.
- Therefore coordination is crucial!



IV. Emergency Detection, Evaluation, and Classification

- 3 Emergency Condition Levels:
 - **Advisory** – non-Emergency
 - **Warning** – Developing situation that is considered controllable
 - **Emergency** – Dam breach is imminent or has occurred
- The higher the Condition Level, the more notifications must be made.





NYS Department of Environmental Conservation



V. General Responsibilities Under the EAP

- **Dam Owner Responsibilities**
 - **Responsibility for Notification**
 - **EAP Coordinator Responsibilities**
 - **Responsibility for Evacuation**
 - **Responsibility for Termination and Recovery**
-
- A follow-up evaluation by all participants after an emergency should be specified.
 - The results of the evaluation must be documented by the owner/operator in a written Incident Report, which must be submitted to the DEC.



VI. Preparedness

- Emergency Notification Directory
- Emergency Operations Center (EOC)

The EOC is to be located upstream of the dam or away from any potential inundation area, in a location accessible in the event of a dam failure. In some cases, the commonly used local EOC is not appropriate

- **Monitoring**

- Ensuring adequate personnel are available to tend the dam during an emergency – who will have other responsibilities?
- Identify monitoring devices, ex: flow and water level measuring equipment
- Secure the site from curious public

- **Emergency Supplies**

Identify supplies such as emergency lighting, fill, excavator, pump

- **Other Site-Specific Actions**



VII. Inundation Map *

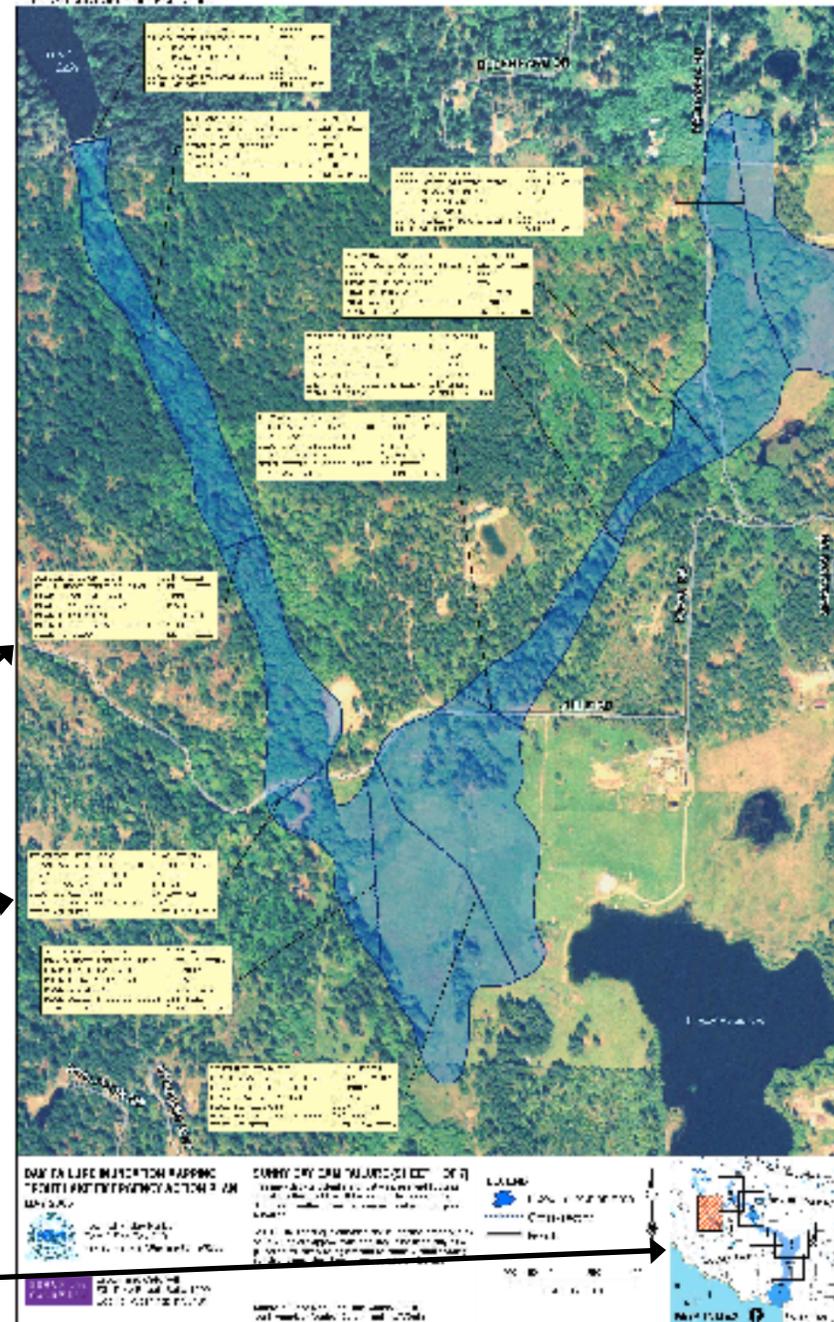
Cross Sections –

Distance, Arrival
Time, Peak Depth,

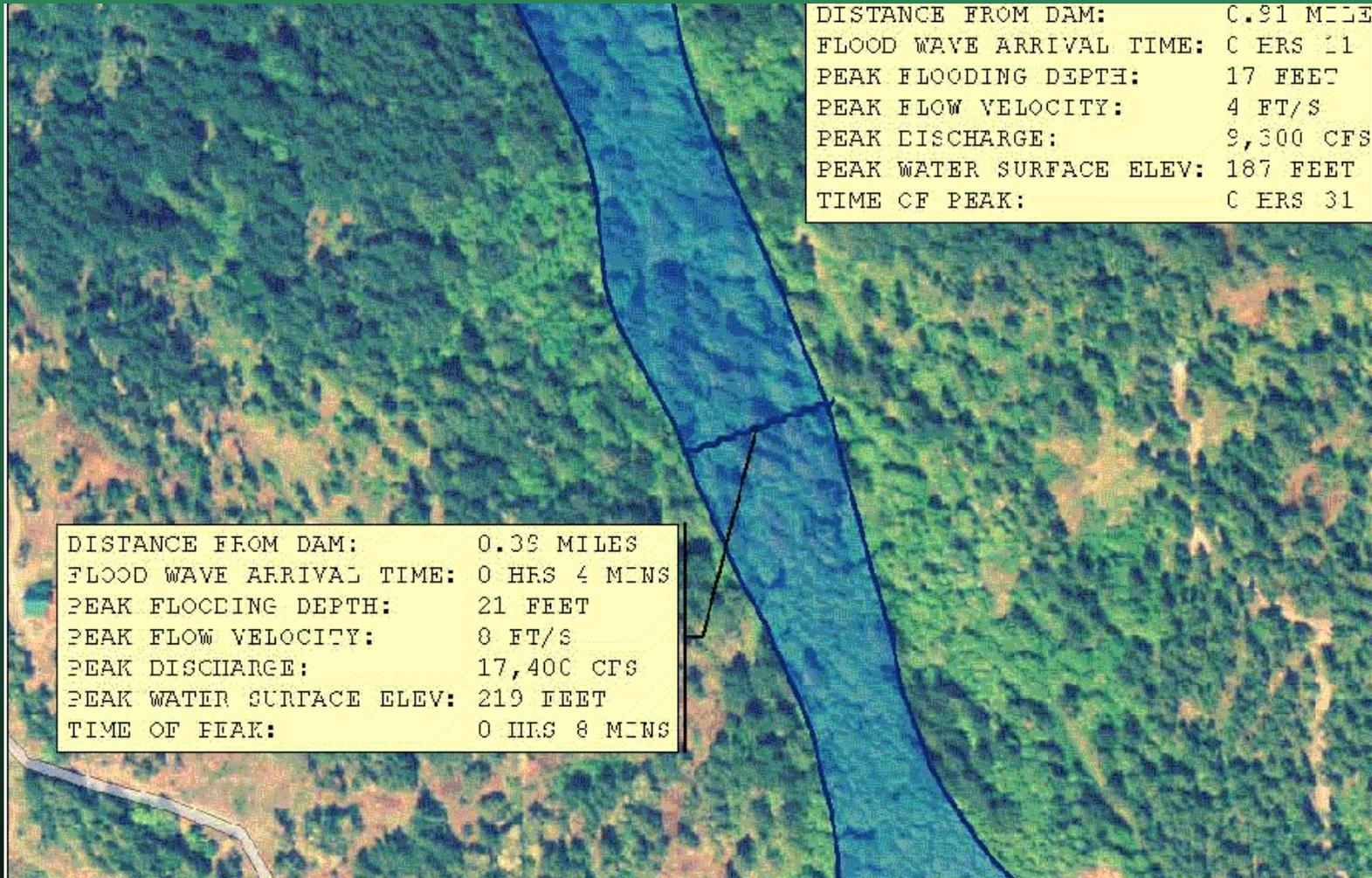
Velocity, and Flow,
elevation and time to
arrival

