

# Ohio



**Ohio Department of Natural Resources  
Division of Soil and Water Resources  
Dam Safety Report 2010**

**Protecting Ohioans and maintaining critical infrastructure in  
cooperation with owners of Ohio's 1550 jurisdictional dams**

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## Message From The Chief

I am pleased to present this annual report of the activities of the Dam Safety Engineering Program for Fiscal Year 2010. This is the second Dam Safety Report for Ohio and it shows that the program continues to make substantial progress toward our ultimate goal of public safety and critical infrastructure protection. The program faced new and continued challenges this year including a continued emphasis on the inspection of coal ash impoundments, implementation of a FEMA grant-funded project for emergency preparedness and public outreach, a mandated five-year rule review, and increases in dam safety fees. The program also took steps this year to assist dam owners by developing pilot changes in surety requirements for upground reservoirs, and facilitating a lower interest rate for loans for dam repairs, both of which could represent significant cost savings for dam owners. This report provides an overview of program goals and progress made during the year and an analysis of the opportunities and challenges we face in the coming year. We know that it takes time, effort, and money to maintain dams and their Emergency Action Plans. We sincerely appreciate the dedication of Ohio's private and public dam owners to this important cause.

*Chief Hanselmann*

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Cover: City of Columbus' 85' high Hoover Reservoir Dam on Big Walnut Creek providing drinking water for over 535,000 people from a normal pool of over 60,000 acre-feet.

## Introduction

Dam safety provides Ohio's citizens with the dual values of protecting lives and property downstream of Ohio's dams as well as the societal benefits that would be lost due to dam failure such as drinking water, flood control, recreation and irrigation.

There are approximately 1550 jurisdictional dams in the state with a conservatively estimated value over \$1.6 billion. Among facts illustrating some of the benefits provided by these dams are:

- Over three million Ohioans get their drinking water from surface water reservoirs impounded by dams.
- Flood control dams in the Miami Conservancy District alone (one of nine flood control dam-owning conservancy districts in Ohio) provide flood protection benefits to approximately 54,000 properties with a total county auditor's assessed value over \$5.8 billion in Miami, Montgomery, Warren, Butler, and Hamilton Counties.
- In 2009 an estimated eleven million visitors took advantage of boating and swimming recreation opportunities on Ohio State Park lakes.

The program protects lives and property and helps to assure these essential societal benefits through accomplishment of the following goals:

- emergency response and preparedness,
- periodic safety inspections,
- new dam and levee construction permits,
- regulation of dam and levee repairs and improvements,
- regulatory enforcement, and
- public information and education.

The Ohio Administrative Code creates classifications for jurisdictional dams based on size of the dam and impoundment, and potential downstream hazard.

- **Class I** – generally larger dams whose failure would result in probable loss of life.
- **Class II** – generally dams whose failure would result in flooding of high-value property and damage to public infrastructure such as water supply and roads with no probable loss of life.
- **Class III** – generally smaller dams whose failure impacts are limited to rural buildings and local roads with no probable loss of life.
- **Class IV** – dams less than 25 feet high that impound less than 50 acre-feet and whose failure would be restricted to the dam itself and rural lands. Class IV dams are not actively regulated by the division and owners do not pay an annual fee.



OHIO DAMS: *Class I, Class II, Class III*



*Class II Chippewa Creek Structure IV-A in Medina County*



*Class I Lakeview Cemetery Dam in Cuyahoga County*



*Class III Upper Wabash Structure No. 2 in Mercer County*

## Successes Achieved in 2010

Program staff conducted 370 inspections including 113 Class I dams using the watershed-scheduling plan. In addition, the program cooperated with US EPA and Ohio EPA on the inspection of coal combustion waste impoundments. The program completed successful enforcement projects including the breaching of Lower Girard Lake Dam, responding to emergency situations with a small dam in Ashland County, and initiating seven enforcement actions for Emergency Action Plans. Other emergency preparedness successes include working with ODNR dam-owning divisions in the development of Emergency Preparedness Plans for all

ODNR dams, providing information to local emergency management officials, and partnerships with local Soil and Water Conservation districts. The program issued one construction permit for the Fremont Upground Reservoir and worked on over 100 repair projects. Much work remains to be done in the coming years; the program has a new schedule of over 350 inspections scheduled for FY 2010, a new FEMA-funded initiative for EAP development and public outreach, several large new dam and dam repair construction projects, and implementation of a new fee schedule with a compliant dam discount.

