

Ohio



Ohio Department of Natural Resources Dam Safety Report 2009

Protecting Ohioans and maintaining critical infrastructure in cooperation with owners of Ohio's 1665 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 2009. The program faced many challenges during the year including increased scrutiny of coal ash impoundments and internal transition to a new division structure. Yet, through all of this, our staff made substantial progress toward the ultimate goal of public safety. This report provides an overview of the program goals and progress made during the year and an analysis of the opportunities and challenges we face in the coming year.

Chief Hanselmann

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Cover photo: Salt Fork Dam, Guernsey County

Introduction

Dams and levees provide the citizens of Ohio with such essential benefits as water supply, flood control, recreation and irrigation. They are an integral part of our infrastructure. The Dam Safety Engineering Program regulates the construction, operation, and maintenance of Ohio's dams and levees to protect life and property from damages due to failure, and maintain the essential public services mentioned above. The program accomplishes these purposes through 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.

There are approximately 1665 jurisdictional dams in the state with an estimated value of over \$1.6 billion. The program helps to ensure the safety of thousands of Ohio's citizens and billions of dollars of property and infrastructure. 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.

Class I (red dots), Class II (blue dots) and Class III (green dots) dams in the state.



Class I Taylorsville Dam in Miami County



Class II McBride Lake Dam in Scioto County



Class III Bear Town Lake Dam in Geauga County

Successes Achieved in Fiscal Year 2009

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.

2009 Highlights

- Successfully met goal of inspecting 370 dams
- Ensured inspections of all Ohio coal ash impoundments after Tennessee disaster
- Helped ODNR divisions develop Emergency Preparedness Plans for all ODNR dams without an EAP
- Took necessary enforcement actions for several dams and responded to emergencies

Safety inspections – Critical to dam safety

Periodic inspection of existing dams is 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 program conducts inspections on a five-year schedule under the following process as described in Rule 1501:21-21-02 of the Ohio Administrative Code.



Inspection of Highlandtown Lake Dam in Columbiana County.

“Each periodic inspection shall consist of, but not be limited to, the following:

1. Review and analysis of available data on the design, construction, operation, and maintenance of the dam or levee, and its appurtenances;
2. Visual inspection of the dam or levee, its appurtenances, the downstream area, and all other areas potentially affected by the structure;
3. Evaluation of the general conditions of the dam or levee, and its appurtenances which may include assessment of the hydrologic and hydraulic capabilities, structural stabilities, and any other conditions which constitute or could constitute a hazard to the integrity of the structure;
4. Evaluation of operation, maintenance, and inspection procedures for the structure; and
5. Evaluation of the emergency action plan for the structure.”

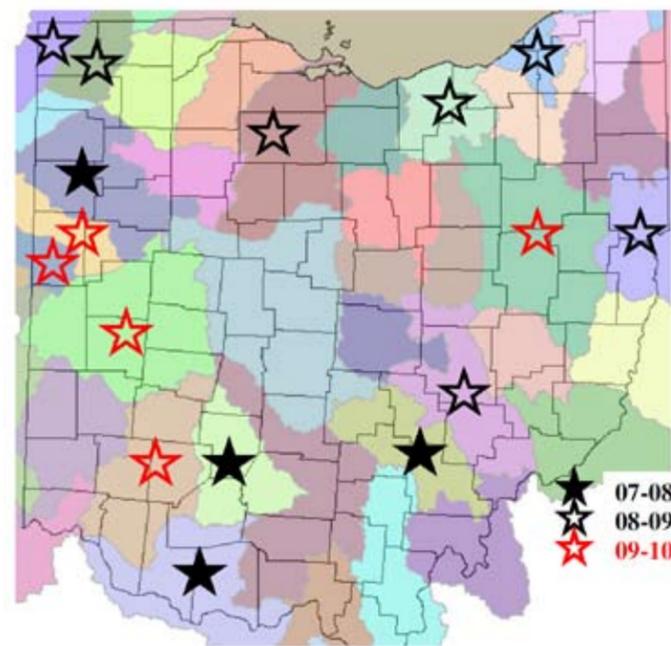
This process provides an overview of the overall safety of the dam and also a review of the dam owner’s current dam safety program (operation and maintenance, emergency preparedness, etc.). The process identifies potential remediation needs for both the structure and the owner’s safety procedures. Findings of the inspection are presented to the dam owner in a written report detailing the results of the inspection and the required remedial measures.

