

REGION IV:

Increasing Emergency Action Plans in Georgia



Reducing the risk of loss of life and property damage from a dam failure

In 2014, the Georgia Safe Dams Program (SDP) drafted a strategic plan to examine their current rules and regulations for dams. As a result, SDP identified the need to clarify a rule that would require high-hazard dams within the State to have an Emergency Action Plan (EAP). As a result of the strategic plan, a rules modification was proposed and adopted in late 2016. According to the new rules contained in the Georgia Department of Natural Resources, Rules for Dam Safety Chapter 391-3-8-.11, all owners of Category I dams that were classified on or after October 1, 2016, must submit an EAP to the SDP as part of an Application for Construction and Operation Permit. Additionally, the rule said if a dam was classified as a Category 1 before October 1, 2016 (which includes most of the SDP dams), owners had until July 1, 2017, to submit an EAP. **Based on enactment of the new rules and the concerted outreach effort to dam owners, as of August 1, 2018, 251 out of 473 Category 1 (high-hazard) dams in the State have completed EAPs and 73 EAPs are under review. That is, over 70 percent of the high-hazard dams in the State have completed EAPs, and submittals continue to come in.**

Additionally, there has been an increase in the number of tabletop exercises across the State to test the EAPs and a growing understanding about the risk associated with dams. Furthermore, completed inundation mapping has allowed more accurate dam hazard classifications to be determined, thereby improving the risk identification in these downstream areas.

This is part of a larger national effort to increase the emergency action planning, and therefore the number of EAPs, across the country. Since the National Dam Safety Program (NDSP) was codified in 1995, the number of high-hazard dams with EAPs has increased from 39 percent to 80 percent. To achieve this reality, SDP, a subsection of the Georgia Department of Natural Resources, applied for Federal Emergency Management Agency (FEMA) National Dam Safety Program (NDSP) grant funding. SDP developed an awareness, outreach, and training program to help dam owners develop and submit EAPs to the State.

LESSONS LEARNED AND BEST PRACTICES:

- **Outreach is key.** Before the rule change went into effect, SDP invested in significant outreach to educate stakeholders. This included not only local officials and emergency managers, but also private dam owners and engineering consultants. Through trainings and workshops, SDP was able to educate these key stakeholders about the risk that is associated with dams and get them to take EAPs seriously.
- **Support with Enforcement.** SDP made it as easy as possible to complete EAPs by doing a few things. First, they sent a series of letters to the dam owners to inform them what they needed to do. Then, they created an EAP template for dam owners to follow. They also held in-person working sessions every Thursday where people could stop by for help. While the efforts to reach and support dam owners were comprehensive, SDP was also able to leverage their enforcement powers to remind dam owners that EAPs are required by law.
- **Strong Relationships.** While dam owners are ultimately responsible for the development of EAPs, county governments within the State, who were sometimes dam owners themselves, actively supported SDP and engaged with private dam owners. Counties leveraged existing data to assist dam owners in developing EAPs as well as organized tabletop training exercises to prepare for hypothetical breach scenarios to test local response plans and dam EAPs.

“These trainings helped people understand the risks associated with dams, and consequently, the importance of EAP development to help keep their families and property safe.”

— KATY GOOLSBY-BROWN, Federal Emergency Management Agency

THE CHALLENGE



Berkley Lake, GA, April 2012.

Similar to other States across the country, Georgia needed to find a way to get owners of high-hazard (Category I) dams to recognize the risk associated with these dams and act to develop and submit EAPs to the State. To achieve this reality, SDP, a subsection of the Georgia Department of Natural Resources, applied for Federal Emergency Management Agency (FEMA) National Dam Safety Program (NDSP) grant funding. SDP developed an awareness, outreach, and training program to help dam owners develop and submit EAPs to the State.

There are approximately 14,000 “high-hazard” dams in the United States. This means that the failure or mis-operation of these dams will likely result in loss of life.

SOURCE: FEMA’S “IDENTIFYING HIGH HAZARD DAM RISK IN THE U.S.”

In 2014, the Director of the Environmental Protection Division in Georgia tasked Tom Woosley, P.E., Safe Dams Program Manager, to develop a strategic plan for how to operate the program given limited funds and staffing. As an outcome, the plan suggested that some of the responsibility currently assumed by SDP should be shifted to dam owners. One of the results of this plan was a rule clarification regarding EAP requirements. The new rule change went into effect in August 2016 and required EAPs to be completed by July 1, 2017. Prior to the rule change, it was not clear if SDP had the authority to require EAPs for existing high-hazard dams. While SDP could not fund EAP development as that is the responsibility of the dam owner, they could leverage inundation mapping and data from the counties for use in EAP development, and partner with counties to help increase awareness by assisting in trainings and tabletop exercises.

“I was tasked to go back and read the rules again, line by line, to make sure what we’re doing is in accordance with regulations, to look at where we should be doing more, and then to develop a plan for how the program could move forward.”