## Periodic and Special Safety Inspections – Critical to dam safety

Periodic inspection of existing dams continues to be one of the fundamental pillars of an effective safety program. A dam, like any other part of our infrastructure, will change and deteriorate over time. Inspection and monitoring of the dam identifies changing conditions and problems as they develop. The Division of Soil and Water Resources has the responsibility and authority under ORC 1521.062 to inspect existing dams and levees. The inspection process provides an overview of the overall safety of the dam and also a review of the dam owner's current dam safety program (operation and maintenance, emergency preparedness, etc.). The process identifies potential remediation needs for both the structure and the owner's safety procedures. Findings of the inspection are presented to the dam owner in a written report detailing results of the inspection and required remedial measures.



*Inspection of Pine Hill Lake Dam in Warren County.*

## Inspections by watersheds – more efficient and more effective

The program schedules periodic inspections on a five-year rotating watershed basis. The watershed scheduling plan was first implemented in 2007. Scheduling by watershed allows the program to be more efficient in field time and also more effective in reviewing the interrelationships between dams in a watershed. The program inspected dams in the following watersheds in FY 10.

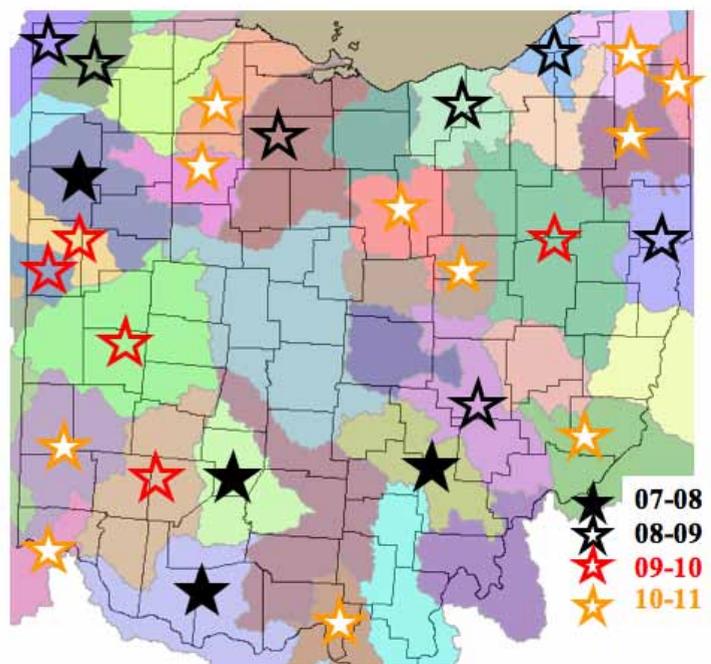
- St. Marys River
- Little Miami River
- Tuscarawas River
- Great Miami River (Upper)
- Wabash River

## Focus on Coal Ash Impoundment Inspections Continues

The program conducted additional inspections of coal ash impoundments in FY 10. These efforts by the division came about following the December 22, 2008 failure of an ash pond containment structure at the Kingston Fossil Plant in Tennessee. The failure released 5.4 million cubic yards of material and inundated several homes. In January 2009 the Dam Safety Engineering Program, along with Ohio Environmental Protection Agency, reviewed internal information regarding these types of structures including databases, aerial photography, and inspection files.

US EPA began inspecting coal ash impoundments in Ohio in June 2009. Program staff inspected eleven structures, provided reports and other information to US EPA's consultants, and participated in eleven of the consultants' inspections in FY 10. In addition, the program conducted site visits at several additional coal-burning generation sites across Ohio to confirm detailed information on existing impoundments. As a result, four smaller impoundments were reclassified into the program and inspected.

None of the coal ash impoundment dams inspected as part of this process were determined by the division or USEPA's consultants to be in unsatisfactory condition, an indication that they do not pose immediate safety threats. The owners of the dams are addressing remedial issues identified by the inspections and several repair projects have been initiated.