Efficiencies gained by organizing inspections by watershed

The program schedules periodic inspections on a five-year rotating watershed basis. The watershed scheduling plan was implemented in 2007 after a successful pilot program. Scheduling by watershed allows the program to be more efficient in field time and also more effective in reviewing the interrelationships between dams in the watershed. The program inspected dams in the following watersheds in FY 2009.

- St. Joseph
- Tiffin
- Sandusky
- Black-Rocky
- Chagrin-Ashtabula
- Upper Ohio
- Muskingum

In addition to the watershed schedule, the program also inspected 46 Class I “chaser” inspections. Implementation of the watershed scheduling process required the program to assign the watersheds for inspection for the entire five-year inspection rotation period. A strict implementation of this schedule would have left some dams without an inspection being performed for more than five years; in order to make sure that all Class I dams are inspected at least once every five years, the program also inspected these Class I “chasers” in FY 2009.



Watersheds of Ohio showing the watersheds scheduled for inspection in the years 07-08 through 09-10. All other watersheds will be scheduled in the subsequent two years.

Coal ash impoundments gain attention Nationally...

The program mounted additional inspection efforts for coal ash Impoundments in FY 2009. 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. Clean-up costs will likely exceed \$1 billion. In January 2009 the Dam Safety Engineering Program discussed this incident with Ohio Environmental Protection Agency. Both agencies reviewed their internal information regarding these types of structures. The Dam Safety Engineering Program reviewed its database, aerial photography, and files. The program summarized and conveyed the data to OEPA. Likewise, OEPA gathered and provided information for the Dam Safety Engineering Program.

...and by Ohio Dam Safety Program

All of the coal ash impoundments that have Class I dams had been inspected within their mandated time period and most of the other dams had been inspected within the previous two years. For the structures that had not been inspected within two years, the program expedited the inspection schedule and performed periodic safety inspections to gain more current information (while still remaining on schedule for all other periodic inspections). Program staff performed eight inspections at four power plants during February of 2009. The program compared information from OEPA with the information that the program gathered, and in March of 2009, the program provided updated information including mapping, “pdf” inspection reports, and database reports to Ohio and USEPA. Following the failure of the Kingston coal ash pond, USEPA embarked on its own investigation of coal ash ponds throughout the nation.

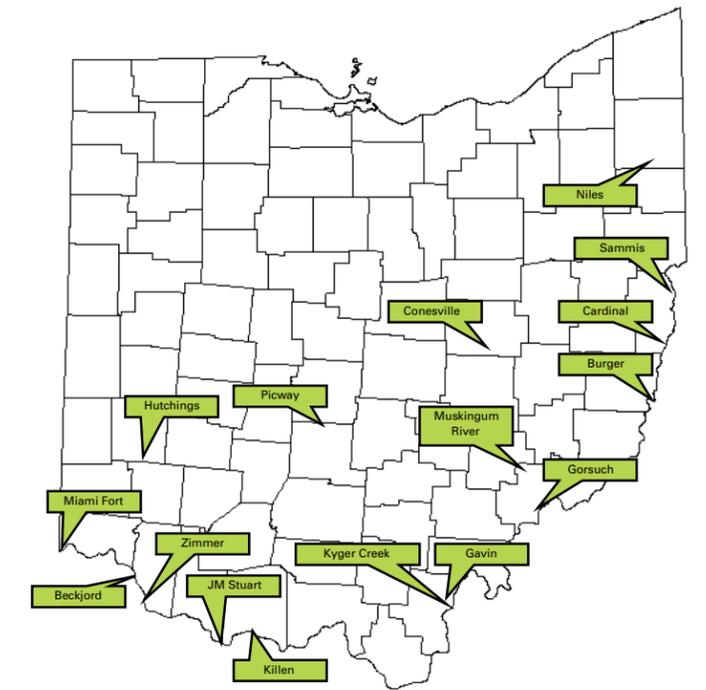
The Dam Safety Engineering Program’s initial focus was to confirm that there were no Class I (high-hazard) dams in Ohio that were constructed and operated in a similar fashion to the coal ash pond at the Kingston Fossil Plant. Inspection and document reviews confirmed that to be the case, but the program did find that there were inconsistencies between the OEPA’s information and the program’s records, mostly pertaining to smaller impoundments.

