

January 30, 2015

Pilot States Final Report
National Outreach and Marketing Campaign
To Promote Implementation of Emergency Action Plans
For State-Regulated High-Hazard Potential Dams

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Final Report
Georgia, Kentucky, Indiana and California
National Outreach and Marketing Campaign Pilot States
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Executive Summary

Overview

The National Dam Safety Review Board (NDSRB) and others involved in dam safety continue to be concerned about the number of state-regulated High-Hazard Potential (HHP) dams in the United States that do not have Emergency Action Plans (EAPs). The aging of dams and the weather extremes of recent years underscore the imperative of the NDSRB objective to achieve 100 percent compliance for EAPs for HHP dams. Compliance currently is estimated at just over 70 percent.

The NDSRB Emergency Action Planning for Dams Workgroup has determined that one reason many HHP dams do not have EAPs is a lack of communication to and between dam owners, dam safety officials, emergency responders, and the at-risk public. As a result, the benefits and importance of EAPs are often misconceived and underappreciated. Unaware that EAPs prepare a community by identifying potential emergency conditions at a dam and specifying actions to reduce property damage and loss of life, stakeholders have traditionally bestowed minimal importance on the document.

This four-state EAP Outreach and Marketing Campaign represents a significant step in a multi-year national roll-out of a program to increase EAP awareness and implementation in states with high numbers of HHP dams that lack EAPs.

The NDSRB EAP Workgroup determined that this campaign's "base year" pilot program should target four states: Georgia, Kentucky, Indiana, and California. The Workgroup and FEMA limited the outreach campaign program to four states due to budgetary and other constraints, but left open the option of adding five more states beginning in spring 2015.

One characteristic each of the four target states share is that they do not have statutory or regulatory authority to require EAPs. They are among several states with the least authority for EAPs and the most EAPs needed. In some instances, new dam construction or extensive reconstruction of a HHP dam may trigger the need for an EAP as part of permitting of the dam. In reality, all the state Dam Safety Officials (DSOs) usually can do is ask dam owners to complete EAPs, or in some instances create the EAP for the owners. This has happened in Kentucky and to some extent in Indiana, where grant funds were used to hire independent consulting engineers to do breach analysis, inundation mapping and EAPs for dam owners.

The Action Plan

The Federal Emergency Management Agency (FEMA) contracted this campaign work in September 2013. The selected contractor had previously conducted national EAP and HHP dams research, followed by pilot studies in 2008-11 in three states to identify the most effective outreach and communications practices for improving EAP awareness and compliance. The contractor then developed the campaign plan now being implemented.

The contract specified that the outreach campaign's primary focus should be targeting public awareness of the importance of dam safety and emergency action planning, in coordination as needed with the target state DSOs. The resulting Action Plan for the campaign stressed the importance of "grassroots" communication directly with dam owners and local emergency managers, as well as providing EAP background information to watershed managers and planners, along with engaging the news media to influence public awareness of the need for more EAPs for each state's HHP dams.

The contractor had previously created the umbrella entity DamSafetyAction.org (DSA) for the earlier Pilot Studies with Missouri, North Carolina and Texas. This facilitates an outreach strategy that is flexible enough to fit each target state now and accommodate more states later. A custom logo, graphics, messaging and state-specific ancillary marketing materials were created for DSA. For this campaign, as directed by FEMA and the NDSRB EAP Workgroup, the DSA website for the three pilot study states was updated with new content regarding changes in laws, regulations, and EAP compliance rates.

New text and graphics content was researched and developed to add the four target states to the DSA website. The information gathered was reviewed by the state DSOs before posting on the website. As the campaign continued, this information and messaging was used in brochures, letters, background material for news organizations, and other communications pieces. All content was updated periodically as needed. News stories regarding dam safety and incidents were tracked at least twice a month and many were posted to each state's News & Events page.

The DSA website provides dam owners and citizens with a more comfortable and approachable point of contact for information about HHP dams and EAPs, especially if someone mistrusts state government. They can visit the website to gather information anonymously. They can call and discuss their concerns or questions about EAPs and HHP dams without anxiety about triggering a possibly costly governmental response. The DSA website also allows for a tighter focus on EAPs. State and Federal websites, along those of many organizations related to dam safety, tend to be much more inclusive of other topics. The DSA website enables aggregation of and linking to information on EAPs and HHP dams from many different government and organization sources where EAP information often is buried deep in other, sometimes unrelated, content.

EAP Results in the Target States

The Association of State Dam Safety Officials (ASDSO) reported in June 2014 that just over 70% of 11,575 state-regulated HHP dams now have EAPs. While this is significant progress from a mere 35% of the dams having an EAP in 1999, there remain approximately 3,473 state-regulated HHP dams that lack EAPs. This means hundreds of thousands of people are living, working, traveling or enjoying recreation at greater risk than their fellow citizens elsewhere who are "covered" by an EAP in the event of a dam failure.

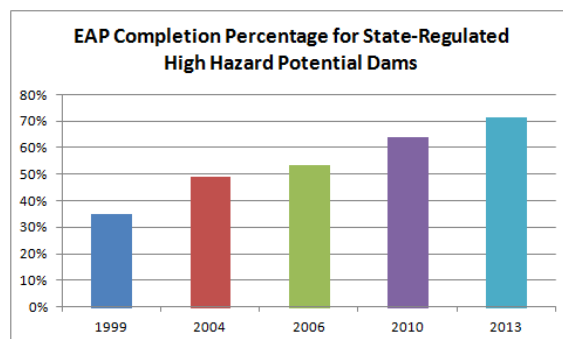


Figure 1. This graph shows the EAP completion percentage for State-regulated HHP dams.

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Several states report that less than 50% of their HHP dams have an EAP. When this outreach campaign began, Georgia, Kentucky, Indiana, and California were among the states with the lowest number of EAPs for their regulated HHP dams. Georgia had 21 EAPs and 464 HHP dams. Kentucky had 54 EAPs and 164 HHP dams. Indiana had 45 EAPs and 245 HHP dams. California had 344 EAPs and 684 HHP dams. By the end of 2014, the conclusion of the “base year” of implementing this campaign, Georgia had 30 EAPs instead of 21. Kentucky had increased from 54 to approximately 125 EAPs. Indiana had gone from 45 to 78 as 33 more EAPs were in process or completed. California EAPs may have increased from 344, but state DSOs did not provide the current total.

State	State-Regulated HHP dams	EAPs in 2013	EAPs End of 2014	Percent Increase
Georgia	464	21	30	43
Kentucky	164	54	125	132
Indiana	245	45	78	73
California	684	344	(unreported)	(unreported)

Figure 2. This chart shows the four targeted states and their increase in EAPs from 2013 to 2014.

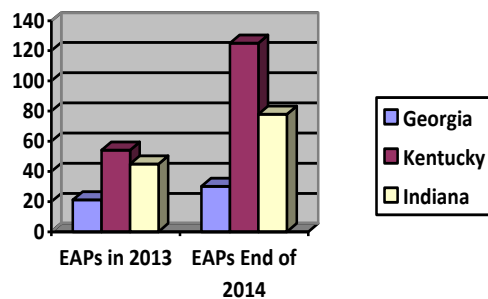


Figure 3. This graph is a reflection of Figure 2.

The outreach campaign created considerable awareness and concern that has prompted dam owners and emergency managers to begin or complete EAPs. DSA communicators are not engineers and are not qualified to create EAPs for dam owners, as is explained to some owners who phone DSA hoping for a quick solution. The outreach team helps owners understand the need for EAPs and how to get started by working with their state DSOs and local Emergency Management Directors (EMDs). This successful aspect of the campaign was demonstrated through direct conversations with dam owners and/or emergency managers in the target states who used the DSA toll-free number or email. The campaign is intended to support the EAP initiatives of the target state DSOs. The campaign’s success in stimulating EAP interest has been mentioned in comments of the DSOs, as is elaborated further in the four state-specific sections of this report.

While DSA laid the groundwork with communications and the website, some DSOs used grant funds from FEMA and their states to hire qualified independent engineers to develop breach analysis and inundation maps, and then create the EAPs for HHP dams of greatest concern. The Outreach and Marketing Campaign integrated as much as possible with these and other DSO EAP initiatives. Educating dam owners about their responsibility to have EAPs prompted many of them to take action by beginning the process. The campaign also reached local EMDs who may be new to the job and not fully aware of the importance of EAPs for HHP dams as part of their required comprehensive mitigation

planning. A DSA postcard to EMDs specifically mentioned this aspect of their planning. The campaign also has informed city and county officials, watershed managers, city planners and others who have a stake in mitigating the risks presented by HHP dams.

National EAP Outreach through Local Impact

The DamSafetyAction.org identity and website have gained equity over the past five years as a clearinghouse of information about EAPs, their regulatory basis, and implementation in the states. The outreach and marketing strategies and tactics cited in this report are the Best Practices that were found to produce results most effectively in the three original Pilot States. Even after the original Pilot Studies contracts ended, the DSA outreach team maintained the creative and communications aspects that were developed. That enabled these communications elements to be adapted, revised, layered and implemented for each of the four new target states, along with new projects that enhanced the national and state-specific efficacy of the campaign.

The DSA website landing page shows a map of the United States with the seven target states highlighted. Callout images of iconic HHP dams in each state have text that summarizes the EAP status of the state. Clicking on the state in the map or the callouts takes the visitor straight to that state's information. In essence, the national campaign is really seven localized campaigns, each designed and implemented in ways that best fit the state's dam safety program needs and activities, as well as the specific social, political, technical and fiscal opportunities and constraints that are the environment of each state dam safety program.