**Watersheds of Ohio** showing those scheduled for inspection in the years 07-08 through 10-11. All other watersheds will be scheduled next year.

## Dam Repairs, Modifications, and New Construction - All Benefit from DSWR Review



Cardinal Plant Ash Pond Dam, Jefferson County being inspected

Dams and levees are an integral part of our infrastructure and a properly designed and well-constructed dam or levee will provide its owner and the public with many years of service. Section 1521.06 of the Ohio Revised Code requires that any person or government agency desiring to construct a dam or levee first obtain a construction permit issued by the chief of the Division of Soil and Water Resources. The purpose of this law is to protect life, health and property from damage due to failure of dams or levees because of improper design or construction.

## American Electric Power - Muskingum River Upper Ash Dam Enlargement

The original dam was raised 17 feet (originally 1650 ft long but expanded to 4125 ft long with the raising) and the freeboard dam (2750 ft long) was newly constructed. Estimated construction cost: \$6,550,000. Construction started in August of 2004 and was completed in 2010.

### AEP Wins Midwest Dam Safety Award

Receiving the Association of State Dam Safety Officials award in Seattle AEP's Pedro Amaya said, "We at AEP understand and appreciate the responsibility and liability of dam ownership, and we take this responsibility very seriously."



- 1 The project raised an existing dam for the storage of coal ash with a new buttress of the main dam and by constructing a wing dam and freeboard dam in saddles of the watershed. This photo shows foundation preparation for the new main dam buttress.
- 2 Construction of the buttress on the downstream slope of the main dam.
- 3 Raising the clay core of the main dam. Construction of the concrete inlet chute.
- 4 Completed downstream slope of the main dam. Completed embankment prior to filling.
- 5 Crest of the completed main dam.
- 6 Downstream slope of the wing dam.
- 7 Completed freeboard dam.

## New Dams and Levees - Construction permits, plan reviews, and construction inspections top our list

The permitting process includes review of construction plans and specifications, performance of calculations and investigations, issuance of the permit, monitoring and approval of construction, and monitoring for a 1-year bond period. Permit projects take on many forms from a complete project that goes all the way through construction to projects that submit plans for review but don't go beyond that step.

The construction permit process consists of four steps.

- Approval of a preliminary design for all proposed new dam and levee construction to establish the classification of the structure and basic design parameters.
- Submittal and approval of a final design which includes a detailed report of foundation and materials analyses, references, calculations and conclusions of engineering studies, a detailed cost estimate, and detailed plans and specifications.
- Construction inspection to periodically visit the site to ensure that construction, materials testing, and observation is being conducted in accordance with approved plans, specs and terms of the permit.
- Once construction is complete and approved the division continues to hold a required surety for one year to ensure that the dam or levee is performing as expected during first filling, etc. At the end of the year, if no problems have developed, the chief releases the surety and the dam or levee is placed into the division's periodic inspection program.

The following table presents a summary of new construction permit activity for FY 10.

- Preliminary reports for three projects including a wastewater treatment lagoon, landfill leachate pond and a sedimentation pond.
- Received final design reports for Lima Upground Reservoir in Allen County, Auglaize River Wastewater Treatment Lagoon in Defiance County, and Hap Cremean Lagoon No. 1 in Franklin County.
- Issued three permits: Lima Upground Reservoir, a 427-acre drinking water reservoir with a 44-foot-high embankment for the City of Lima; Auglaize River Wastewater Treatment Lagoon, a 22.4-acre lagoon with a 12.3-foot-high embankment; and Hap Cremean Lagoon No. 2, a 4-acre lime sludge lagoon with an 11-foot-high embankment.
- Five projects were under construction during the fiscal year. Program staff detected major issues at some of the projects. Division monitoring led directly to the correction of these problems and avoided major safety issues.
- Construction was approved for the Caldwell Lake Dam enlargement in Noble County and Hap Cremean Lagoon No. 2 in Franklin County.
- Final approval and bond release were given for three projects including two water supply reservoirs, and a brine storage pond.

## Division and owners cooperate on repair of existing dams and levees

Similar to new dam and levee permits, the program also regulates repair of existing dams and levees. The repair approval process is similar in the approval of plans and specifications, monitoring of construction and construction approval. The chief does not hold a surety for repair approval, so there is no bond period.

