

Dam Safety Initiatives

Emergency Management Association of Ohio
Spring Director's Conference
April 22, 2014



Presentation Overview

- * The Ohio Dam Safety Program (ODSP)
- * How is dam safety achieved?
- * New/continued dam safety initiatives
 - * ODSP (Regulatory)
 - * ODNR (Dam Owner)
 - * Alert Status Descriptions
 - * DamWatch

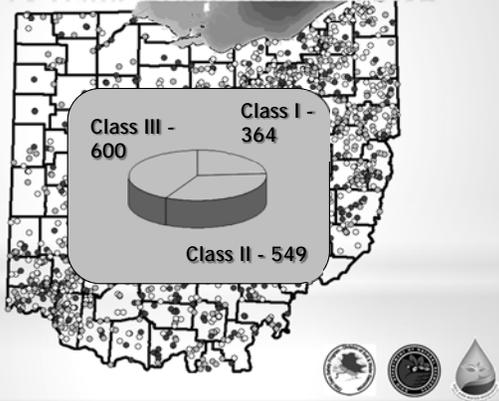


The Ohio Dam Safety Program

- * Department of Natural Resources
 - * Regulation
 - * Division of Soil and Water Resources, Ohio Dam Safety Program (ODSP)
 - * Ownership
 - * Site Management
 - * Division of Parks and Recreation
 - * Division of Wildlife
 - * Division of Forestry
 - * Technical Support
 - * Division of Engineering



1513 Dams Regulated by ODSP



Parts of the Ohio Dam Safety Program

- * Periodic safety inspections
 - * Evaluate condition, potential downstream hazard, and owner's safety program
 - * Five-year periodic inspections
- * Repairs and modifications
 - * Review and oversight of repairs and modifications
- * Construction permits
 - * Issue permits for new dams and increases in size
- * Enforcement
 - * Authority to compel corrective action through the courts
- * Emergency response
 - * Authority to require and to take immediate action to improve the safety of a dam











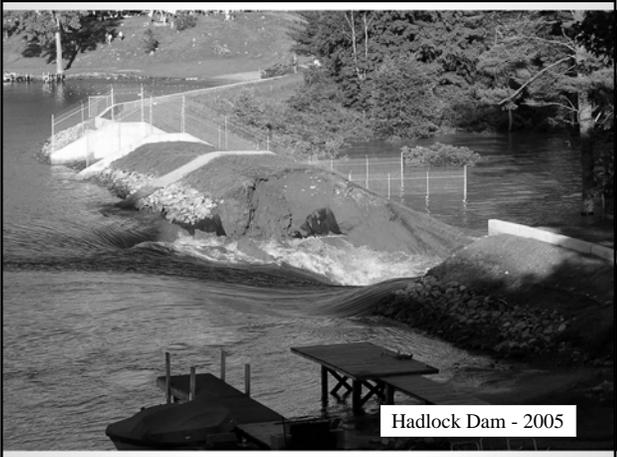




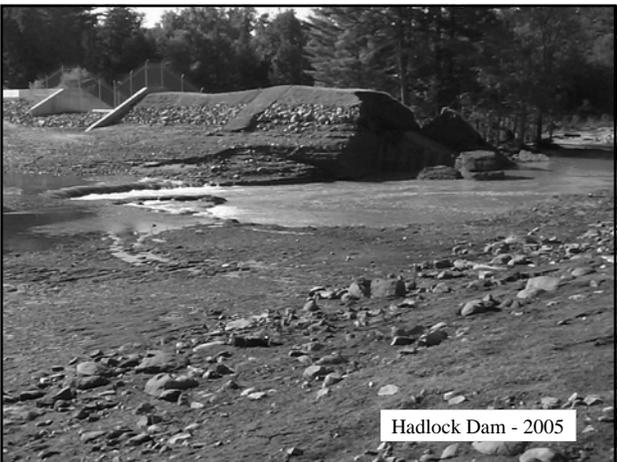




Taum Sauk Reservoir - 2005

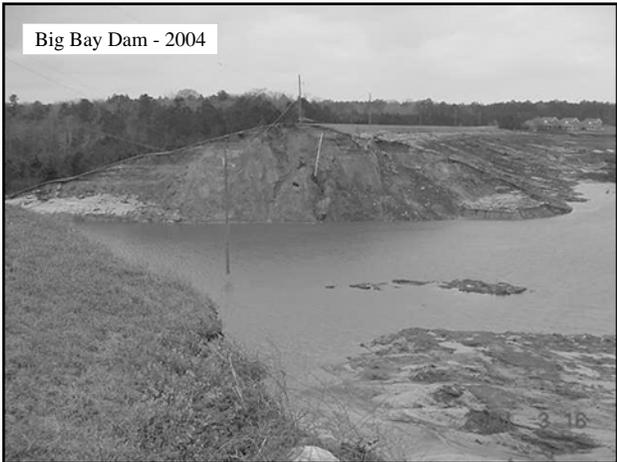


Hadlock Dam - 2005



Hadlock Dam - 2005







How is dam safety achieved?