Content for each state details the number of EAPs needed, the laws and regulations regarding EAPs in that state, along with hazard classification standards, and EAP templates the DSOs would like used for that state. Links to the state safety program, examples of EAPs and inundation maps, history of dam failures, and typical dam failures are highlighted. Contact information for the state chief of dam safety is included. News articles on specific dam safety issues in the state have been tracked, summarized and linked. A Publications section includes downloadable PDF versions of state-specific DSA brochures that were direct mailed to dam owners and EMDs. At several locations in the DSA website there are links to dozens of websites and documents by ASDSO, FEMA, and USDA that can help dam owners and EMDs create EAPs, along with links to organizations involved in dam safety.

The DSA website is the centerpiece of the campaign, and this is where the national aspects of EAP importance are spotlighted. A new section on the website landing page was designed to create a menu of national interest content. One item highlights success stories/case studies of teams that created EAPs. These feature stories are based on interviews with the dam owners or managers, the EMDs, the private engineers and the DSOs who were part of the team. National menu promotions and links added to the landing page also help the outreach campaign better cross-link and integrate with other FEMA programs, such as the earthquake Shakeout drills and special events (the Johnstown Flood anniversary). Another new section pulls to the forefront the importance of testing the assumptions and contents of an EAP through various drills and exercises. A section was added to detail the "incident" vs. "emergency" aspect of EAPs in helping a dam owner identify problems and intervene before the former becomes the latter. This is important because the campaign's research has shown that dam owners don't always know

how to recognize an “incident” and are hesitant to call 911 even when that incident is beginning to spiral out of control. The DSA website also integrates with other FEMA programs through the Citizen Action section that includes information on flooding and flood insurance, with links to the appropriate FEMA websites.

Social media also was added to the DSA website, with a DSA Facebook page and the Spillway Blog. Results for Facebook were disappointing, but with the millions of pages devoted to celebrities, recipes, quirky videos, etc., it has been difficult for DSA to quickly find its audience. The Facebook page is linked to those of ASDSO, the American Society of Civil Engineers (ASCE), and other state and national organizations to help expand the DSA universe. The Spillway blog provides a means to react to current events and frame related messages in terms of EAPs, preparedness, and dam safety. The DSA team believes that the social media aspect could use more time to develop, particularly if more states are added to the campaign.

The campaign direct mail program provides effective contact with dam owners, EMDs, and targeted stakeholders in local government and organizations. Mailing lists specific to each state were researched and aggregated. The direct mail letters and brochures were then customized for different audiences in each state. A “public brochure” was created for local and state emergency managers and for other stakeholder lists. The campaign also included a dam owners brochure and postcards underscoring the urgency of EAPs. An emergency contacts refrigerator magnet was produced and mailed to dam owners in Georgia and Indiana. The brochures condensed the DSA website information explaining an EAP, why it is important for the reader, HHP dams, who to contact at the state dam safety program for more information, and how to take action to get EAPs done. The mailings went to 445 dam owners in Georgia, 677 in Kentucky, and 1,264 in Indiana. Mailings also went to 569 emergency managers and stakeholders in Georgia, 270 in Kentucky, 255 in Indiana, and 411 in California. News media received separate mailings of background information on HHP dams and the EAP status in each state.

An EAP exhibit for workshop support was designed for each state, though only Georgia has been using it in workshops for dam owners, engineers and stakeholders. Other activities are detailed in each state’s section of this report. Georgia made the most of the DSA website because the Safe Dams Program does not have a page of its own on the Georgia Department of Natural Resources (DNR) website. DSA literally became the Safe Dams Program web presence.

Recommendations

Based on results of the outreach campaign and comments of DSOs, these issues and recommendations for moving forward have been identified. They are further elaborated elsewhere in this report.

Build on the momentum. While the campaign contributed to an initial increase in EAPs in the target states, this impact can be expected to continue for many more months or years. Outreach and marketing programs typically build momentum slowly at first and then will grow as more people look for the information, tune into the messages, and respond. Initial audiences continue to engage, while new audiences discover the information and its importance to them. This has been illustrated by phone calls that have continued to come into the DSA toll-free line from dam owners and stakeholders in Texas, Missouri and North Carolina who obviously have visited the DSA website for the first. Those sections of the DSA website found their initial audiences in 2009 and 2010, but calls periodically continued to come in during 2011, 2012 and 2013 after the Pilot Studies program ended. The DSA website was left up in those years as a public service, which kept the state-specific EAP messages available to new visitors or even those who had retained mailings from the Pilot Studies program of 2009-2010.

Link to 2015 EAP initiatives. Each of the campaign's four states made progress in 2014 with the support of the outreach program, and DSOs have described their plans for 2015 and suggested ways the campaign could help them.

Add more states. A primary goal of the Workgroup and NDSRB is to move states with the least EAP authority and the most EAPs toward 100 percent compliance. The more states that are part of the campaign, the greater the overall impact as the dimension of the EAP issue becomes clearer to each state's emergency managers, policymakers, and the public. Comparative progress on EAPs, or the lack of it, will be more apparent to DSOs in other states. While outreach is targeting the additional states, support for EAP efforts in these four states can be tweaked and focused tighter to push more owners toward beginning EAPs. Further analysis of states to consider adding is provided in the Results and Recommendations section of this report.

Improve evaluation of DSO enthusiasm. The NDSRB Workgroup directive to the contractor was to work "as needed" with DSOs, but some clearly needed more attention than others. There were unanticipated delays and issues with DSOs in Kentucky and California. Kentucky DSOs were initially resistant to being part of the campaign even though interest had been expressed earlier. Their participation remained somewhat reluctant, leading eventually to a complaint that the outreach created more work for a limited DSO staff. In California, there was DSO resistance to the outreach campaign throughout the year. The campaign can succeed even without full participation by some DSOs, but it is most effective when they embrace it for the greater good of public safety and community preparedness.

Refine dam owner lists. The lists provided by Georgia, Indiana, and Kentucky demonstrated that while dams may be inspected regularly, the information about who owns them is not always reliable and often is not updated at the same time. Indiana provided a list of dam owners that was four times the size of the actual HHP number, and more than 200 of those addresses were not deliverable or were incorrect. Georgia and Kentucky also had numerous returns. The campaign may need to devote more resources to helping the DSOS update their lists.

Reduce dam owner confusion. Some DSOs said that several dam owners thought the campaign direct mail pieces were from the state dam safety program and that DSA was part of it. DSA staff closely looked at the wording in the letters and brochures. These have very prominent DSA branding. Letters state clearly that the DSA program is supported by the NDSRB and FEMA to assist the state dam safety program but is not part of it. This also is stated in the "About Us" page of each state's DSA website section. Nonetheless, the creative staff can take extra steps possible to further clarify this matter.

Determine when to use open records laws. Sometimes it may be necessary to use state open records laws to obtain mailing lists for owners of HHP dams. Deciding when to do that is a delicate question. Dam safety chiefs at two of the seven states asked that the campaign not directly contact dam owners with mailings. During the Texas Pilot Study that was not a difficult request to honor because the dam safety program was actively working with dam owners while implementing new authority to require EAPs. Instead the outreach program focused on stakeholders, especially local EMDs and officials. The head of California's Division of Safety of Dams (DSOD) made a similar request. This was more problematic because the state had no new EAP authority, but the request was honored. In hindsight, it became clear that a full outreach program including dam owners would be more effective. This may have required an open records request. In the future, it is recommended that the campaign seek the guidance and assistance of FEMA mitigation staff in this difficult matter.

Navigate conflicting concerns. Another dynamic that was expressed by California dam safety officials is the conflict between Department of Homeland Security (DHS) concerns about HHP dams possibly being a terrorist target, and FEMA preparedness and mitigation efforts to promote awareness of HHP dams and EAPs for them. Campaign staff need to stay informed as to how this dynamic is playing out, where the sensitivities lie, and how best to navigate an outreach campaign.

Rely more on FEMA regional staff. The campaign also should call upon the regional FEMA mitigation staff more often for insight and assistance in some aspects of the outreach campaign. This might have been more helpful in California, where there were months of delays getting the campaign rolling while waiting for responses from dam safety staff of the California Office of Emergency Services (CalOES) to campaign questions, information needs, and coordination efforts.

Encourage FEMA grants for mapping and EAPs. The FEMA grants to state dam safety programs remain a key component of progress on EAPs when inundation mapping and production of EAPs are required as part of the grants. DSOs rely on the grants, which gives FEMA leverage in setting EAP goals. The progress on EAPs in Kentucky, for example, appeared to be directly tied to requirements built into the grant for the state. Understanding how each state is using grants to produce EAPs will suggest new or better communications tactics to support those efforts.

Objectives of the 2013-15 Four-State Outreach and Marketing Campaign

The NDSRB Workgroup and FEMA identified this outreach campaign objective, which was met:

- Develop and implement an Outreach and Marketing Campaign to promote implementation of EAPs for state-regulated HHP dams, with strategies focusing on Georgia, Kentucky, Indiana and California. In a second, optional and separate phase, develop and extend the Outreach and Marketing Campaign to include Ohio, New Mexico, Rhode Island, Connecticut and Mississippi.

Overall Strategic Approach

The communications strategies that guided the Outreach and Marketing Campaign were based on findings in the May 2011 Pilot Studies Final Report and other information developed as planning and dialog progressed with the DSOs in the four states, EMDs, the NDSRB Workgroup, and stakeholders.

Strategies for grassroots communication to target public awareness of the importance of dam safety and emergency action planning also needed to include conveying the importance of EAPs to and between dam owners, dam safety officials, and emergency responders, as well as stakeholder groups comprising a significant portion of the public. The following is the strategic approach of the Action Plan that was implemented.