The program worked on 203 total dam repair projects in FY10 including seventeen projects that were under construction. These projects included spillway repair design, hydrologic and hydraulic studies, EAP and OMI review, lake drain design and installations, adding emergency spillways, toe drain repairs and design, slide repairs and design, downstream hazard studies and classification studies, removals, etc. The following describes a sampling of the successful rehabilitation projects.

- Ledge Lake Dam is a Class III recreational dam owned by Cleveland Metroparks located on the Hinckley Reservation in Media County. The dam is 38.3 feet tall and can store 65 acre-feet of water. Previous inspections revealed problems with erosion at the outlet of the principal spillway and the lack of a lake drain. In September of 2009, repairs began to replace the principal spillway system and to install a siphon lake drain. The repairs were successfully completed in November of 2009.
- American Electric Power removed Ohio Power Company Pond Dam MB-118, an 80-foot tall Class I dam in Morgan County late in FY 10. Inspections of the dam had revealed problems with the spillway system, erosion of the earthen dam, and tree and brush growth.

## Interesting Ohio Dam Facts

- **Tallest Dam** - Cardinal Fly Ash No. 1 Dam in Jefferson County at 241 feet high
- **Longest Dam** - Buckeye Lake Dam in Licking and Fairfield Counties at 4.1 miles
- **Largest storage volume** - Miami Conservancy District's Englewood Dam at 413,000 acre-feet (over 134 trillion gallons) of storage. This volume could fill Paul Brown Stadium in Cincinnati 120 times. Englewood Dam is a dry dam used solely for flood control purposes. In fact, the MCD flood control dams constitute four of the five largest storage volume dams in the state. The largest total storage volume of a permanent impoundment behind a dam is Grand Lake St. Marys at 156,383 acre-feet.

## Pilot project geared to reduce costs for new upground reservoirs - Columbus may save \$9 million

In our efforts to both serve our public safety mission and provide the best service and value for dam owners, the division developed a pilot project to study the benefits of modifying surety bond requirements for construction of new upground reservoirs. With an increasing need for drinking water supplies, the division anticipates a demand for new upground reservoirs, which are essentially interconnected earthen dam embankments that create a basin for retaining water. During construction, upground reservoirs pose significantly less risk to downstream life and property than on-stream dams because no water is impounded in the reservoir. The approved pilot allows the chief of the Division of Soil and Water Resources to tailor the required surety requirements for dams to reflect this lesser risk.

Currently, applicants for a dam construction permit are required to submit a surety in the amount of fifty percent of the estimated construction cost. Because upground reservoirs impound no water until construction is complete, the cost to mitigate a potential failure during the first filling/bond stage could be significantly less than the required 50% surety amount. The pilot allows the Chief to require a lesser surety requirement that accurately reflects both the risk to life and property downstream during construction for the selected pilot program. The planned Columbus Upground Reservoir project, an 850-acre upground drinking water reservoir in Delaware County, will be the likely subject of the pilot.

Construction of the Columbus Upground Reservoir, scheduled to begin in FY 11, is anticipated to cost around \$90 million. Under current law, the city estimates their costs for the required surety to be as much as \$9 million. Under the provisions of the pilot, the surety requirement will be phased over the construction and filling phases of the project and the city estimates their cost to be about \$200,000, providing a substantial savings. While the amount of the surety will be reduced, the time period for the division to hold it will be increased to ensure that there are no problems with the reservoir as it fills.

The pilot will hopefully demonstrate that a change to the surety requirements for the construction of upground reservoirs can provide a significant savings to dam owners while increasing public safety. The division envisions that the pilot program will help develop recommendations for permanent law changes that, if enacted, will serve other communities seeking a construction permit for an upground reservoir project.



Erosion at the spillway outlet of Ledge Lake Dam in Medina County.



Repaired outlet of Ledge Lake Dam. Former Ohio Power Company Pond Dam MB-118 following breach



The downstream slope of Ohio Power Company Pond Dam MB-118 in Morgan County.