– TOM WOOSLEY, P.E., Safe Dams Program Manager

Prior to the rule change, SDP looked for other ways to leverage opportunities and to encourage high-hazard dam owners to develop an EAP. Of course, with any rule change, there are challenges. SDP specifically needed to find a way to publicize the rule change and educate people about why it was needed. This was especially true with dams that were owned by private citizens, as they had mixed reactions to the new requirement, specifically those who could not afford to go through the EAP process. This would take a culture change—a shift to putting more responsibility on the dam owners than on the State. To achieve this takes time, understanding, training, and relationships.

THE SOLUTION

RULE CHANGE ROLLOUT AND OUTREACH

In preparation for the rule change, SDP organized a series of meetings with local government officials and developed presentations for Emergency Managers at various conferences to alert them of the upcoming change. SDP held meetings with engineering consultants to introduce them to the change as well as free training workshops regarding basic dam facts and management practices, safety, and regulatory requirements for dam owners in Georgia. This helped different owners and multiple counties better understand the risk associated with dams and to take actions to reduce their risk.

SDP also held dedicated workshops focusing on state owned watershed dams and DeKalb County owned dams. In these cases, some technical data was already available, including inundation mapping, which made it easier for the owners to complete an EAP during the workshops.

“Any one letter or any one point of contact won’t change behavior. We needed the dam owners to hear things multiple times in order for the steps to sink in so they know what they need to do.”

– TOM WOOSLEY, P.E., Safe Dams Program Manager

While some dam owners immediately began developing their EAPs, others were resistant and took coaxing, especially private owners. Understanding that there may be barriers, SDP developed a set of letters to owners. The first was an alert; the second included a template to help dam owners more easily complete their EAPs. Other letters alerted dam owners that SDP would help individuals fill out the template through in-person working sessions every Thursday. The final letters were ones of non-compliance. Because SDP hadn’t previously done much enforcement, this letter was an important tool. Following this enforcement, SDP immediately saw a jump in the number of submittals. These different letters, the offer for one-on-one assistance, and the template, in conjunction with two dam owner workshops often supported by county governments, helped dam owners understand why EAPs were important and why they needed to get them done.



An Emergency Action Plan template, 2017.

“I wish people could have seen the last week of June [2017]. It was June 30, the final date for submittal, and we had a great number of people dropping off EAPs to make sure they made the deadline. We even stayed past closing hours and my desk was covered with submittals that next day I could hardly move anything!”

– TOM WOOSLEY, P.E., Safe Dams Program Manager



An EAP workshop in Georgia with the Georgia Soil and Water Conservation Districts, 2017.

INUNDATION MAPPING

A previous grant from FEMA's NDSP provided funding for the State of Georgia and several counties to develop inundation mapping. Some dam owners were able to leverage this information to create EAPs for their own dams. In addition to providing data, counties also hosted preparedness tabletop exercises.

SDP also gathered data on existing inundation mapping for watershed dams that were built by the Natural Resources Conservation Service and now commonly owned by state agencies. This inundation mapping information could be leveraged for EAP development. As part of a Fiscal Year (FY) 2016 FEMA grant, SDP used funds to hold a dedicated workshop on the watershed dams to examine available mapping data and educate these state agency dam owners on their responsibilities. The workshop focused on the state agencies, but also included local emergency managers who were invited to review and sign off on any completed EAPs developed during the workshop. In addition to strengthening relationships, the workshop resulted in 32 additional completed EAPs.

“Moving forward, our plan is to hold a tabletop exercise every 6 months and have our EAPs reviewed on an annual basis.”

– SANDRA GLENN, P.E., Assistant Director of Regulatory Compliance

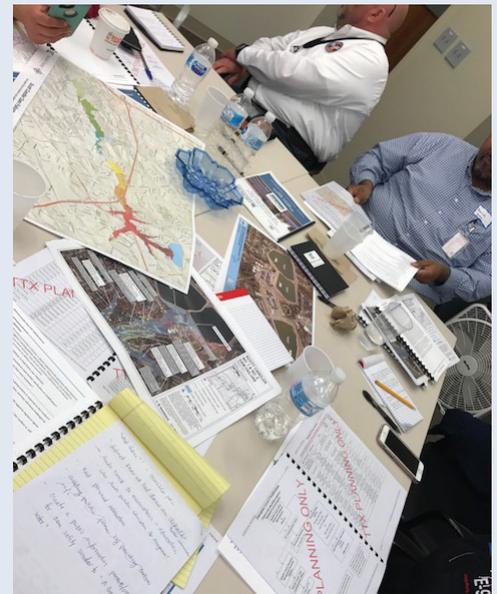
CASE STUDY: DEKALB COUNTY TABLETOP

As part of Georgia's Floodplain Mapping Program, DeKalb County had previously developed Inundation Mapping data and had created a single map, showing all high-hazard dam inundation zones in the county, including from private dams, color coded for time of inundation. Building off this success and supported by a FEMA NDSP grant, DeKalb County held a dam owner workshop that resulted in nine additional completed EAPs from dam owners and other plans that were partially complete.