Concrete, Steel, Rock



How is dam safety achieved?

Concrete, Steel, Rock

Calculating, analyzing, designing, constructing

Legal order, directives



Federal Energy Regulatory Commission



FERC
FEDERAL ENERGY REGULATORY COMMISSION

Owners Dam Safety Program

The Owners Dam Safety Program is the most important factor in maintaining safe dams and preventing dam failures. Dams with owners who do not have an effective ODSP represent a higher risk. The owner's dam safety program has been cited as a contributing factor in many dam failures including: the 1976 failure of Teton Dam, the 1986 failure of Upriver Dam, the 2003 failure of Silver Lake Dam, and the 2005 failure of Taum Sauk Dam



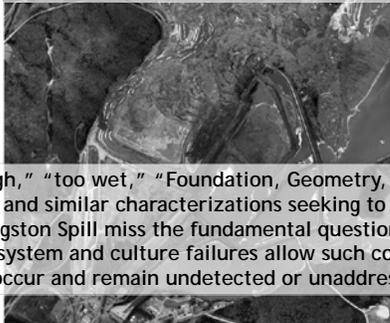
Federal Energy Regulatory Commission

OWNERS DAM SAFETY PROGRAM

Assuring the safety of licensed dams is a cooperative effort between owners, consultants and the FERC with the most important role being that of the owners.



A REPORT TO THE BOARD OF DIRECTORS OF THE TENNESSEE VALLEY AUTHORITY REGARDING KINGSTON FACTUAL FINDINGS



"Too high," "too wet," "Foundation, Geometry, Material, Load" and similar characterizations seeking to explain the Kingston Spill miss the fundamental question, which is: did system and culture failures allow such conditions to occur and remain undetected or unaddressed.

How is dam safety achieved?

Concrete, Steel, Rock

Calculating, analyzing, designing, constructing

Legal order, directives



How is dam safety achieved?

Concrete, Steel, Rock



Owner Dam Safety Program

Inspecting, monitoring, planning,
communicating

Convince, persuade, facilitate, coordinate,
educate



How is dam safety achieved?

Ohio Revised Code: (E) The owner of a dam ... shall monitor, maintain, and operate the structure ... safely ... The owner shall ... notify *ODSP* and other responsible authorities of any condition that threatens the safety of the structure and shall take all necessary actions to safeguard life, health, and property.



ODSP - New/Cont. Initiatives

- * Owner Dam Safety Program Initiatives
 - * A focal point of Periodic Inspection Reports (over 2000 reports since 2007)
 - * Dam Safety Workshops (FEMA Grant)
 - * Emergency Action Plans
 - * Enforcement projects
 - * New guidelines and forms on the web site
 - * Standardized communications with County EMA's



Dam Safety Workshops

- *Planning meeting with Co. EMA Director & SWCD
- *EMA Director invites local officials
- *All regulated (Class I, II, III) dam owners in the county receive personal invitation letter
- *One meeting for local officials
- *One meeting for dam owners
- *Educate all on:
 - *Importance of good Operation & Maintenance of dams
 - *Importance of Emergency Action Plans for dams



Dam Safety Workshops

2010	(5)	Adams, Allen, Highland, Medina, Perry
2011	(12)	Brown, Carroll, Clermont, Columbiana, Lorain, Miami, Morgan, Shelby, Stark, Tuscarawas, Van Wert, Williams
2012	(13)	Butler, Clark, Hancock, Holmes, Lake, Lawrence, Mahoning, Montgomery, Ottawa, Paulding, Sandusky, Warren, Wayne
2013	(22)	Athens, Belmont, Clinton, Franklin, Fulton, Gallia, Geauga, Greene, Guernsey, Hamilton, Harrison, Licking, Logan, Lucas, Marion, Meigs, Morrow, Portage, Scioto, Summit, Trumbull, Wood
2014	(18)	Ashtabula, Champaign, Cuyahoga, Darke, Defiance, Delaware, Erie, Henry, Hocking, Huron, Jefferson, Monroe, Muskingum, Noble, Preble, Putnam, Union, Vinton
2015	(18)	Ashland, Auglaize, Coshocton, Crawford, Fairfield, Fayette, Hardin, Jackson, Knox, Madison, Mercer, Pickaway, Pike, Richland, Ross, Seneca, Washington, Wyandot