- **Largest surface area** - Grand Lake St. Marys at 13,500 acres
- **Oldest dam** - Beaver Lake Dam in Licking County built in 1800 (according to records in Ohio's Dam Inventory)
- **Tallest concrete dam** - O'Shaughnessy Reservoir Dam in Delaware County at 91 feet high
- **Tallest masonry dam** - Lake Hamilton Dam in Mahoning County at 70 feet high
- **Owner with most jurisdictional dams** - Ohio Department of Natural Resources with 117 Class I, II, and III dams
- **County with the most jurisdictional dams** - Medina County with 66 Class I, II, and III dams

# Emergency Action Plans – The difference between life and death in an emergency

Despite efforts to keep dams and levees in good condition and to perform inspection and maintenance, they can develop problems that can lead to failure. Early detection and appropriate response are crucial for maintaining the safety of the dam and levee and downstream people and property. An emergency action plan (EAP) is a collection of information that helps a dam or levee owner properly respond to many potential problems.

An EAP is required for all Class I, II and III dams and levees. The program uses guidelines of the federal Interagency Committee on Dam Safety (ICODS) as the model for EAPs to help ensure consistency and uniformity. As detailed elsewhere in this report, the division implemented new programs, public outreach efforts and an annual fee discount, in FY10 to assist dam owners in improving the number of EAPs for dams in the state.



*The division approved an EAP for Clear Fork Reservoir Dam in 2010, a Class I dam in Richland County.*

The following table shows the number and type of approved EAPs by classification.

TYPE	CLASS I	CLASS II	CLASS III
ICODS	112	83	46
Old	60	65	62
EPP	55	25	28

## Emergency Preparedness and Dam Owner Outreach Efforts

In FY 10 the program implemented a new FEMA-grant funded project for emergency preparedness and public outreach. The purpose of the program is to increase awareness about dam safety issues among local officials and dam owners and to increase the number of Emergency Action Plans for regulated dams. The project began as a pilot in FY 10 by targeting five counties (Adams, Allen, Highland, Medina, Perry) for meetings with local officials and dam owners. The meetings focused on basic information about dams, emergency

preparedness roles and activities, and development of EAPs. Meetings with local officials were generally facilitated with the cooperation of the local emergency management director and included emergency management, county and municipal, and floodplain management officials. Dam owner meetings were generally well attended (over 40 participants in the Medina County meeting) and owners came away with increased knowledge of their dam and how it relates to the overall emergency response plan of the county and state. Owners also received specific instruction on how to develop an EAP for their dam and how to work with local officials to keep it up to date.

At the conclusion of the efforts with the pilot counties (the grant period and the pilot runs to the end of the first quarter of FY 2011), the program will assess effectiveness of the meetings and materials and apply lessons learned to outreach in other counties for FY 11.

## Emergency Enforcement - Rare but necessary when voluntary efforts fail

The core purpose of the Ohio Dam Safety Engineering Program is to protect human life, health, and property from the failure of Ohio’s dams and levees. In an emergency situation, the chief has the authority to take such measures or actions as the chief considers necessary to safeguard life, health, and property. The division operates under the premise that dam safety is a cooperative process between the dam owner/operator and the regulator and that a dialogue can accomplish more than a directive. The division strives for voluntary compliance by consistently informing owners of their responsibilities, rights, and options. However, the division is sometimes forced to either issue an administrative order or seek the assistance of the courts to require owners to improve safety when efforts for voluntary compliance have been unsuccessful. In FY 10 the program took the rare enforcement action of taking control of a dam to breach the embankment and remove the hazard to downstream property.

The division pursued a total of twenty-eight enforcement actions in FY 10 including two actions specifically for the development of Emergency Action Plans. The following describes the actions taken on one project.

# Ponderosa Park Resort Lake Dam Removed After Warnings Ignored

The division used its emergency authority to protect public safety from a failing dam by lowering the dam at Ponderosa Park Resort, located 5 miles southeast of Canfield in Mahoning County. Division officials had previously informed Ponderosa Park’s owners of deficiencies at the 21-foot-high earthen dam, but the owners ignored warnings and orders, resulting in the emergency action.