However, the mapping data and the workshop also highlighted the significant risk from county-owned dams in the highly populated metro-Atlanta area. DeKalb had developed EAPs, but to ensure local officials understood how the plan would work, the county collaborated with the SDP to enact a tabletop exercise to test the plan. Overall, officials from 13 cities that would be impacted by dams in the county joined, in addition to officials from Atlanta, the Fulton County Emergency Agency, the Department of Transportation, FEMA, and local police and fire departments. In all, 20 agencies participated.

Through the tabletop exercises, officials realized there were issues that needed to be worked out. For example, for one high-hazard dam at the edge of the county, a 911 call was directed to the neighboring jurisdiction's contractor, not DeKalb's 911 system. They found that many of the cities that would be rapidly inundated did not have the capability to deal with one road closure, let alone many. Officials were shocked by how far and fast the floodwaters would go and that key places, like major water transmission lines and interstate highways, would be severely damaged or destroyed. Disruption of an adjacent main water treatment plant could result in countywide water shortages, making fire hydrants inoperable. They also learned that there wasn't a complete understanding of what emergency staff can do and in what time frame. As a result, DeKalb County realized the need to amend their EAP, as well as create an informal communication system and update formal channels. Response personnel, like the fire departments, are now putting more emphasis on skills needed during a dam failure scenario, like swift water rescue training.

As follow-up, a Communication Outreach group is developing a message about preparedness to help encourage people to sign up for a reverse 911 system, known as “CodeRED,” that will help people prepare for an emergency and know what to do when one strikes. Additionally, CodeRED warning scripts have been developed for utilization in a dam breach scenario. DeKalb County also identified and contracted a dam engineer of record to be an emergency contact in case of issues and ensured that contact information was shared across agencies. Furthermore, DeKalb County is planning to hold a tabletop exercise every 6 months (a second exercise has already been held) and to review their EAP on an annual basis (which is currently underway) with a much broader review team. While the work is not done, this coordination, information, and planning will help reduce the impacts of future emergencies by identifying and addressing issues before lives are at stake.



Tabletop exercise in DeKalb County, 2013.

“As a result of that effort, we were also able to do something similar with Gwinnett County and Cobb County. These three counties are some of the largest counties with respect to population and number of high-hazard dams.”

– TOM WOOSLEY, P.E., Safe Dams Program Manager

CASE STUDY: COBB COUNTY

Before the rule change, Cobb County had performed dam break analyses and inundation mapping for high-hazard dams the county owned. However, previous versions of the NWS Dam Break model were very time consuming and expensive to run, and progress was slow. Following flooding from Hurricane Ivan in September 2004, Hurricane Dennis in July 2005, and the Epic Flood of September 21, 2009, the county's priorities shifted from dam break analyses and inundation mapping to flood damage assessments, flood control projects, and flooded property buyouts. When the SDP rule change was enacted, Cobb County hired an outside consultant to perform additional dam break analyses, dam break inundation mapping, and an EAP report template. Many Category 1 dam owners contacted Cobb County for help on their EAPs. Because Cobb County had information from previous simulation models, they were able to assist private Category 1 dam owners with their EAPs and committed to perform new dam break analyses and inundation mapping until funding ran out. As a result, Cobb County was able to fund dam break modeling and inundation mapping for over 30 dams in the county without cost to the dam owners.

THE OUTCOME

The EAP rule change served as a turning point by not only significantly increasing the number of EAPs in the State of Georgia, but also for getting more dam owners to understand the risk associated with dams and the need for routine maintenance. Additionally, with the ability to enforce the EAP requirement, SDP can hold dam owners accountable to deadlines and take enforcement action, as needed.

However, the outcomes go beyond increasing the number of EAPs. More dam owners are interested in participating in tabletop exercises, showing a greater awareness of risk and understanding of the importance of dam safety. Counties have recognized their unique opportunity to share data when available, create data when needed and promote collaboration between SDP and private dam owners.

Dam owners are able to reduce their risk by leveraging the latest available information, understanding the current condition of the dam and associated hazard, and what they can do locally to reduce the risk to their community. Overall, over 70 percent of the high-risk dams in the State have completed EAPs, and submittals continue to come in. Enforcement is being taken, as needed, to encourage dam owners to develop an EAP. The SDP continues to offer assistance to dam owners and hopes to conduct more trainings and workshops to help people understand the risk associated with dams.

LINKS TO ADDITIONAL RESOURCES:

<https://epd.georgia.gov/safe-dams-program-faq-eap>

<https://www.fema.gov/dam-safety>

<https://www.fema.gov/media-library-data/1478633654726-9b1587e1cbe6898d38ba92c95dbf6f16/FEMAP-911.pdf>

<https://www2.usgs.gov/water/southatlantic/ga/flood/toccoa/>

<https://www.fema.gov/media-library/assets/documents/164575>