- Develop an umbrella EAP Outreach and Marketing Campaign that will include four state-specific, grassroots campaigns appropriate to each state's needs, priorities and legislative authorities regarding EAP implementation. The campaign avoids the appearance of being "top-down" from Washington, D.C. but instead has more of a "home grown" aspect. Continue the DSA branding as the "umbrella" concept, which benefits from being an independent, non-governmental identity. This identity has been successful in terms of acceptance, flexibility, memory, look, and functionality. The distinct DSA logo and name have caught on with the dam safety program staffs, dam owners, EMDs, ASDSO and others crucial to the EAP program. DSA name recognition brings value to the national outreach campaign. This identity continues to be:
 - Flexible enough to accommodate outreach to additional states,
 - Conducive to more creative and operational freedom and responsiveness,
 - Tailored to a "grassroots" and state-specific approach,
 - Focused specifically on dam safety and EAPs,
 - Non-commercial in appearance,
 - Not overtly affiliated with any particular government agency, and yet "official" enough to have credibility.
- Harmonize the outreach campaign with the activities and objectives of the DSOs to the greatest extent possible. Deploy and assess meaningful communications projects, thus lending support to their EAP efforts. Supplement and help improve DSO EAP initiatives.
- Target stakeholder and public sector groups to create increased awareness of the importance of dam safety and emergency action planning. Help the public understand the state dam safety program and where to call if they need to report a problem with a dam.
- Give state government and emergency management VIPs a heads-up to inform them about the program as the new state sections of the DSA website are introduced. VIP letters are positive in

tonality so as not to call into question the work of DSOs in obtaining EAPs. The DSOs in the four states helped to determine the best way to handle the notification (direct from DSA, direct from the leading DSO, email instead of letter).

- Based on discussions with DSOs in each state, develop messaging and materials that help them address the issues and obstacles they face in trying to coax dam owners to complete EAPs. Messaging stresses the liability and important public safety interests of dam owners in developing EAPs. Messaging also highlights the benefit dams provide (drinking water, recreation, flood control, hydropower) as well as the risks.
- Create multiple direct mailings to dam owners and EMDs using text and graphics with considerable impact, but that depict typical state problems with dams. Federal dams that are not state-regulated and that already have EAPs are not depicted except possibly on the DSA landing page as the state's iconic, immediately recognizable dam. If used in literature, identify the dam, its regulator, and its EAP status.
- In each state's educational messages to HHP dam owners, local EMDs, and other stakeholders about EAPs, emphasize the ways EAPs are **in their own best interest** and their community's best interests. Messaging to EMDs makes the case for why EAPs on dams in their jurisdictions are important to them, their ability to do their job, and their community's preparedness.
- Stress to dam owners and EMDs the importance of updating and exercising existing EAPs periodically so they do not become less effective. Develop news features – or portions of features and case studies – stressing the positive impact and “lessons learned” through EAP exercises.
- Use communications materials to help bridge the gaps between bureaucratic “silos” or stovepipes within state government and between state and federal agencies.
- Build into the tactical elements of the program formal mechanisms, methods and best practices for measuring the effectiveness of communications strategies and tools. These feedback loops and best practices will be monitored and reported monthly. They include:
 - Logging behavioral responses (phone calls, requests for additional copies of brochures),
 - Gathering DSA website metrics showing traffic patterns into and through the site,
 - Tracking the correlation of peaks in website traffic with other campaign elements such as mailings and news articles,
 - Tracking news media calls and publication/broadcast of DSA news features,
 - Monitoring social media interactions such as blog posts and Facebook,
 - Documenting the number of new EAPs and any EAPs in process as the outreach campaign winds down.
- Create public support for EAPs by generating urban and rural publicity about the public safety importance of EAPs. Include messaging that addresses the notification difficulties created for EMDs by the changeover from land phone lines to cell phones.
- Use the DSA website to expand cross-links with stakeholders and public action organizations interested in EAPs.

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- Use public relations techniques such as news backgrounders, fact sheets, and news feature “pitches” targeting media as part of building public awareness of importance of EAPs. Focus on environmental and science reporters at major daily newspapers.
- Provide fast delivery of materials and projects, and use the flexibility of the outreach campaign to cut through bureaucratic obstacles that frustrate DSOs, such as slow state budgetary procedures, lack of funds for outreach, layers of approvals within state government, and political interference. Make fast delivery of needed support a hallmark of the outreach campaign even as more states are added.
- Remain alert to new ideas and opportunities not anticipated early in the program.
- Leverage the interest and credibility of secondary stakeholders to create more public awareness of the need for EAPs. For example, spotlight the most recent findings of the American Society of Civil Engineers (ASCE) Report Card for each of the four target states, and where possible enlist state ASCE leaders to help promote the need for EAP authority.
- Ensure the outreach campaign is aligned with other FEMA mitigation programs in terms of language and objectives. As needed tap into the knowledge and contacts of FEMA regional dam safety and mitigation staff to further the effectiveness of the outreach campaign in their states.
- Ensure accessibility of the DSA website and other outreach campaign components, where applicable, through compliance with the accessibility standards issued by the Architectural and Transportation Barriers Compliance Board at 36 CFR 1194 and <http://www.section508.gov>.

The Tasks that Drove the Outreach Campaign

The contract for the Outreach and Marketing Campaign for the base year (Georgia, Kentucky, Indiana, and California) specified performing the following tasks, which are exemplified in the Action Plan Tactical Elements delineated later in this Final Report.

Task 1: Coordinate the planning and execution of the EAP Outreach and Marketing Campaign.

The contractor will coordinate with FEMA and the Emergency Action Planning for Dams Workgroup to (1) review existing data on the dams that will be addressed by the project and the findings from the May 2011 Report; (2) discuss barriers to the development, implementation, and exercise of EAPs at the state level; (3) identify stakeholders involved in the EAP development, implementation, and exercise process; (4) discuss potential best practices and strategies for promoting EAPs at the state level; (5) identify audiences for the marketing and outreach campaign; and (6) ensure that the marketing campaign is aligned with other FEMA outreach initiatives. Work under this task will include an analysis of the current state of EAP implementation and exercise by the states. For those states that do not require EAPs or for those states with a low percentage of dam owners submitting EAPs, the contractor will identify general and state-specific barriers, such as legislative, regulatory, financial, lack of public awareness, and state or local resistance.

Task 2: Develop a draft campaign work plan. The contractor will develop a draft work plan that will serve as the basis for the campaign. The Action Plan will (1) incorporate findings and recommendations from Task 1; (2) be designed for pilot testing at least the first four states identified above under the Objective for this Statement of Work; the contractor will coordinate, as necessary, with the appropriate states to implement the pilot test program; and (3) outline a formal mechanism for collecting feedback during pilot testing. The Workgroup will provide comments on the draft work plan. The contractor will submit, for FEMA review and approval, a revised work plan incorporating the comments.

Task 3: Implement the marketing and outreach campaign. The contractor will implement the Outreach and Marketing Campaign with the pilot states identified in Task 2. It is anticipated that the pilot marketing and outreach campaign will be conducted over a 6-month period.

Task 4: Draft report on the results of the marketing and outreach campaign with the pilot states.

The contractor will prepare a draft report on the results of the Outreach and Marketing Campaign with the pilot states. The draft report will summarize activities conducted during the campaign; success and/or failure of the activities; results achieved; and recommendations for implementation of the marketing and outreach campaign at the national level. The Workgroup will provide comments on the draft report. The contractor will submit a revised Final Report on the Outreach and Marketing Campaign incorporating the comments.

Task 5: Update the Dam Safety Action website. Update the statistics, links and any new information on the Dam Safety Action website (<http://www.damsafetyaction.org>) for Missouri, North Carolina, and Texas (three states from the previous pilot study); and update the statistics, links and any new information on the Dam Safety Action website for the states included in this pilot study.

Task 6: Contract Status Reporting. Provide monthly Contract Status Reports to FEMA on the status of work and any problems encountered. Provide as needed a brief status update to the Workgroup during their scheduled monthly meetings, via teleconference or webinar. Provide a brief status update on the progress on the pilot studies to the NDSRB during their scheduled quarterly meetings via teleconference or webinar.

Action Plan Tactical Implementation Elements Common to All Four States

In implementing the six Tasks, this campaign included many tactical elements that were common to the outreach for all four states, although each tactic still was customized and written to reflect information and content relevant to the individual state. Based on discussions and correspondence during the planning phase of the campaign, the DSO chiefs in the four states seemed comfortable with these elements. California state emergency management officials, however, later were not responsive to offers to provide some of these elements. The tactical projects included:

- **Research for Action Plan development.** The outreach team reviewed the work product and reports on the three-state Pilot Studies program and the national EAP outreach plan that resulted. In discussions with the DSOs in each of the four states, barriers to EAP development, implementation and exercising of EAPs were discussed, along with their ideas for EAP promotion and best practices, and audiences for the campaign. Discussions and online research helped identify state-specific stakeholders important to EAP development or that benefit from EAPs. The campaign also developed ideas for ways to use the DSA website to cross-promote and align with other FEMA outreach initiatives such as FloodSmart, strengthening community resilience, preparedness, and earthquake drills, as well as special events such as National Dam Safety Awareness Day.
- **Create the Action Plan.** The Action Plan for the campaign was developed based on the research, reviewed by the EAP Workgroup, and revised to incorporate the Workgroup suggestions and comments. Then it was finalized. The Action Plan was tailored to fit the needs and opportunities of each of the four states, to facilitate coordination with the DSOs, to focus on primary audiences and stakeholders, to have flexibility to accommodate unforeseen opportunities and obstacles, and to optimize the funding available. Feedback loops in the plan included the DSA toll-free phone number, an email address for questions and comments, monthly monitoring of news media, dialog with DSOs, a post office box so returned mail and correspondence can be captured, and DSA website analytics to track visitors and movement among the sections and pages.
- **Refresh the DSA website.** The DSA website had been kept online by the contractor as a public service and at no cost to the Government during the more than two years that elapsed between the end of the Pilot Studies and the launch of this outreach campaign. Occasional contacts with dam owners in the three states and the DSOs continued during the interval. One of the first tasks in implementing the Action Plan was to research and refresh the information in the DSA web pages of those three states. Status and statistics on EAPs for each state were determined, and summaries of laws and regulations were updated as well. News items over the previous year related to dam safety and EAPs were gathered for each of three states and posted on their respective News & Events section. Missouri had moved forward with more EAPs, while the Texas Legislature had rolled back EAP requirements for hundreds of HHP dams in rural areas. North Carolina had made little progress on EAPs, and the lead engineer for EAPs had left the NC Department of Environment and Natural Resources (DENR).
- **Add the four target states to the DSA website.** With the updates for Missouri, Texas and North Carolina completed, the campaign team began final research, discussions with DSOs, extensive creative and programming work to add website sections for Georgia, Kentucky, Indiana and California. The DSA landing page was substantially redesigned to add each state's EAP data snapshot and iconic dam image, and to activate a dot on the national map. This offered two routes for click-through to the selected state's content inside the website. Content for the state-specific