In May of 2009, USEPA announced that it had hired consultants to inspect coal ash impoundments throughout the nation, including the impoundments at the General James Gavin Power Plant in Ohio. Program staff provided reports and other information to USEPA’s consultant and participated in the inspections at the General James Gavin Power Plant in June.

We anticipate continued increased efforts for these impoundments in FY 2010. By the time of publication of this report, the division had accompanied USEPA on the inspection of impoundments at seven additional facilities in Ohio. In addition, the program conducted additional site visits at several additional coal-burning generation sites across Ohio to confirm inventory information on existing impoundments. As a result, four smaller impoundments were reclassified and inspected.



Duke Energy Basin “A” in Hamilton County



Ohio’s power generating facilities with ash impoundments.

Note –Other power generating facilities in Ohio landfill the waste as dry ash.

Construction of New Dams and Repair of Existing Dams

Dams and levees provide the citizens of Ohio with such essential benefits as water supply, flood control, recreation and irrigation. They are an integral part of our infrastructure. 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 to 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.

“The most critical year in the life of a dam is the year of construction and first filling.”

Thorough plan reviews are critical...

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 then monitoring for a one-year bond period. Permit projects take on many forms from the complete project that goes all the way through construction to projects that submit plans for review but don't go beyond that step for various reasons.

...as are construction inspections

The permit process requires the submittal of a preliminary design report for all proposed new dam and levee construction. The preliminary includes information about the proposed size, location and classification of the dam or levee. It also includes typical cross sections for the structure, an analysis of surficial conditions, and preliminary design assumptions, etc. Program staff review the preliminary report for completeness of the submittal, appropriateness of the site, and other engineering assumptions. Staff also perform a site visit to assess the site conditions and the proposed classification of the structure. A determination of whether the dam is under state jurisdiction and the classification of the dam is made as part of approval of the preliminary report.

The final design report includes a detailed report of all foundation and materials analyses, all references, calculations and conclusions of engineering studies, a detailed cost estimate, and detailed plans and specifications. Program staff review all the final design submittals to ensure the proposed dam or levee will adhere to appropriate engineering standards and dam safety regulations.

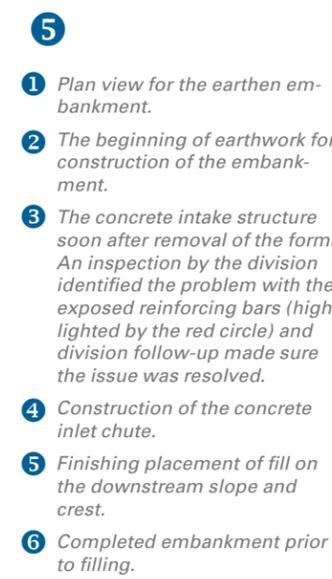
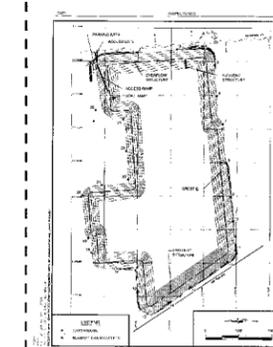
During construction, program staff visit the site periodically to ensure that construction, materials testing and observation is being conducted in accordance with the approved plans and specifications and the terms of the permit. These periodic site visits have proven very important in the past in identifying problem areas during construction.