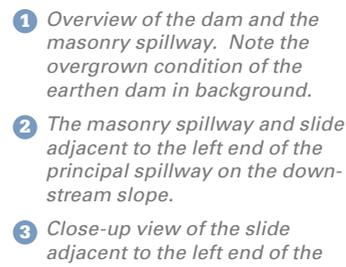
An inspection of the dam in April 2010 revealed that the dam had significant erosion and slippage in addition to problems with the masonry spillway. State Route 45 is below the dam and a catastrophic failure of the dam could have significantly damaged the roadway, putting motorists at risk. In addition, polluted sediment had accumulated behind the dam and failure could have sent a significant amount of the sediment into Meander Creek, harming aquatic life in and along the creek.

The division breached the dam by lowering the masonry spillway to the point where little water is normally impounded, but most of the sediment remains behind the dam. In addition to removing the hazard of the dam, the work resulted in creation of a wetland which benefits the watershed.

The project took about two weeks to complete. Some of the project’s cost was covered by a Surface Water Improvement Fund grant from the Ohio Environmental Protection Agency. ODNR will seek restitution of all state funds expended from the owners of Ponderosa Park Resort.

Several Mahoning County agencies assisted the division in responding to this emergency situation including the county’s Emergency Management Agency, Health Department, and Soil and Water Conservation District.

**“An uncontrolled failure would have threatened SR 45 and impacted aquatic life in Meander Creek.”**



- 1 Overview of the dam and the masonry spillway. Note the overgrown condition of the earthen dam in background.
- 2 The masonry spillway and slide adjacent to the left end of the principal spillway on the downstream slope.
- 3 Close-up view of the slide adjacent to the left end of the principal spillway. Seepage is exiting the embankment in the slide.
- 4 Construction of the controlled breach by removing a portion of the masonry spillway.
- 5 Further breach construction.
- 6 Construction of a check dam in the former lakebed.
- 7 Completed breach section.
- 8 Former lakebed looking downstream toward the breached spillway following completion of construction.
- 9 Former lakebed looking upstream.

## **Administrative Rules Reviewed, Annual Fee Increased, and Compliant Dam Discount Initiated**

The FY 10 state budget placed more of the responsibility for funding the dam safety program on the owners of dams through an increase in the annual fee for all jurisdictional dams. While no one likes fee increases, the state recognized the importance of the program to the citizens and dam owners of Ohio and the fee increase helped to maintain the program while many other state programs received funding cuts. The change in the fee statutes did also provide a measure of relief to dam owners through a new compliant dam discount. The discount provides up to a 25% reduction in the fee amount for dams that are in compliance with state standards and have an approved emergency action plan. The division promulgated a rule for implementation of the discount that provides for a 10% discount for any dam with an approved and up-to-date EAP and a 15% discount for dams in compliance with all other dam safety requirements established by the chief. The increased fee and the discount were implemented for the first time in FY 10.

In addition to the new rule for the fee discount, the program completed the review of all administrative rules as part of a mandated five-year review. This review resulted in several rule modifications ranging from simple clarifications to major changes relating to EAP requirements. The review included notice and comment from stakeholders including dam owners, local emergency management officials, and the Ohio Dam Safety Organization.

In conjunction with the new annual fee discount rule, modifications to requirements for EAPs require that dam owners meet annually with their county EMA director to assure that their EAP is up to date. Beginning in FY 11 the owner will be required to submit documentation of this in order to receive the 10% discount for an up-to-date EAP. While providing the division a way to ensure that EAPs are current, the meetings also facilitate a relationship between dam owners and local emergency management officials that will be beneficial to first responders and the public in the event of a dam emergency.

In conjunction with the new annual fee discount rule, modifications to requirements for EAPs require that dam owners meet annually with their county EMA director to assure that their EAP is up to date. Beginning in FY 11 the owner will be required to submit documentation of this in order to receive the 10% discount for an up-to-date EAP. While providing the division a way to ensure that EAPs are current, the meetings also facilitate a relationship between dam

owners and local emergency management officials that will be beneficial to first responders and the public in the event of a dam emergency.

## **What's New for FY11?**

### **Public Outreach Effort to be Fully Implemented**

As stated previously, FY11 will see full implementation of this effort. The project will take the lessons of implementation in the five pilot counties and target additional counties throughout the state for outreach with local officials and dam owners to increase awareness of dam safety risk. The effort will include working with local officials to educate them about dams in their area, helping to encourage local officials to provide "eyes on dams" during flooding and other events, and notifying the state of potential development downstream of dams. It will also work with dam owners on developing and implementing their owner dam safety program and on updating and exercising their EAP and Operation Maintenance and Inspection Manual (OMI). Public outreach and educational resources will be developed for our web page, and for handouts, mailings, etc. This will provide additional public safety through early detection of problems with dams and efficient and effective emergency response.