pages reflected information from DSOs as well as state websites, laws and regulations, and independent sources such as the ASCE report cards for state infrastructure. Information posted on the DSA website is thus considered to be current, relevant, reliable and helpful to anyone interested in EAPs within the target states. Images that are correct for the state (recognizable and typical of state-regulated dams in the state) were researched and selected to lend credibility to the program and help anchor its local flavor. The images, some of which also were used in the state-specific brochures and EAP exhibits, help emphasize the “grassroots” focus of the program. State-specific photography was augmented when necessary by royalty-free stock photos. Links and content also were updated for recent FEMA/DHS documents, such as the new FEMA 64 and inundation map guidelines. ASDSO links and content were updated. A series of images of typical state-regulated dams of various size and purpose were gathered and programmed to rotate every few seconds to make the page more dynamic and also to illustrate the kind of dams that need EAPs. The landing page also was given a new menu column in which various significant information topics and event promotions can be spotlighted. These “teasers” were linked to more detailed content inside the website as well as links to external follow-up information. Topics included success stories/case studies of teams of stakeholders who created EAPs, with each person’s perspective on the process and benefits of having EAPs. Also, a section urging participation in any of the Great Shakeout drills; information about the new FEMA inundation mapping brochure and Geospatial Dam Break software; a National Dam Safety Awareness Day promotion; information about the difference between a dam incident and an emergency situation; and a section promoting drills and exercises for EAPs. As an added service to FEMA, the DSA website also is hosting download capability for the memory-intensive Geospatial Dam Break software to supplement FEMA’s DVD ordering service. The section on typical dam “incidents” such as seepage, slides, faulty gates and spillway problems supports all state dam safety programs and highlights why EAPs help dam owners and emergency managers identify and respond to those incident levels. It also was in response to discussions with Indiana’s dam safety chief. In that state EAPs are called Incident and Emergency Action Plans (IEAPs), and that is the term used on the Indiana IEAP template and website. IEAP is used through all outreach campaign communications to Indiana audiences. Highlighting and explaining this difference was intended to dispel possible confusion since EAP is the term elsewhere in the DSA program. Prior to the state websites going “live” online, each state’s DSO chief was asked to provide review for accuracy, along with any suggestions or comments. A few changes were suggested by DSOs in Georgia, Kentucky and Indiana. There was a substantial revision to the California section in response to DSOD objections to some of the information about dam safety laws, regulations, and hazard classification procedures being reproduced on the DSA website.

- **Ensure accessibility.** When the DSA website was revised and expanded specialized software was used to assure compliance with the accessibility standards issued by the Architectural and Transportation Barriers Compliance Board at 36 CFR 1194 and <http://www.section508.gov>. This was repeated in March 2013 after additional new content was added to the website.
- **Letters for VIPs.** After the DSA website was redesigned and programmed to include each of the four new states, letters were sent to VIPs (key state officials, emergency managers, and leaders of stakeholder groups) informing them of the purpose of the outreach campaign and how it will support EAP development. The letters noted what makes a dam HHP and the importance of EAPs for them. The DSOs were offered the opportunity to send these letters themselves if they preferred, or even use email. Where there were bureaucratic delays for approvals, DSA sent the letters out to keep the campaign on schedule.

- **Add social media to the DSA website.** During the earlier three-state Pilot Studies, social media was not included because the studies were short term and it was not known whether the national campaign would be launched. With that roll-out now underway and a longer term for the campaign, testing social media platforms seemed a logical extension of the campaign's tactical elements. A Facebook community was created as a possible way to attract dam owners, emergency managers, stakeholders, and DSOs to engage. Another tool to stimulate conversation and contacts across and within state lines was a blog on topics related to EAPs, dam incidents, regulatory and legislative issues, barriers to EAPs, best procedures for completing various aspects of EAPs, etc. A logo and concept for the Spillway Blog were created. Postings by the campaign team were written to pass along news and information of possible interest, leverage current events to illustrate the importance of EAPs, and perhaps stimulate responses, ideas, and helpful information these audiences could share.
- **Develop and work stakeholder lists.** Comprehensive mailing and telephone lists for primary and secondary stakeholders were researched and developed for each state. One set of lists for each of the four states focused on emergency managers at the state and local level, watershed managers, and other persons and organizations with possible influence regarding EAPs and the state's authority for them. Also, organizations with members who might want to learn more about EAPs and the benefit for their safety. Organization newsletters and websites were researched to determine whether they might accept news items about EAPs and links to the DSA website. The second category of lists was dam owners. The DSOs were asked to provide names and addresses for HHP dam owners. California declined to provide a list. This is discussed in the Issues and Recommendations section of this report. Georgia provided 572 names, Kentucky provided 677 names, and Indiana provided 1,287 names. Each of these lists exceeded the number of state-regulated HHP dams, and each provided no way to segment the actual HHP dams. In the case of Kentucky, DSOs there requested that the campaign include Significant Hazard-Potential (SHP) dams, which helps explain the size of the list they provided. In general, the excess number of dam owners meant extra expense for the direct mail program. On the plus side, it also meant that many non-HHP dam owners also would be made aware of the importance of EAPs. Some of their dams eventually will become HHP dams because of downstream development. Recognizing the non-HHP audience, the campaign used wording in the cover letters of the direct mail program to address "dam owners" in Kentucky and Indiana, not just "HHP dam owners" as in the Georgia letters. Another problem with each of the dam owner lists is that they are outdated and unreliable to a considerable extent. Some even listed rural route box numbers, which the U.S. Postal Service phased out beginning more than a decade ago. The campaign team was able to use search engines to correct some of the returned mail, but the volume (more than 200 just from Indiana) soon became too time-consuming. This problem also is discussed in the Issues and Recommendations section of this report.
- **Implement a direct mail program.** The lists were used for multi-part direct mail campaigns for dam owners, local EMDs, and leaders of secondary stakeholder organizations. There were four to five mailings each to EMDs/stakeholders and to dam owners. As detailed elsewhere, these direct mail items consisted of an introductory VIP letter explaining DSA and the campaign, a dam owner brochure or a Public Brochure, an inundation mapping brochure, a postcard, and an emergency contact magnet. Mailings were timed three to four weeks apart to spread out the impact. Letters noted the importance of EAPs and provided suggestions for following up to get started on EAPs. The letters also contained reminders that although creating an EAP is the first step, updating and exercising an EAP are important because these are "living" documents. Any events in the state that would underscore EAP importance were noted. Along with the letters, most mailings included a

brochure or an emergency contacts refrigerator magnet. The mailings went to 445 dam owners in Georgia, 677 in Kentucky, and 1,264 in Indiana. Also, 569 emergency managers and stakeholders in Georgia, 270 in Kentucky, 255 in Indiana, and 411 in California. News media received separate mailings of background information on HHP dams and the EAP status in each state.

- **Create user-friendly, state-specific targeted brochures.** Two brochures, one for dam owners and one (the “Public Brochure”) for EMDs and independent stakeholder organizations were created in state-specific editions. There were four versions of the Public Brochure. There were three versions of the Dam Owners Brochure, since California DSOs did not want the outreach campaign to directly contact the state’s HHP dam owners. The Dam Owners Brochure details what an EAP is, what it contains, why it is important and in the best interests of dam owners (liability, community responsibility), and where to learn more about an EAP and creating one. The Public Brochure contains some of the same information, but is written for those who live, work, enjoy recreation in or travel through an inundation zone. The Public Brochure tells how to identify HHP dams of concern, whether those dams have EAPs, and how to learn more about dams and EAPs. The content and images of the Public Brochure educate the public, but also inform EMDs and first responders. While suitable for distribution at meetings, workshops, fairs and other public meetings, the Public Brochure provides information that would help emergency managers understand the classification of HHP dams, the importance and content of EAPs, who may be at risk from a HHP dam, how to find out where HHP dams are located, and who owns them. The brochure informs citizens of their role in making sure there is a comprehensive EAP for any HHP dam inundation zone. Both types of brochures fold down to fit in a #10 envelope and to fit literature racks at shows/meetings or countertops. They have been used in the outreach campaign direct mail program and also have been provided for download on each state’s DSA website “Publications” page. Other publications made available for download include FEMA’s “Living with Dams: Know Your Risks” and “Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures,” the ASCE’s “So, You Live Behind a Levee,” and DSA’s inundation mapping brochure.
- **Create an updated and generic Inundation Mapping Brochure.** The campaign team researched, wrote and designed a generic inundation mapping brochure, a variation of the larger format brochure originally created to explain the Missouri inundation mapping program. The “Inundation Maps Make Emergency Action Plans More Effective” brochure underscores the importance of knowing the extent of inundation zones below HHP dams, and explains how the maps are created. This brochure did not need to be state-specific. This is an 11 x 17 inches sheet folded down to fit a #10 envelope for direct mail and literature racks. The brochure was created so that dam owners and the emergency management community could better understand the detail, purpose, and importance of the inundation maps, which can be the centerpiece of a comprehensive EAP. The brochure shows a set of three maps created for one lake, plus one in a series of maps the USDA Natural Resources Conservation Service (NRCS) created for another lake. The brochure was developed in close coordination with the Missouri Department of Natural Resources (DNR) to assure technical accuracy. The brochure notes that maps are essential EAP components even if the maps are not required by statute or regulation.
- **Create postcards for dam owners and EMDs.** These oversize cards (6 by 9 inches) feature strong graphics of a dam failure along with a very direct message. For dam owners, it asks “If Your Dam Fails Do You Have a Plan? Know What You Need to Do?” The back of the card has a photo of a breach and another photo of a severe sinkhole on the face of a dam, with the headline: “Don’t Put Off Having a Plan Until There is an Emergency.” The EMD cards ask a similar question (“If a Dam

Fails Do You Have a Plan?”). It notes the importance of identifying HHP dams in their jurisdictions and having EAPs for them in their mitigation plans. The “call to action” is to get in touch with the state dam safety office for help preparing an EAP before it is too late.