ODSP - New/Cont. Initiatives

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 - * Emergency Action Plans
 - *Enforcement projects
 - *New guidelines and forms on the web site
- * Standardized incident communications with internal and external stakeholders



Standardized Incident Communication

- * Call county EMA and provide verbal notification
- * Email list:
 - * Internal ODSP
 - * ODNR Comm. Center
 - * State and County EMA
 - * Owner
 - * Owner's Engineer
- * Alert Status
- * Next Update
- * Contacts



ODNR - Dam Ownership



State-regulated Dams



ODNR Class I Dams

- * There are 1513 state-regulated dams in Ohio; 364 Class I dams
- * ODNR owns 188 regulated dams (12% of 1513); 56 are Class I (15% of 364)



ODNR Initiatives

- * June 2013, Tabletop Exercise
- * Key Areas for Improvement
 - * Uniformity and clarity in emergency classifications
 - * Timeliness and clarity in notification



Dam Emerg. Level Models in U.S.

FEMA Guidance (2013)	WV	TX	NY	MO
High Flow	Normal Conditions	--		--
Non-failure	Adverse Conditions	Watch	Advisory/Non-failure (Condition C)	Level 1 Emergency
Potential failure	Standby Alert	Possible Dam Failure	Warning (Condition B)	Level 2 Emergency
Imminent failure	Evacuation Conditions	Imminent Dam Failure	Emergency (Condition A)	Level 3 Emergency
	--	Dam Failure		--



New Dam Alert Status Levels

New 'Dam Alert Statuses' for all Class I's	Previous for most Class I's	Previous for several Class I's	Previous for Buckeye	Previous for Mt. Gilead
Normal	--	--	--	--
Monitoring	Monitor	Unusual	Emergency Watch	Deficient
Watch	Watch	Unsafe	Emergency Warning	Watch - Stand By
Warning	Warning	Emergency	Evacuation	Warning



New Dam Alert Status Levels

Status	What It Means
Normal Alert Status	<ul style="list-style-type: none"> Normal dam operations & routine surveillance for unusual conditions. May include pending investigation of unusual condition. ODNR communications are internal at this level.
Monitoring Alert Status	<ul style="list-style-type: none"> Hazardous condition is present; potential for failure being assessed; corrective measures underway. Based on engineers' evaluation of unusual conditions, e.g., lake levels, spillway elevations, structural problems & severe weather. Internal and select external notifications underway.
Watch Alert Status	<ul style="list-style-type: none"> Potential failure situation is developing; possible mode of failure being assessed; corrective measures underway. Worsening conditions have increased potential for dam failure. Internal and external notifications and safety advisories underway.
Warning Alert Status	<ul style="list-style-type: none"> Dam failure is occurring or is likely, despite corrective measures. Worsening conditions have made the dam unsafe. Internal and external notifications and safety warnings underway.

New Dam Alert Status Levels

NORMAL Alert Status	MONITORING Alert Status	WATCH Alert Status	WARNING Alert Status
<p>No hazardous conditions exist.</p> <ul style="list-style-type: none"> Unusual condition may be present Interim risk reduction measures may be in place 	<p>Hazardous condition exists.</p> <ul style="list-style-type: none"> High water level & rising (check EAP) Worsening rainfall predictions Unusual crack Spillway obstruction Seismic event 	<p>Potential for failure exists.</p> <ul style="list-style-type: none"> Higher water level & rising (check EAP) Worsening rainfall predictions Increased seepage/leakage Developing erosion Settlement or upheaval Sinkhole develops Boil develops Substantial slide Bomb threat/sabotage 	<p>Failure is happening or imminent.</p> <ul style="list-style-type: none"> Impending overtopping Increased/muddy seepage Uncontrollable erosion Actively collapsing sinkhole Collapsing spillway Massive slide reaches lake

ODNR Initiatives

- * June 2013, Tabletop Exercise
- * Key Areas for Improvement
 - * Uniformity and clarity in emergency classifications
 - * Timeliness and clarity in notification
- * 56 Emergency Action Plans for Class I dams
- * Current construction projects: Tuscarawas Diversion Dam, Acton Lake Dam, Jefferson Lake Dam, Pike Lake Dam, Pond Lick Lake Dam, Roosevelt Lake Dam
- * Eight dam assessments



ODNR Initiatives

- * Improve & Test Protocols (underway now)
- * Training (underway now)
- * Rollout (early 2014 → late 2014)
 - * Improved EAPs
 - * Briefs to partners
- * Exercises & Community Preparedness (mid 2014 →)
- * If your county would be interested...