Once construction is complete and approved, the division continues to hold the required surety for one year to ensure that the dam or levee is performing as expected during first filling, etc. Program staff will make periodic visits to the site during this bond period. 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 list presents a summary of new construction permit activity for FY 2009.

- The division received preliminary reports for three projects including two wastewater treatment lagoons and one abandoned mine lands project.
- Final design reports were received for Fremont Upground Reservoir in Sandusky County and the Hillsboro Wastewater Treatment Plant Levee in Highland County.
- The division issued one permit in FY 2009 for the Fremont Upground Reservoir, a 93-acre reservoir to be impounded by a 29-foot-high earth embankment.
- At least seven 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 Marathon Brine Pond Dam in Stark County.
- Final approval and bond release was given for ten projects including four water supply reservoirs, four wastewater treatment lagoons, one private recreation lake, and one concrete flood control dam.

Marysville Upground Reservoir – 1.5 billion gallon reservoir – constructed over 12 months at a cost of over \$7 million.



- 1 Plan view for the earthen embankment.
- 2 The beginning of earthwork for construction of the embankment.
- 3 The concrete intake structure soon after removal of the forms. An inspection by the division identified the problem with the exposed reinforcing bars (highlighted by the red circle) and division follow-up made sure the issue was resolved.
- 4 Construction of the concrete inlet chute.
- 5 Finishing placement of fill on the downstream slope and crest.
- 6 Completed embankment prior to filling.
- 7 Completed project in first filling and bond stage.

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.

“Staff reviewed/monitored over 100 repair projects.”

The program worked on 108 total dam repair projects in FY 2009 including twenty-two projects that were under construction. These projects included spillway repair design, hydrologic and hydraulic studies, Emergency Action Plan review, lake drain design and installations, adding emergency spillways, toe drain repairs and design, slide repairs and design, downstream hazard studies and classification studies, rehabilitation of relief wells, etc. The following describes a sampling of the successful rehabilitation projects.

- During FY 2009, American Electric Power (AEP) completed modification construction on three large dams on their property in Morgan and Noble Counties. These dams are located on land that was previously strip mined for coal. As part of a multi-year plan, AEP has been working to reduce their liability with many of their dams (especially high and medium hazard dams) by removing the structure or reducing the height, thereby eliminating or reducing the potential public safety hazard caused by a dam failure. At the same time they are modifying these structures, AEP is also improving the structural safety of these dams by making upgrades to bring them into compliance with Ohio's dam safety laws.
- Englewood Dam is a flood control dam on the Stillwater River that protects the Cities of Dayton, Trotwood, Clayton, and Englewood. The dam is 120 feet tall and can store 413,000 acre-feet or 135 billion gallons. The dam sits atop more than 100 feet of sand and gravel deposits. During flooding conditions, as the dam fills with water, it also experiences seepage under the dam through the sand and gravel deposits. In order for the dam to remain stable during floods, the seepage must be released in a controlled manner. For Englewood Dam, relief wells allow the seepage to flow up through the wells and discharge safely away from the dam without causing internal erosion in the dam or allowing high uplift pressures beneath the dam to develop. In the summer of 2008, the Miami Conservancy District began installing 46 new relief wells. These new wells are in addition to the 26 existing relief wells.

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.



The City of Columbus has an up-to-date EAP for O'Shaughnessy Reservoir Dam that is exercised on a regular basis.

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.

What's an EAP?

When completed, the EAP has two sections: the basic EAP and appendices. The following list presents the basic format.