- **Create emergency contact refrigerator magnets.** The final piece in the direct mail phase of the campaign was an oversized (3.5 by 6 inches) refrigerator magnet for dam owners. These magnets, about the size of a smart phone, spotlight emergency contact information dam owners need to keep nearby. The state-specific magnets feature the image of a severe sinkhole eroding a dam face and reaching toward the crest of the dam. The headline over the image is: “Got a Problem with Your Dam?” The secondary headline is: Do you have a slide, sinkhole, overtopping or other rapidly developing emergency in progress?” On the Georgia version of the magnet, text in large letters says: Call 911. The Indiana version refers to rapidly developing “incident or emergency” and includes a space for the owner to write in the phone number of the dam’s private engineer as the first person to notify, then 911. Secondary text provides the state dam safety program daytime and after-hours emergency phone numbers, along with other information. Dam owners are reluctant to call 911, often trying in vain to deal with a dam emergency themselves. They may not have their EAP at hand. This magnet prompts them to take the right action and who to notify. The cover letter mailed with the magnet emphasizes how to proceed in an emergency and the importance of having an EAP, exercising it, and updating it. Georgia and Indiana DSOs were provided the opportunity to customize the magnets to better fit their state’s guidelines and procedures. DSOs in Kentucky declined the magnet mailing.
- **Respond to inquiries.** An important feedback loop for managing and executing the campaign entails being responsive to anyone with an EAP or dam safety question, complaint or issue to discuss. Particularly after each mailing there were several phone calls to the toll-free outreach campaign phone line from dam owners, emergency managers or other stakeholders who had questions or wanted to talk about starting on EAPs. Sometimes the calls were from persons worried about a dam or noticing a leak. Several were from dam owners wanting to discuss the hazard classification of their dam. Some wanted to start work on their EAP, including a woman who just took over as dam manager at a Girl Scouts camp. Two calls were from North Carolina dam owners needing to identify engineers qualified in breach analysis and inundation mapping. Other callers were former dam owners who wanted to pass along contact information for the new owner. One such dam had been sold 20 years ago, which is an indication of how outdated some state dam owner lists can become. A person with the Nature Conservancy of Texas was interested in latitude-longitude information on HHP dams. Another dam owner just wanted to vent about his legal battle with Indiana over DNR ordering costly repairs and improvements. A Kentucky woman said her dam has been around 100 years, and she doesn’t need any brochures or letters about the safety of it. Calls from Georgia and Indiana included municipal water utility managers who received the DSA brochures and thought they should start EAPs for their reservoirs. An elderly woman with a North Carolina dam said she would like to do an EAP, but she is using WordPerfect and it won’t open the North Carolina EAP template. All calls are sincere, and almost all are courteous. The outreach campaign person taking the calls always offers a friendly ear, help where possible, and usually a referral to the state DSOs or others as appropriate. The campaign team relayed to DSOs any important information in these calls. The mailings also generate numerous website hits, which often lead to the phone calls.
- **Help DSOs update dam owner lists.** Between the returned undeliverable mail and some of the phone calls the outreach campaign has a few hundred dam owner list corrections or errors to pass along to the DSOs so they can update their records. The DSOs generally do not have support staff to

go through each return and try to search for new addresses. The campaign staff's hope is that by knowing which addresses are no longer valid, the next safety inspections for those dams will include an attempt to update ownership files.

- **Create EAP exhibits.** The campaign creative team researched, designed and wrote text for EAP tabletop displays for each state illustrating the importance and content of EAPs, along with contact information to start an EAP. Each state was provided a PDF of what the display would look like. The campaign offered to produce the panels and supply the hardware for use in workshops and meetings. Only Georgia accepted the display offer. The 106" x 58" display collapses into a single carrying case, along with graphics, and is shipped free of charge to the state DSOs. Georgia's Safe Dams Program used the display at an EAP workshop for dam owners and engineers and will use the display again at another meeting in the next few months.
- **Promote and support EAP workshops.** DSOs were urged to conduct EAP workshops with dam owners and EMDs. The outreach campaign offered the exhibits for these workshops, but also offered to provide support with invitations, handout literature, local news media notices, and to attend the meetings to learn dam owner concerns, questions and other issues that may become evident. Georgia was the only state planning a workshop during the campaign, though some of the other states have meetings later in 2015. The Georgia workshop was considered to be very successful and is expected to result in more EAPs being completed. The DSO chief said the exhibit and handout literature were important contributors to that success and will be used again.
- **Write and distribute EAP news "backgrounders" and suggested feature stories.** Media lists were custom aggregated for each state. Public relations outreach aspects of the campaign included writing and distributing to these lists EAP information "backgrounders" and suggested news features on dam safety/EAPs. Story "pitch" letters were sent to news editors, political and environment beat reporters at the state's major daily newspapers as well as smaller newspapers near HHP dams. Information highlighted included the number of HHP dams in the state, the number of EAPs needed, the types of stakeholders who should be concerned about EAPs, the role of EAPs in mitigation planning, and the deteriorating condition of many dams. Sensitivity to political issues was exercised so there was not a backlash that would be counter-productive to EAP initiatives or needed legislative changes in dam safety regulations. Several editors followed through with news stories about the EAP situation in their state. Among them were the WDRB-TV in Louisville, Kentucky, and the Evansville, Indiana Courier & Press, which also covers Henderson, Kentucky. The Louisville online and broadcast coverage was particularly thorough. In fact, it was so on target and enterprising in pointing out the state's shortcomings in getting EAPs for HHP dams that some state officials considered it "bad press" when they only seem to want "good press." A reporter for the National Journal requested contact information for a multi-part series on infrastructure issues that will include a piece on dams. He was particularly interested in Texas and was provided contact and background information that may be helpful. A reporter for WISH-TV in Indianapolis called for information and contacts for a report on the EAP needs and dam safety inspections in Indiana.
- **Track media coverage.** Publication and broadcast of DSA news releases and feature stories, along with other news about dam safety, was monitored using VOCUS media software. Pertinent news items were posted on the appropriate state's DSA website news page. Reprints of features also were acquired and made available to DSOs and EMDs as appropriate.

- **Implement public relations initiatives with stakeholder organizations.** This activity included providing EAP information for possible use in newsletters of professional and service organizations, real estate brokers and developers, and state lake management societies. The news program targeted business press and special interest publications that are read by stakeholders. The number and quantity of these efforts was limited and highly targeted because of budget and time constraints of the campaign.
- **Leverage opportunities.** The campaign staff watched for events that could be used for commentary in the Spillway blog, Facebook or other elements of the campaign. Some of these included the Napa earthquake in California, the publication of “The Resilience Dividend” by Judith Rodin, a research publication by Northeastern University about how droughts weaken concrete dams, the Great Shakeout earthquake drills, discovery of a “ghost” dam (unknown to DSOs) in New Mexico, National Dam Safety Awareness Day events, and announcement of a dam rehabilitation program by USDA. DSOs also provided suggestions for new tactics to pursue or implement as events unfolded.
- **Gather findings and metrics.** Each of the cited strategies and tactics was applied using best practices for outreach and marketing, and each produced varying levels of feedback on their success. Phone calls to the DSA website toll-free line are fielded by the outreach campaign team and tend to peak in response to direct mail and news about problems with dams. Some phone calls are clearly the result of DSA’s high position in search engine inquiries. Other phone calls and emails are in response to direct mail. Requests from the state dam safety officials and emergency managers for additional brochures are an indicator of their successful deployment. State officials are asked to report on the success of workshops and campaign activities. Media monitoring tracks news release pick-up. All these and other feedback loops have been monitored during the implementation of the campaign.
- **Write monthly status reports.** Monthly reports were provided to FEMA and the NDSRB EAP Workgroup to summarize activities, project status, observations, issues and suggestions that pertain to the previous month and the upcoming month(s) of the campaign. These reports are important because they have kept FEMA contract managers and the Workgroup aware of all aspects of the program execution. The reports also helped the contractor focus on the most salient activities during the month and look ahead to future developments. The reports allowed the communication of opportunities and changes that may not have been foreseen in the original plan but that could strengthen the campaign. Reports also were a way to convey to FEMA the issues and obstacles that were important to DSOs and EMDs in their EAP work. There also were occasional teleconferences to provide updates to the Workgroup and FEMA contract managers. These monthly reports began in October 2013 and continued until the last month of the contract.
- **Write the Final Report.** This report on the results of the campaign summarizes activities conducting during the campaign, the success and/or failure of the specific activities, the overall results achieved, issues and problems identified, and recommendations for improving the campaign if it is continued and expanded.

Action Plan State-Specific Tactical Elements, Variations and Considerations

Georgia

DSOs in the Safe Dams Program can encourage HHP dam owners to develop EAPs, but few have done so. The Safe Dams Program staff does not know exactly how many EAPs exist for the state's 167 HHP NRCS watershed dams. Many of the state's unregulated coal ash dams are HHP, as documented in recent years by the U.S. Environmental Protection Agency (EPA) and also in the "State of Failure" report by Earthjustice and the Appalachian Mountain Advocates.