### **New Staff Allow Program Expertise to Stay High**

Since 2007, the program has lost four experienced engineers through attrition. The division anticipates replacing three of the vacant engineering positions in FY11. Two of the positions will focus on the periodic inspection of Class II and III dams. The third position will provide staff resources to allow for sufficient construction inspection for the large permit projects expected to be under construction in FY 11.

### **Implementation of EAP Update Requirement Yields Compliant Dam Discount**

In FY 10 the new ten percent annual fee discount was granted to all dam owners with an approved EAP for their dam. The updated administrative rule for EAPs requires the dam owner to keep the EAP up to date and to meet annually with their local emergency management officials in order to receive the discount. In FY11, the program will develop and implement the procedure for dam owners to update their EAP and submit documentation of their meeting with local officials.

## Ownership Issues Get Resolved - or, "Who really owns that dam?"

The increase in the annual fee and implementation of the compliant dam discount in FY10 brought to light many issues involving documentation of the correct ownership of dams in the dam safety inventory database. The division will undergo an effort to update incorrect ownership information. We appreciate the assistance of owners (or non-owners as the case may be) in correcting our ownership database.

## Issues and Unmet Challenges

The Dam Safety Engineering Program faces many continuing challenges for Fiscal Year 2011 and beyond.

- Many of Ohio's private and public dams and levees continue to be in need of upgrade and remediation. The Ohio Chapter of the American Society of Civil Engineers gave dams a "C" in their 2009 Ohio Infrastructure Report Card. The report card indicated that about one-third of the jurisdictional dams in the state have deficiencies and they conservatively estimated a cost of nearly \$300 million to accomplish the needed upgrades.
- Levee safety will likely be a major challenge for the division. The division has regulatory authority and responsibility to inspect jurisdictional levees, but has never had the resources to do this on a regular basis. Also, there is a lack of adequate inventory information about the levees in the state. The planned development of a national levee safety program may provide assistance to states in the development of a levee inventory and help fund the beginning of a more formal inspection program.
- Outreach and enforcement efforts to increase the number of EAP's for dams will ultimately result in more plans that must be reviewed. This has been and will continue to be a challenge with existing staff resources.
- The program has utilized improvements in technology and public data to provide thorough, efficient analyses. However, keeping up with technical changes and maintenance of the database requires significant resources and will continue to be a challenge.



*DSWR engineer inspects Decker Lake Dam spillway in Miami County*



*Moraine levee and floodwall in Montgomery County*



*Spillway pipe replacement for Willowbrook Lake Dam in Clermont County.*

## Don't forget - assistance is available for dam owners

The Dam Safety Engineering Program provides the following assistance to dam owners.

- Low-interest loan programs through the Ohio Water Development Authority for the repair of existing dams for both public and private dam owners. The program worked with OWDA this year to lower the interest rate to make the loans more attractive to banks and dam owners.
- Publications and information on maintenance of dams, ponds and lakes through our web site.
- A listing of consulting engineers interested in doing dam safety work in Ohio on our web site and publications on procuring the services of a professional engineer.
- Consultation with dam owners on operation and maintenance and with their engineers on engineering studies and repair designs.
- General technical assistance.
- In an indirect benefit to owners, the program routinely provides extensive data in the form of tables, maps, summary reports, and digital mapping data sets to state and local officials and to engineering consultants.