Map Index

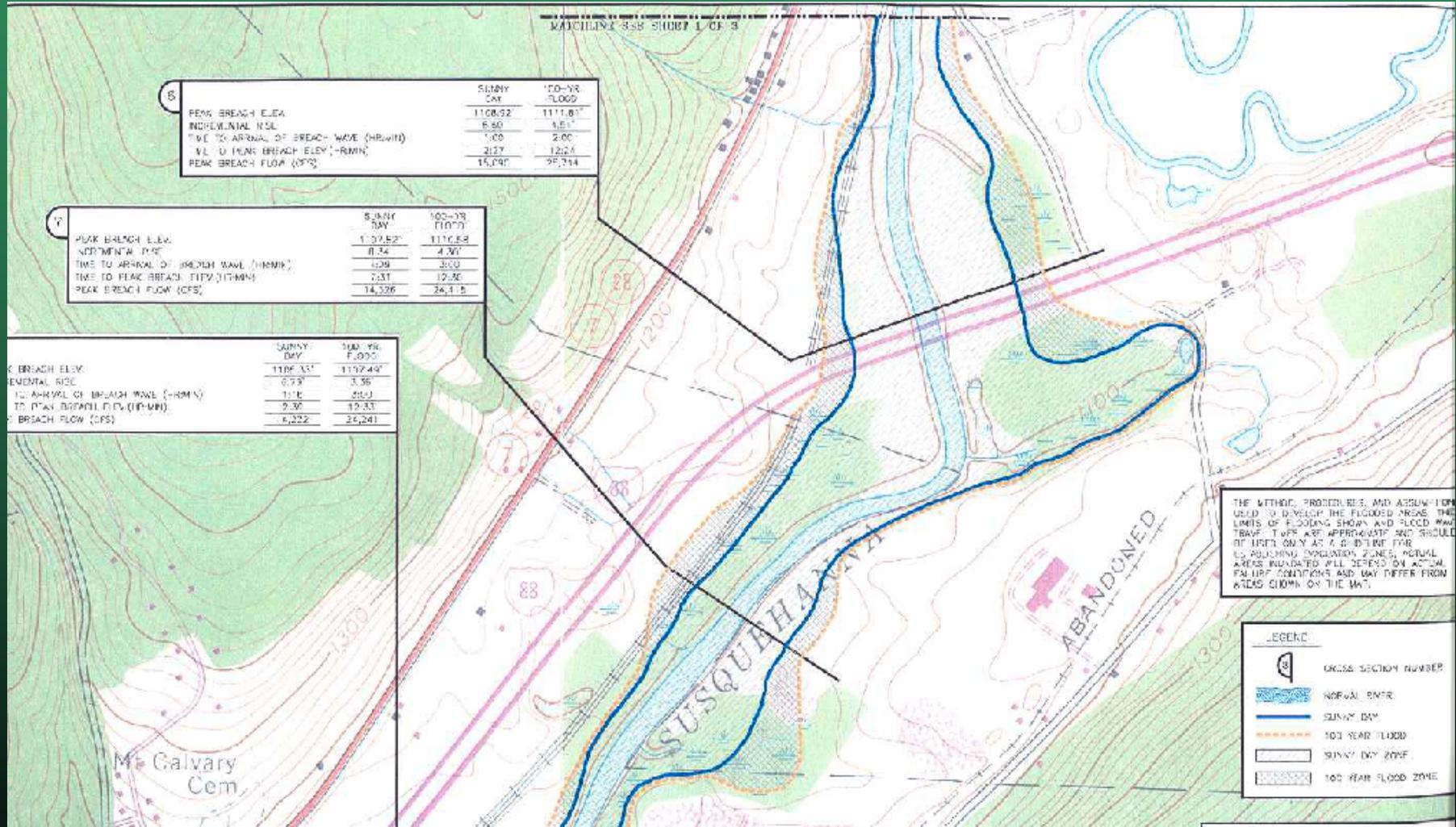
NYS D
Conser



Cross Section

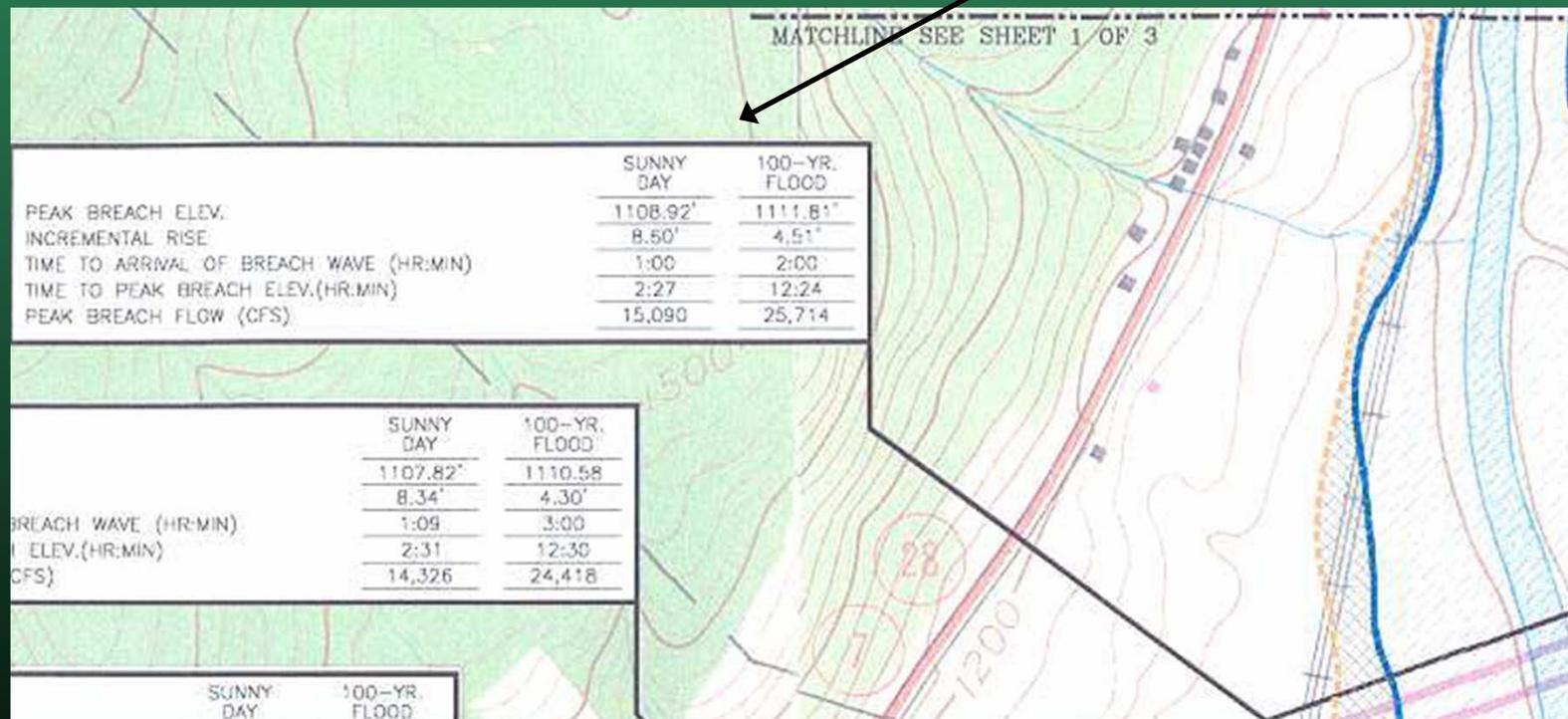


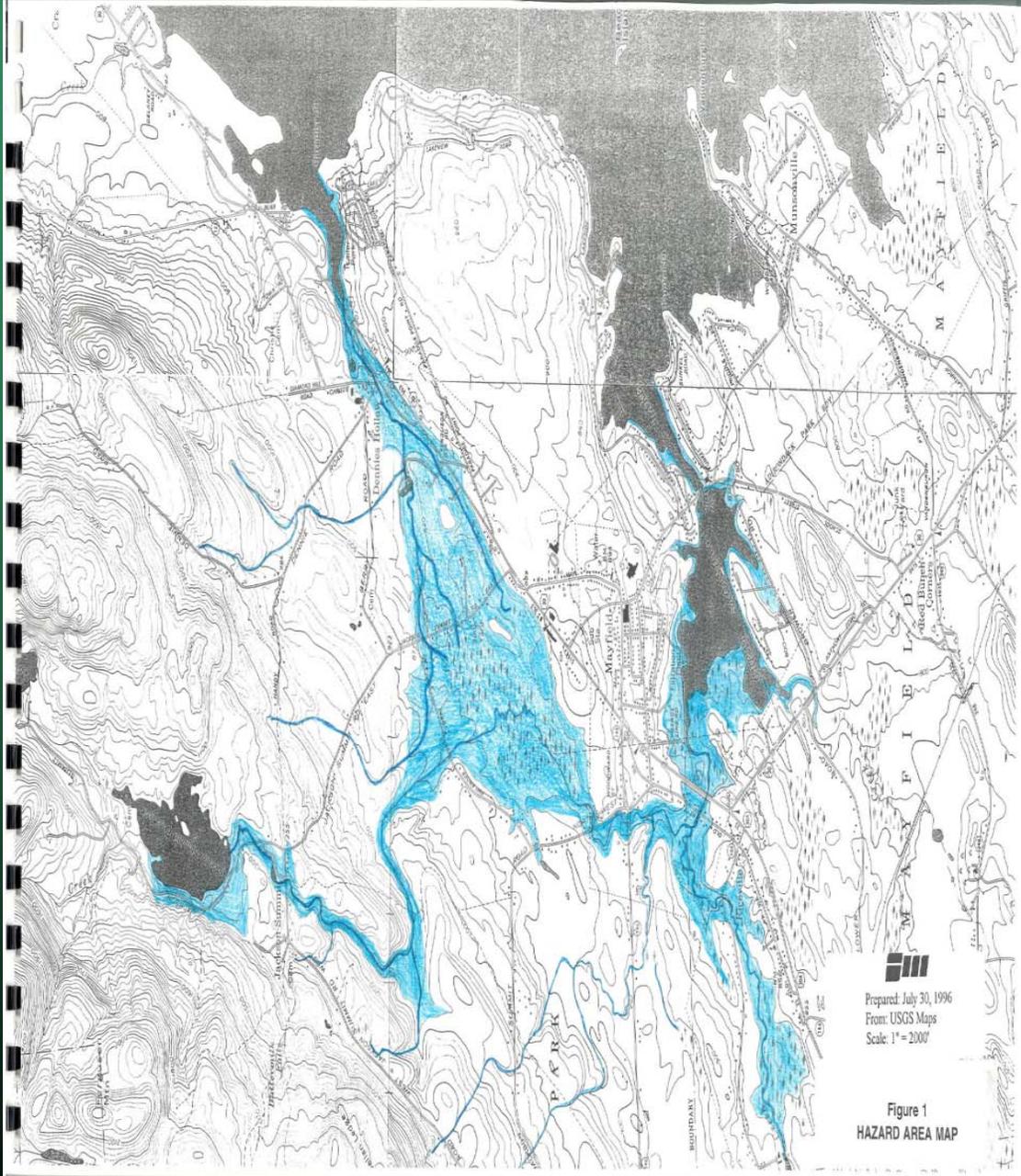
Another Inundation map example



Cross Section

Sunny Day and Flood Data





Simple inundation map



EAP Appendices

Appendix A – Plans for Training, Exercising, Updating and Posting

Training of personnel involved in implementation of the EAP should be conducted to ensure that they are thoroughly familiar with all elements of the plan, emergency operation of the dam, the availability of equipment, and their responsibilities and duties under the plan.

Orientation Meeting

Annual Test & Update

Tabletop Exercise

Functional Exercise

Full-Scale Exercise

Locations where the EAP will be posted