EAP Obstacles

Tom Woosley, manager of the Georgia Safe Dams Program within the DNR, noted these obstacles to EAP compliance as reasons why only about 30 EAPs have been completed on 474 HHP dams:

- The lack of EAP authority is primary
- Several DSO staff reductions over the past four years, including the latest decrease from six to five
- No online access to EAP information because the Safe Dams Program has no web page (no other state in this outreach campaign is this "invisible" in the state's online presence)
- The large number of dam owners and county emergency managers for a small staff to work with (Georgia has 159 counties)
- The lack of resources at the rural county level to help with EAPs
- No standardized Georgia EAP template (inquiries are referred to NRCS, ASDSO, and/or FEMA web information on EAPs and templates)
- Legislative indifference to updating the statutes to include EAP authority
- Opposition by some politically well-connected individuals and organizations
- Dam owners who do not see a need for an EAP
- With funds and staff at a minimum, the Safe Dams Program focus has been on what is statutorily required, such as inspections, basic maintenance and repairs. A workshop for dam owners and engineers was held in 2014 and another is planned for 2015.
- Mapping of inundation areas is geared to classification of dams, not inclusion of a complete inundation zone for an EAP (when the first house below a dam is identified, it triggers the HHP classification and the mapping stops there)

Primary stakeholders

- HHP dam owners, managers, watershed dam sponsors, Georgia Lakes Society officials and members
- County emergency managers
- County Commissioners
- Mayors, city managers, municipal land use planners/administrators, and municipal watershed managers
- Georgia Emergency Management Agency/Homeland Security administrators and Area Coordinators
- Georgia print and broadcast news media

Secondary stakeholders included in campaign

- DNR Environmental Protection Division and Watershed Protection Branch administrators
- Georgia Association of Conservation District Supervisors
- Georgia Soil & Water Conservation Commission
- Georgia Water Coalition (207 conservation and environmental organizations, hunting and fishing groups, businesses and faith-based organizations representing more than 300,000 Georgians)

- NRCS State Conservationist, Chief Engineer, watershed field engineers, and Resource Conservation and Development Councils (RC&D)
- Georgia Scouting organizations leadership
- Georgia real estate brokers, developers, and property managers

Urgent/Additional Outreach Elements for Georgia

- **Prioritize Georgia for updating the DSA website.** The Safe Dams Program does not have its own page in the state DNR website. There is only contact information for Tom Woosley's office. DSA helped fill this void through a comprehensive section within the DSA website.
- **Workshop support in Georgia.** The Safe Dams Program conducted a dam safety workshop for dam owners in 2010, two in 2011, and two in 2013. The August 27, 2013 Dam Safety Workshop was presented by ASDSO and included a section on developing and implementing EAPs. These workshops caused a handful of dam owners to start working on EAPs. The campaign supported a workshop for dam owners and engineers in 2014 with a tabletop exhibit and handout literature on EAPs. These materials also will be used at a workshop planned for 2015. Tom Woosley also expects to conduct a few "what we do" presentations on a regional basis and at the Association of County Governments of Georgia conference. These would include EAPs. The regional conferences by the Safe Dams Program would include county commissioners, EMDs and city planners to educate them about HHP dams, the need for EAPs, and the potential impact of dam failure on downstream development. Support for these workshops can be continued if the campaign is given another year. Consideration is being given to using FEMA grant funds to hire an engineering firm that does breach analysis to join the Safe Dams Program in workshops where dam owners would be educated on EAPs in the morning and work with the firm in the afternoon, with the objective of having a largely completed EAP by day's end. This has the potential to become a Best Practice for other states to consider and for the DSA website and social media to highlight.
- **Focus on specific HHP dams.** Outreach helped the Safe Dams Program by focusing portions of the DSA Georgia website on several HHP dams that have been identified as highest in hazard, such as the Hickory Log Reservoir dam, which is 185 feet tall and holds 6 billion gallons of water directly above downtown Canton (population 23,791). The Lake Petit Dam is 126 feet tall and normally holds 4,600 acre-feet of water above the community of Big Canoe, which is an hour north of Atlanta.
- **Develop a case study of how counties can achieve EAP compliance.** Several attempts were made to develop a success story/case study of the EAP program in Gwinnett County in northeast suburban Atlanta. County officials were not responsive. Campaign public relations writers hope to continue to try to develop this case study because the county has taken a serious and productive approach to obtaining EAPs for its many dams. Gwinnett could provide an example of how to get EAPs done in other counties and municipalities.

Georgia DSO comments on the campaign.

One of the best benefits I see from DamSafetyAction.org is demonstrated with Mr. Lee. [George Lee, with Newnan Utilities, who had received DSA mailings, had visited the DSA website, called the DSA toll-free line with questions about EAPs, and was referred to Tom Woosley at the Safe Dams Program.] It gave him a great resource to learn about EAPs and answered many of his questions and thus reduced my workload some. Granted, he still needed to talk with me, however that was much less than if the website did not exist. There are other cases of folks going

to the site and learning about EAPs and at least indicating to us a desire to develop an EAP. We have not seen a direct result yet.

It is very difficult to say what you could do to help us right now. We are within the next month or two going to hold a stakeholder meeting to discuss some potential changes to our rules (really clarifications or enhancements). One area is to enhance the language to be clear that we require EAPs for a project to get permitted. I have no idea how those meetings will go and our path as a result. I do plan on using the (DSA provided) EAP display at this meeting. There might be an opportunity for another mail-out about EAPs depending again on the results of the stakeholder meeting.

I think a great 'low-hanging fruit' for EAPs is to target counties that have done GIS mapping and dambreak studies, and use that information to easily develop an EAP. That is how we used some of our grant money this year and plan on something similar next year.

- Dallon Thomas (Tom) Woosley, P.E.
Program Manager, Georgia Safe Dams Program

Kentucky

Dam inspections and enforcement are the responsibility of the Division of Water (DOW) within the Kentucky Department for Environmental Protection (DEP). DSOs can encourage HHP dam owners to develop EAPs, but few had done so prior to the campaign. The direct mail program resulted in numerous calls to the DOW, some from HHP dam owners and some from owners of dams with lower hazard categories. DSOs even complained about the volume of calls received, but this is an indication that the program raised awareness among dam owners, emergency managers, and stakeholders. The Kentucky outreach campaign activity came ahead of a period in late summer when the Kentucky DSOs launched a major effort to create EAPs for HHP dam owners, raising the compliance rate from 32 percent to 77 percent (approximately 54 to 125 EAPs) of the state's 164 state-regulated HHP dams. This increase enabled the DOW to meet the objectives of a FEMA dam safety grant. DSOs believe there may be more EAPs for HHP dams owned by utility companies and USDA NRCS, but they have not received copies of them.

The state does not have a formal educational program to teach private dam owners about their responsibilities. Dam owners are urged to use NRCS EAP templates. The DSOs have not produced their own template. With regard to inundation mapping, DSOs recommend that dam owners use simplified maps (about 100 have been completed). The state plans to use grant funds to hire outside engineers to help with modeling and work with dam owners on EAPs for those dams. It is expected to be a slow process. The DSO staff of five spends most of its time handling floodplain violations as well as issues and inspections for dams.

The campaign direct mail program included local EMDs and floodplain managers in response to DSO comments that Kentucky DSOs would like to work closer with local communities and county officials on EAPs for dams in their jurisdictions. Many of these impoundments are HHP and pose a threat to parts of communities. They also are water supply dams, and there is additional liability when a dam failure cuts off water supplies to homes, businesses and critical care facilities. Many of these dams have problems. Communities also are building more and bigger retention ponds to hold storm water. The

direct mail to floodplain managers educating them about EAPs was intended to help fill a gap in their training since they are not EMDs.

The campaign addressed the DSOs belief that a helpful strategy would be educating EMDs about EAPs so they in turn can educate dam owners. The EMDs may be able to overcome dam owner distrust of state government and get the owners to local workshops and meetings. DSOs had requested that the outreach campaign also work with SHP dam owners. DSOs said their state's dam safety website is inadequate. The DSA website's Kentucky section was built in part to address that concern.

EAP Obstacles

Shane Cook and designated EAP program contact Carey Johnson noted these obstacles to EAP compliance:

- Absentee, inattentive, or completely disengaged owners
- The lack of awareness by dam owners, floodplain managers, and EMDs about the importance of EAPs
- The lack of EAP authority
- DSO staff having responsibility for floodplain violations as well as dams
- The lack of interest by mayors, county executives and planners
- No standardized Kentucky EAP template (inquiries are referred to FEMA web information)
- Legislative indifference to updating statutes to include EAPs
- Opposition by politically well-connected individuals and organizations in agriculture and mining
- Dam owners who do not see a need for an EAP and do not trust state government
- Lack of cooperation by NRCS in sharing watershed dam EAPs and pushing harder to have them completed

Primary Stakeholders

- HHP dam owners, managers, and watershed dam sponsors
- County emergency managers
- County Commissioners
- Mayors, city managers, municipal land use planners/administrators, and municipal watershed managers
- Administrators in the Kentucky Emergency Management agency and the 11 Regional Response Offices
- Kentucky print and broadcast news media

Secondary Stakeholders

- Division of Water and Kentucky Department for Environmental Protection administrators
- Kentucky Association of Conservation Districts and state Division of Conservation officials.
- Kentucky Soil & Water Conservation Commission
- NRCS State Conservationist, Chief Engineer, watershed field engineers, and RC&Ds
- Kentucky Scouting organizations leadership
- Kentucky Farm Bureau Federation and affiliates, including Farmers Trust, Kentucky Cattlemen's Association and FFA
- Kentucky real estate brokers, developers, engineering consultants, property managers, and Property Valuation Administrators (assessors)

Urgent/Additional Outreach Elements for Kentucky

- **Focus on SHP as well as HHP dams.** The campaign direct mail program included SHP dam owners so they would understand the importance of EAPs. After the mailings, DSOs found that many of the dam owners who received the mailings contacted them to find out whether they had to create EAPs. This resulted in some dam owners complaining, but also showed that the campaign succeeded in raising awareness of EAPs. The campaign requested that Kentucky DSOs suggest teams of dam owners and EMDs successful in creating EAPs for use as case studies, but DSOs said the EAPs were created by them and there were no outside teams. The DSOs did not assist the campaign with regard to specific community water supply dams of major concerns, but did note that a major Kentucky power supply company had begun EAPs on all its HHP dams. The company did not want a case study regarding their process and benefits to them of having the EAPs.
- **Educate local EMDs and watershed managers.** Kentucky DSOs did not have any plans in 2014 for workshops with local EMDs, watershed managers or dam owners. The campaign used direct mail of letters and brochures to educate local EMDs about the importance of EAPs and getting dam owners in their jurisdictions to the workshops. Mailings also helped floodplain managers who also may be city/county officials to understand EAPs and HHP dams in their area so they can work with DSOs on EAPs and help recruit dam owners.