Title Page/Cover Sheet/Table of Contents

- 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

The complexity of the EAP is dependent on the size of the dam, the storage volume, and the potential downstream hazard. Some older EAPs do not meet the ICODES standards, and program staff work with the dam owners to update the plans to current standards. Copies of approved EAP's are provided to county emergency management officials.

What's an EPP?

In FY 2009, the program worked with the dam-owning divisions within the Department of Natural Resources to develop Emergency Preparedness Plans (EPP) for all of the department-owned dams that did not have an EAP. The EPP contains most of the information of an EAP, but it does not have the inundation map or other engineering-related information which can be costly. The EPPs are an important interim step and provide an aid to dam operators and local emergency management officials. The program will continue to work with dam-owning divisions to complete full EAPs for all department dams. Similarly, through local workshops the division worked with private dam owners to complete EPPs as a stepping stone to their EAPs.

Number and type of approved EAPs by dam classification.

| TYPE | CLASS I | CLASS II | CLASS III |
|-------|---------|----------|-----------|
| ICODS | 104 | 84 | 39 |
| Old | 66 | 45 | 35 |
| EPP | 37 | 10 | 5 |

Dam emergencies, at some scale, occur in Ohio every year

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. Because response to an emergency situation can be a complex course of action, the division developed an Internal Emergency Action Plan (available through the division web site) to be a process for handling emergency situations efficiently and effectively. There were no major emergency actions in FY 2009, but the division did implement the plan in two instances.



Seepage exiting the downstream slope of a small dam in Ashland County.

- A Class II dam in Ashland County experienced serious seepage issues along the spillway pipe following repair construction. The division took emergency actions to ensure the lowering of the lake level and notification of local officials.
- A periodic inspection of Brentwood Lake Dam, a Class II dam in Lorain County, revealed many problems including a severely undermined spillway. The division took emergency actions to ensure lowering of the lake level and notification of local officials.

We appreciate the assistance of local officials in both emergencies. Enforcement actions are continuing with both events to ensure that the dams are properly repaired or removed.

Safety sometimes takes enforcement

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

“I saw completion of the Lower Girard Lake Dam enforcement project with the breaching of the dam.”

To guide the enforcement process, the division created an enforcement manual (available through the division web site), and safety and funding dictate the prioritization of violations. Division enforcement efforts mostly focus on highly

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.



Lower Girard Lake Dam in Trumbull County viewed from the former lakebed looking at the upstream face of the dam. Breached in July 2008 by cutting thirteen panels into the concrete face of the dam.

deficient Class I (high-hazard) dams with dense populations downstream. The program developed a risk-based analysis with numerous criteria to determine enforcement priorities. Enforcement efforts, including assistance from an Assistant Attorney General position, are funded through a grant from the Federal Emergency Management Agency. Since its inception nearly ten years ago, the enforcement program has been very successful in bringing dams into compliance.

In FY 2009, the program took enforcement action against ten dams including seven actions specifically for the development of Emergency Action Plans.

- As mentioned above, the division took enforcement action for a Class II dam in Ashland County and Brentwood Lake Dam following the emergency actions to ensure that the dams will be properly repaired or breached. Action was still proceeding on both of these dams at the end of the fiscal year.
- Of the seven Notices of Violation (NOV) sent to dam owners specifically for the development of an EAP, all seven have been successful in moving the owner toward development of the plan without further action.
- The division began enforcement action for Lower Girard Lake Dam, Trumbull County, in 2003 following a severe flood in the area. The concrete and earthfill dam originally constructed in 1917 had previously been determined to be structurally deficient during elevated lake levels. The owner of the dam, the City of Girard, drained the lake and developed an EAP, but did not complete repair or removal of the dam for several years while searching for a funding source to repair the dam. The division continued enforcement action until an agreement was reached in 2007 to breach the dam by cutting thirteen panels into the concrete face of the dam. The construction was completed in July 2008.