EAP Appendices

- Appendix B – Definitions
- Appendix C - Approval and Distribution of the EAP
 - Distribution of the EAP and any updates
 - Return receipts
 - **Promulgation and Concurrence Form**



EAP Guidance (DOW/ TOGS 3.1.3)

- Draft announced in ENB and posted on DEC web site March 3, 2010
- Public Comment period ended April 2, 2010 (3 commentors)
- Review of comments, possible revisions
- “Final” issued – June 2010
- Effective 30 days after issue



Sample Promulgation & Concurrence Form

Sample Promulgation and Concurrence Form:

PROMULGATION AND CONCURRENCE

I, the undersigned, on the date indicated, have reviewed the Emergency Action Plan (EAP) for the _____ Dam, State Dam ID _____. I have received the concurrence of the necessary emergency managers, who are listed below.

| Name | Title | Organization | Date |
|------|----------|-----------------------------|------|
| Name | Director | County Emergency Management | |
| | | | |
| | | | |

Certification of Promulgation and Concurrence:

I certify under penalty of law that the answers and information provided in and with this Promulgation and Concurrence Form were prepared by me or under my direction or supervision. The answers and information I submit are, to the best of my knowledge and belief, true, accurate, and complete.

This Certification must be signed by an individual who is the EAP coordinator, on his or her own behalf.

Name: _____

Title: _____

Company: _____

Signature: _____ Date: _____



The safest dam is one that's drained