Kentucky DSO comments on the campaign.

We have had numerous phone calls from dam owners that seem to think that these EAP mailings are coming from us. They think that (the campaign manager) works for us and with us. I would like to request that no more of these mailings go out. We are working with a limited amount of staff and do not have the resources to work on this in the near future.

FEMA has required us to have EAP's on at least 75 percent of our high hazard dams in order to continue to receive FEMA grants. My staff and I increased that percentage from 32% to 77% in the months of August and September. We now have EAP's on 77% of our high hazard dams because of the work that we did and have now satisfied FEMA's requirements.

We do not currently have laws requiring dam owners to have EAPs. Dam owners are calling us all worried that we are going to go after them legally if they do not produce an EAP. All of the calls that we are getting are coming from dam owners of low hazard dams. These are large farm ponds and if they failed, more than likely, no one would ever know. We currently have no law that would require a dam owner to have an EAP and there is no reason that an owner of a low hazard dam should have an EAP.

- Shane Cook
Kentucky Dept. of Environmental Protection
Division of Water

DSA outreach campaign comment: The campaign asked for a list of owners of HHP dams. The list provided apparently included SHP dam owners as well. Owners of low-hazard dams should not have been included and should not have received mailings. DSA received a few calls from SHP and HHP dam owners in Kentucky and referred them to DSOs for further information. Some dam owners did not know the actual hazard classification of their dams.

Indiana

Dam inspections and enforcement are the responsibility of the DOW within the Indiana DNR. State statute requires HHP dam owners to hire a private engineering firm to conduct and report on inspections every two years. DSOs can encourage HHP dam owners to develop IEAPs, but few have done so. Indiana lacks statutory authority for inundation mapping and does not require the seven basic elements be included in an IEAP. Indiana has posted a standardized template for IEAPs, although owners have the option of using NRCS or ASDSO examples as guidance. The Indiana template is best used by a professional engineer with dam safety expertise. Non-technical dam owners typically have difficulty completing it correctly. DSOs report that owners of smaller dams who have fewer resources and owners of dams that have a less extensive inundation area do not need to create comprehensive IEAP inundation maps. Some simplified inundation mapping techniques can be effective for those dams. DSOs can require IEAPs on new construction if they know the dam will be HHP.

Indiana DSOs believe the key to making significant progress on IEAPs is using grant funds to contract with consulting engineers to do breach modeling and inundation mapping. In 2014 this was done for 22 privately owned HHP dams. The information was provided to dam owners. The consultants also prepared IEAPs and tabletop exercises, and then gathered several dam owners for workshops. DSOs also have had some success educating dam owners about EAPs and their responsibilities through meetings involving the Indiana Silver Jacket Partnership Project (ISJ), which brings together local dam owners and state, federal and university experts in planning and mitigation. The workshops revealed that some dam owners were shocked by their responsibilities, and others were confused as to the role of government agencies in maintaining dams and responding to problems with the dams. IEAPs are often not incorporated into other emergency response plans. DSOs believe the downstream public needs to be engaged and educated regarding HHP dams. Dam owners do not want to admit to having an emergency situation and feel helpless when one develops. The Silver Jackets approach seems to work and offers opportunities for further deployment.

Indiana DSOs are concerned that some IEAPs are now as much as ten years old and have never been updated. DSOs asked that the outreach Campaign materials address dams that already have IEAPs and to emphasize the importance of updating and exercising IEAPs. DSOs would like to remind dam owners that while dams do not change ownership that often, EMDs and first responders do change periodically. Another issue DSOs face and need to clear up with IEAPs and updates is dam ownership by several homeowners, often without a homeowners association to provide organization and clarity of responsibility.

As in other states, it can be difficult for DSOs to know precisely how many EAPs there are on Indiana's 127 earthen dams that are part of 33 NRCS watershed projects built under Public Law 566. About 15 years ago, a NRCS report projected that 30 of the dams will have reached their 50-year design life by now. At that time, 34 of the dams had homes or other buildings downstream and needed to be upgraded to meet current dam safety laws to protect people and property. Several dams had slope instability. In the Silver Jackets program, NRCS dams with inundation maps were to be given priority for EAPs. Outreach campaign communications that went to rural dam owners and watershed dam sponsors should contribute to reaching this objective.

A new issue that arose just as the campaign was winding down was a bill introduced by the majority leader in the Indiana state House of Representatives to set the clock back on the hazard classification of HHP dams. This bill was introduced in January 2015 but DSOs believe it was shelved or withdrawn by February after their objections were expressed. The bill would have redefined hazard classification in a

backward looking fashion with hazard class reset to when the dam was built and ignoring what currently exists below the dam. This would have created a conflict between state and federal hazard definitions. It would have set up numerous ethical dilemmas for DSOs and other professionals who would be expected to endorse a blatantly false hazard classification. Campaign staff will continue to monitor the issue along with Indiana DSOs and keep FEMA informed if the situation develops further.

EAP Obstacles

Ken Smith, head of the dam safety program, noted these obstacles to EAP compliance:

- Legislative inertia inhibiting efforts to update the dam safety statutes to include EAPs, and moves that would negatively impact hazard classifications and EAP compliance
- Absentee, inattentive, or completely disengaged dam owners
- The lack of awareness by dam owners, floodplain managers, and EMDs about the importance of EAPs
- The lack of EAP authority
- The lack of interest by mayors, county executives and planners
- Opposition by politically well-connected individuals and organizations to any improvement in EAP and hazard classification modernization

Primary Stakeholders

- HHP dam owners, watershed dam sponsors, and Indiana Lake Management Society members
- County and city emergency managers
- County Commissioners
- Mayors, city managers, municipal land use planners/administrators, and municipal watershed managers
- Indiana print and broadcast news media

Secondary Stakeholders

- Division of Water and Indiana Department for Natural Resources administrators
- Indiana Association of Soil & Water Conservation Districts and state Division of Soil Conservation officials.
- NRCS State Conservationist, Chief Engineer, watershed field engineers, and RC&Ds
- Indiana State Soil Conservation Board
- Indiana Scouting organizations leadership
- Indiana real estate brokers, developers, property managers, and Property Valuation Administrators

Additional Outreach Elements for Indiana

- **Use of the term Incident and Emergency Action Plan (IEAP).** Indiana DSOs prefer that EAPs be referred to as IEAPs to convey the difference between smaller state-regulated dams and large, mostly federal, impoundments, or small but dangerous incidents and worst case scenarios. The Indiana DSOs see more “incidents” than emergencies, and would like to raise dam owner awareness of the need to intervene before an incident becomes an emergency. It can be a matter of “prevention vs. mitigation” if caught in time because dam incidents are slow progressions that do not need to become calamities. Linguistically, an “incident” is less intimidating and frightening than an “emergency,” the DSO chief notes. The outreach campaign implemented this terminology throughout the Indiana section of the DSA website and in all letters, brochures and other communication targeting the state. The campaign also added a special section on the landing page to

explain the incident-vs.-emergency concept. The campaign's careful approach minimized confusion in referencing IEAPs.

- **Emphasize EAP updates and exercises.** While it was the Indiana DSOs who expressed greatest concern about the aging of existing EAPs and requested more emphasis on updates and exercises, the campaign took this a step further. Content on the subject was pulled out to the DSA website landing page and given special treatment with graphics and text that highlighted the importance of exercises and updates.
- **Create a case study of an Indiana community dam IEAP process.** Indiana DSOs also were concerned about community dams for lakeside communities. Homeowners often do not have associations to manage and maintain the dams. Many homeowners do not realize their liability as co-owners of the dam and the lake. These developments have increased in popularity over the past 30 years throughout the nation. The campaign determined that the best way to address this issue is to create a success story/case study involving such a community dam. Indiana DSOs identified the Sylvan Lake IEAP as a candidate. Participants in the IEAP process for that lake near Rome, Indiana were interviewed, photos collected, and the case study was given a prominent position on the DSA landing page. The case study also was reproduced as a news feature story in the daily newspaper that services the area around the lake. Another case study was developed for a community lake in Missouri. Each of these case studies explores ownership and liability issues, dam management and responsibility, and the perspective of each key person involved in creating the IEAP, as well as the benefits of having it.

Indiana DSO comments on the campaign.

The tri-fold brochure raised some awareness with folks who received it, and with some media. Several calls and inquiries occurred specifically referencing the brochure. Unfortunately, most recipients of the brochure thought it had been a state DNR published document, and it caused them some confusion.

This year DNR tried a new way to reach large groups of stakeholders with IEAPs. As part of the DHS/DNR cooperative project for IEAP development, an innovative county focused multi-dam IEAP Tabletop Exercise was created by the consultant for southern Indiana dams (Christopher Burke Engineering) and recently tested in Morgan County; a second exercise is scheduled for Bartholomew County in January 2015.