Looking ahead to FY 2010

The division will continue the watershed inspection scheduling plan for FY 2010 with the following watersheds scheduled for inspection.

| Watershed | # CLASS I | # CLASS II & III |
|-------------------|-----------|------------------|
| St. Marys | 1 | 2 |
| Little Miami | 27 | 100 |
| Tuscarawas | 23 | 119 |
| Upper Great Miami | 15 | 41 |
| Upper Wabash | 1 | 7 |
| Class I "Chasers" | 17 | |

Public outreach – working with owners and partners

Another new initiative beginning in FY 2010 will be an expanded public outreach effort with an emphasis on EAPs. A portion of the dam safety grant funded through FEMA will be dedicated to an EAP/Outreach Plan to increase the number of EAPs and to increase dam owner's dam safety efforts and local official/public awareness of dam safety risk. The division will initiate outreach and awareness activities on the risk posed by dams to the downstream public and critical facilities. Ohio has identified a need for an EAP/Outreach Plan to assist dam owners in developing and implementing their owner dam safety programs. It will also help the state in regulatory responsibility by educating local officials on how and what to look for with dams during high water and other events. The plan will include working with local officials to educate them about the 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. The plan 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). The plan will improve public outreach and educational resources on 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.

Administrative rules – up for review

The division is required to undertake a review of the administrative rules for dam safety in FY 2010 as part of the mandated five-year rule review process. This rule review process will include the increased annual fee amounts and the new compliant dam discount approved by the General Assembly as part of the budget process for Fiscal Years 2010 & 2011. The rule review process will include review by dam safety staff and stakeholders.

Division merger transition continues

The division will continue implementation of the new structure for the combined Division of Soil and Water Resources. This will include opportunities for increased collaboration with local soil and water district staff on dam safety issues. The division will reach out to the districts with information and training on dam safety issues, and district staff will continue to assist the division by providing a local contact that can investigate dam safety situations.

Focus for the Future

The Dam Safety Engineering Program will have a number of opportunities and challenges for Fiscal Year 2010 and beyond.

- 1 Most dams throughout the U.S. are approaching old age due to the fact that the most active period of dam construction occurred between 1950 and 1970. Many dams built then or earlier may not have been built to standards used today, and may not have been adequately maintained since. Thus many of Ohio's private and public dams will need upgrades and remediation because of their age. Repairing these structures, however, is a very costly investment. The Ohio Chapter of the American Society of Civil Engineers has conservatively estimated a cost of \$300 million for necessary repairs and upgrades for Ohio's jurisdictional dams.
- 2 Although most of Ohio's dams are not owned by the state (more than 95% are owned by other entities) The Ohio Department of Natural Resources has made a commitment to improve dam safety by developing Emergency Preparedness Plans for all of its dams, and by identifying significant capital improvement funds for dam repairs.
- 3 The division has regulatory authority and responsibility to inspect jurisdictional levees, but will need additional resources to do this on a regular basis. There is also a lack of adequate inventory information about levees in the state, which poses a challenge. The planned development of a national levee safety program, however, may provide assistance to states in the development of a levee inventory and help fund the beginning of a more formal inspection program.
- 4 The division will need to continue to devote significant staff time to assist with coal ash impoundment inspections and assessments, in conjunction with U.S. and Ohio EPA and utility owners.

- 5 Increases in new dam construction fees and inspection fees should help provide necessary staffing levels, allowing for more monitoring of new construction and review of smaller repair projects.
- 6 The division has taken a much more aggressive approach with outreach and enforcement efforts to ensure that dam owners have Emergency Action Plans in place for their dams. This has ultimately resulted in more plans that need reviewed and may present a challenge with existing staff resources.
- 7 The dam safety program has been able to utilize technology to make improvements to public data and provide more thorough, efficient analyses. However, keeping up with these technical changes and maintenance of the database will continue to require significant resources.



1 Privately-owned Brentwood Lake Dam (Lorain County) concrete spillway had deteriorated to the point an emergency breach became necessary.