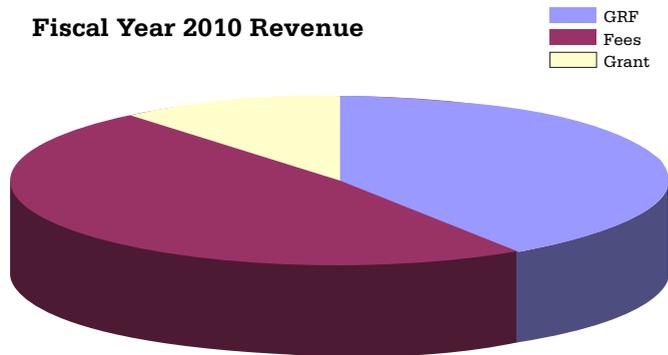


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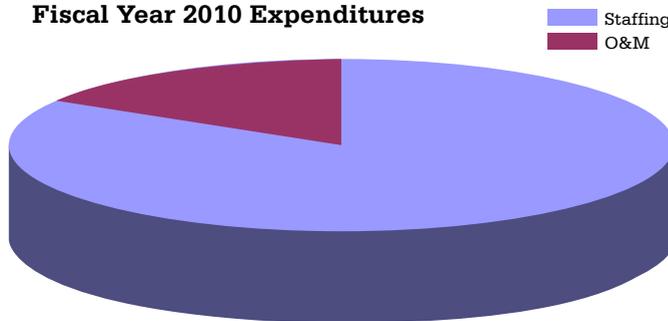
# State General Revenue Funds, owner fees, and FEMA grants support dam safety

The total budget for the Dam Safety Engineering Program in FY 10 was about \$1.4 million. Funding sources for the Dam Safety Engineering Program include the General Revenue Fund, fee revenue from construction permit fees and annual dam safety fees, and a grant from the Federal Emergency Management Agency. The following charts depict the percentages of revenue for FY 10.

**Fiscal Year 2010 Revenue**



**Fiscal Year 2010 Expenditures**



The program receives about \$590,000 each year in annual fee revenue (a net increase of about \$260,000 from previous years) and about \$80,000 per year in permit fee revenue. The annual fee is determined by the classification, height and length of the dam, and total storage volume stored behind the dam. It is paid for each dam under state jurisdiction and is collected every June. Revenue from the annual fee is used to fund the periodic inspection efforts of the division. Permit fees are based on the estimated cost of construction for new dam construction. The permit applicant must pay the fee before the division can issue a permit. Because new construction activity varies from year to year, permit fee revenue is not as predictable as the annual fee. The fees are used to fund a portion of permit-related activities.

## Dam Safety Engineering Program Staff

- **David Hanselmann**, Chief, 34 years of water resources experience
- **Mark Ogden**, P.E., Administrator, 25 years of dam safety experience
- **Rodney Tornes**, P.E., Program Manager, 21 years of dam safety experience
- **Keith Banachowski**, P.E., Program Manager, 16 years of dam safety experience
- **Tina Griffin**, P.E., Project Manager, 17 years of dam safety experience
- **Pete George**, P.E., Project Manager, 17 years of dam safety experience
- **Mia Kannik**, P.E., Project Manager, 13 years of dam safety experience
- **Tom Lagucki**, Construction Specialist, 13 years of dam safety experience, 26 years of construction experience
- **Dena Barnhouse**, P.E., Project Manager, 11 years of dam safety experience, 5 years of experience in floodplain engineering
- **Ronda Tipton**, Administrative Assistant, 6 years with the program
- **Jeremy Wenner**, E.I., Project Engineer, 4 years of dam safety experience
- **Matt Hook**, E.I., Project Engineer, 4 years of dam safety experience
- **Jim Huitger**, Construction Specialist, one year of dam safety program experience with 36 years of construction experience
- **Martin Joyce**, Public Outreach Coordinator, in his second year as the part-time public outreach coordinator, but 16 years of service in Soil & Water conservation programs
- **Cynthia Frazzini**, Assistant Attorney General, 11 years experience as an Assistant Attorney General

## Dam Safety Engineering Program Partners

The program enjoys partnerships with the following agencies and organizations and would like to recognize them for their contribution to dam safety in Ohio.

- Ohio Dam Safety Organization, a division of the Water Management Association of Ohio
- Association of State Dam Safety Officials
- Ohio Emergency Management Agency
- Federal Emergency Management Agency
- Natural Resources Conservation Service
- Ohio Chapter of the American Society of Civil Engineers
- Ohio's local Soil & Water Conservation Districts
- U.S. Army Corps of Engineers
- Federal Energy Regulatory Commission
- U.S. Department of Interior
- Ohio Environmental Protection Agency

**Ted Strickland, Governor**

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