2 State-owned Buckeye Lake Dam in Licking and Fairfield Counties. Trees are always discouraged on dams, knowing that up-rooting can cause structural damage.



3 Privately-built Mills Pride Levee in Pike County protects a cabinet manufacturing plant.



4 Kyger Creek South Coal Ash Pond in Gallia County and all other such impoundments in Ohio have been recently inspected by DSWR staff.



5 Spillway replacement at Lake Rice Dam in Hocking County requiring plan review and construction monitoring by DSWR staff.

Assistance Available to 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.
- Low-interest loan programs through the Ohio Water Development Authority for the repair of existing dams for both public and private dam owners.
- 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.

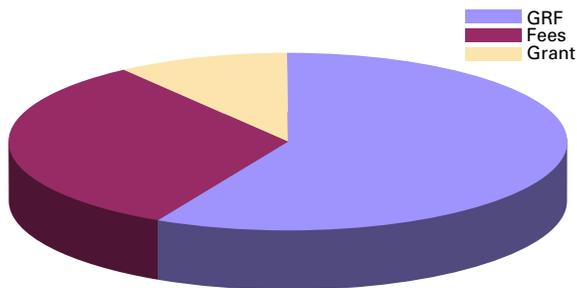
<http://ohiodnr.com/tabid/3329/Default.aspx>



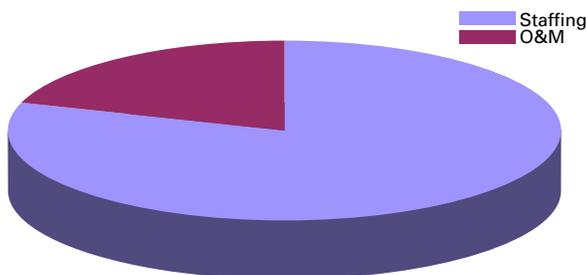
State General Revenue Funds, owner fees, and FEMA grants support dam safety

The total budget for the Dam Safety Engineering Program in FY 2009 was about \$1.4 million. Funding sources for the Dam Safety Engineering Program include the State 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 2009.

Fiscal Year 2009 Revenue



Fiscal Year 2009 Expenditures



The program receives about \$330,000 each year in annual fee revenue and about \$80,000 per year in permit fee revenue. The annual fee is determined by the classification and height of 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, 33 years of water resources experience
- **Mark Ogden, P.E.**, Administrator, 24 years of dam safety experience
- **Rodney Tornes, P.E.**, Program Manager, 20 years of dam safety experience
- **Keith Banachowski, P.E.**, Program Manager, 15 years of dam safety experience
- **Tina Griffin, P.E.**, Project Manager, 16 years of dam safety experience
- **Pete George, P.E.**, Project Manager, 16 years of dam safety experience
- **Mia Kannik, P.E.**, Project Manager, 12 years of dam safety experience
- **Tom Lagucki**, Construction Specialist, 12 years of dam safety experience, 25 years of construction experience
- **Dena Barnhouse, P.E.**, Project Manager, 10 years of dam safety experience, 5 years of experience in floodplain engineering
- **Ronda Tipton**, Administrative Assistant, 5 years with the program
- **Jeremy Wenner, E.I.**, Project Engineer, 3 years of dam safety experience
- **Matt Hook, E.I.**, Project Engineer, 3 years of dam safety experience
- **Jim Huitger**, Construction Specialist, the newest staff member hired just at the end of the fiscal year, but he comes to the program with 35 years of construction experience
- **Martin Joyce**, Public Outreach Coordinator, in his first year as the part-time public outreach coordinator, but 15 years of service in Soil & Water conservation programs
- **Cynthia Frazzini**, Assistant Attorney General, 10 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
- USDA 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

Ted Strickland, Governor
www.ohio.gov

Sean Logan, Director
 Ohio Department of Natural Resources
www.ohiodnr.com

David Hanselmann, Chief
 ODNR Division of Soil and Water Resources
www.ohiodnr.com/soilandwater