(DSA outreach should) Assist state agencies and dam owners with finding additional federal funding sources to prepare IEAPs. Assist state agencies with legislative initiatives to require high hazard dam owners to create written IEAPs and providing copies to emergency response personnel.

(Outreach should place more focus on) Property owners living below these dams, most of them are unaware of the risk and thus are not vocal.

- Kenneth E. Smith, PE, Assistant Director
Division of Water
Indiana Department of Natural Resources

California

Dam inspections, supervision of construction and alteration, repair, maintenance, removal and regulatory enforcement are the responsibility of the DSOD within the California Department of Water Resources (DWR). Inundation mapping and EAP creation are the jurisdiction of the Mitigation Planning Division of CalOES, which is responsible for overseeing and coordinating the state's emergency planning, prevention, preparedness, response, recovery, and logistics. This separation of responsibility for aspects of dam safety is not typical of the other states in this outreach campaign. If it facilitates DSOs and the CalOES Emergency Services Coordinators (ESCs) with EAP responsibility to have more direct contact with one another, it would seem to be a positive division of dam safety management. Instead of exacerbating the stovepipe effect of dam safety and EAP development being in different segments of state government, it would help bridge the stovepipes. The CalOES Dam Safety Program had cuts in budget and staff during the recession and has not recovered. There is no line-item for dam EAPs in the CalOES budget. As a consequence, EAPs are not a first priority for the mitigation staff.

DSOs and ESCs can encourage HHP dam owners to develop EAPs, but prior to the outreach campaign only about half of 684 state-regulated HHP dams had EAPs. At one time a state statute said dam owners "shall" adopt emergency procedures, but when the law was renewed in 2004 "shall" became "may." Apparently the previous "shall" was not enforced or EAPs would exist for all HHP dams prior to 2004. California has begun a multi-year program to increase the number of EAPs. DSOs state that National Dam Safety Program grants administered by FEMA have helped the State complete the following:

- The DSOD contracted with local universities to document the as-is condition of EAPs in California.
- The DSOD and CalOES developed and posted a standardized template for EAPs that the DSOD staff adapted from the NRCS sample EAP for earthen HHP dams. The template was modified to fit the situation in California and was created for use by the local ESCs working with dam owners. The template and the EAP process that DSOD developed and provided to CalOES exemplify inter-departmental cooperation.
- The DSOD contracted with local universities to work with DHS and the University of Mississippi to beta test a process to help small dam owners develop inundation maps.
- The DSOD contacted all dam owners of HHP dams that do not have an EAP and requested that they complete an EAP. Many dam owners positively responded and are now completing EAPs. Dam owners that did not respond were sent follow-up letters from the DSOD.

California statutes require inundation maps for dams. Typically an owner may provide CalOES with an "inundation area" image ("footprint," sometimes highlighting evacuation routes) for the dam, usually generated by GIS software. CalOES regional staff will visit the site with the dam owner and local emergency managers. If there are no homes or businesses present, CalOES can issue a waiver relieving the owners of the inundation map requirement. If the waiver is denied, CalOES will require an engineered inundation map. When that is provided, CalOES will ask contractor hydrology experts at local universities to review it. If approved, the map is filed with CalOES.

A drawback of the CalOES structure is that the agency has only one engineer on staff, no hydrologists, and no staff members trained in breach analysis. Contractors provide that part of the work, which also helps assure that the maps will have credibility. The DSOD also is working with the university hydrologists to determine the best engineering models to keep inundation maps updated. Some of the maps have since been updated for CalOES. The University of Mississippi's DSS-WISE software package is being used.

One secondary stakeholder group, real estate brokers, has great interest in the CalOES inundation maps. The state's Civil Code for real estate transactions requires the inundation maps as part of the required Natural Hazard Disclosure Statement provided to anyone considering buying property. The brokers also resell the maps and related information CalOES develops and maintains. However, users of the maps are cautioned on at least one website that: Many of the maps were developed in the 1970s and had they been produced more recently different assumptions and methods would have been used.

The head of the Mitigation Planning Division said he is working on a plan to reorganize the inundation mapping and EAP program with new objectives. During 2015 he intends to list EAP statutory authority as a need, along with line-item budgeting for EAP staffing. With no state funds tied to hazard mitigation, what little work CalOES can do on EAPs is funded by FEMA grants. CalOES has an ESC assigned to every county, and they in turn work with the local Emergency Management Coordinators (EMCs), who usually are staff or volunteers with the area Emergency Survival Program (ESP). A positive aspect of working EAP outreach through the CalOES should be that their communications system reaches down to every local ESP through their county's ESC.

The California DSOD chief asked that the EAP outreach campaign staff not contact dam owners with direct mail because his office has already contacted all dam owners on the EAP issue and is sending follow-up letters as part of the multi-year EAP program DSOD has implemented. As with the Texas Pilot Study, the campaign shifted emphasis and resources to working with emergency managers, stakeholder groups, and providing information to news media to create public awareness of the EAP need. The acute awareness of Californians regarding earthquake risks provided opportunities to link the need for EAPs to the potential for earthquake-induced dam failure. The CalOES Dam Safety Program of inundation mapping was established in 1972 following the near failure of the Lower San Fernando Dam during the Sylmar Earthquake. On the other hand, there is so much emergency management focus in California on earthquakes, forest fires, floods from heavy rains, and drought that dams are not viewed with much urgency by emergency managers, the news media, or the public.

Typically it can be difficult for DSOs to know precisely how many EAPs there are on NRCS watershed project dams built under Public Law 566. DSOD had a contractor study the compliance situation. NRCS only lists 16 program dams in the state, and only one of the dams is approaching a 50-year design life.

EAP Obstacles

David Gutierrez, head of the dam safety program, and two CalOES ESCs assigned to EAPs, noted these obstacles to EAP compliance:

- Lack of authority to require EAPs
- Lack of resources and assigned personnel in CalOES for getting EAPs completed
- Emergency management priority on earthquakes, forest fires and floods from rains
- Unwillingness of owners of dams, even major ones, to spend time on EAPs because they are not mandatory
- Legislative and Executive indifference to updating the statutes to include EAPs
- The lack of interest by mayors, county executives and planners

Primary Stakeholders

- HHP dam owners and managers, California Lake Management Society officials/members
- County and city emergency managers and ESPs
- County Supervisors, County Administrators, and sheriffs

- Mayors, city managers, municipal land use planners/administrators, and municipal watershed managers
- Administrators in the CalOES state office, regional offices, and county EMCs
- Administrators in the California Department of Water Resources and in Flood Control Districts
- California print and broadcast news media

Secondary Stakeholders

- California Soil & Water Conservation Society leaders, California Soil & Water Conservation District directors and staff, California Department of Conservation officials.
- NRCS State Conservationist, Chief Engineer, watershed field engineers, and RC&Ds
- California Scouting organizations leadership
- California Farm Bureau Federation and affiliates, California Cattlemen's Association and FFA officials
- California real estate brokers, developers, and property managers
- California Sierra Club and other environmental organization leaders

Additional Outreach Elements for California

- **Leverage the Water Issues.** Water supplies and distribution, including water from reservoirs, is an intense subject in California, with many influential organizations and constituencies involved. The state passed a major water bonds measure that includes the possibility of raising several dams or building new ones for long-term water storage. News stories about these activities were added to the News & Events page of the DSA website California section. Background information about EAPs and the state's HHP dams was provided to publications serving agricultural, environmental and other stakeholder organizations.
- **Strengthen the public awareness campaign.** Letters and background information about the urgency of EAPs for HHP dams was provided to news organizations to help them better educate the public about the dangers HHP dams present and the lack of action at the state government level to ensure that these dams have EAPs. The letters emphasized that tens of thousands of Californians are at greater risk from HHP dams because more than 300 of them do not have EAPs, which could hamper emergency response if one of those dams fails, whether due to earthquake or other poor maintenance. California has a robust and diverse news and communications structure. However, coverage of public safety issues in 2014 focused on the early and intense forest fires, the severity of the drought, and the Napa earthquake, which did not cause significant damage to dams in the area.

California DSO comments on the campaign.

The CalOES mitigation chief has had that job just over a year, and it was a year of intense challenges.

Unfortunately we were not able to work with the campaign, partly because of bad timing, partly because of the resources available. Events have slowed down a little and we want to put more emphasis on dams in the next couple of months (early 2015). The CalOES mitigation program will be going through a major tune-up and revamping during which we hope to regain some aspects that were lost during the recession. We lost three or four positions, one of which was the person who handled the dams EAP program. So it became a secondary duty to the other staff.

We want to bring the dams EAP program back in its entirety, and that may happen over the next year or two. I will be recommending that we go out for legislative change because we need

mandatory EAPs. That is the major thing. The CalOES executive level has already been made aware that this is something we need to do. Consolidation of dam safety at CalOES also is needed since we are the natural agency for this. We need to have line-item funding for EAPs restored because without that it is very difficult to assign staff to the program. We know emergency management, but we do not know hydrology and breach modeling and dam construction.

We know there are issues with dams, but it's just not something we could focus on at the time. We have had to prioritize our time based on what is happening in the state. The Napa earthquake demanded our attention for two months.

- José Lara, CPP
Mitigation Planning Division
California Office of Emergency Services (CalOES)

Results and Recommendations

EAP Results in the Target States

The ASDSO reported in June 2014 that just over 70% of 11,575 state-regulated HHP dams now have EAPs. While this is significant progress from a mere 35% of the dams having an EAP in 1999, there remain approximately 3,473 state-regulated HHP dams that lack EAPs. This means hundreds of thousands of people are living, working, traveling or enjoying recreation at greater risk than their fellow citizens elsewhere who are “covered” by an EAP in the event of a dam failure.

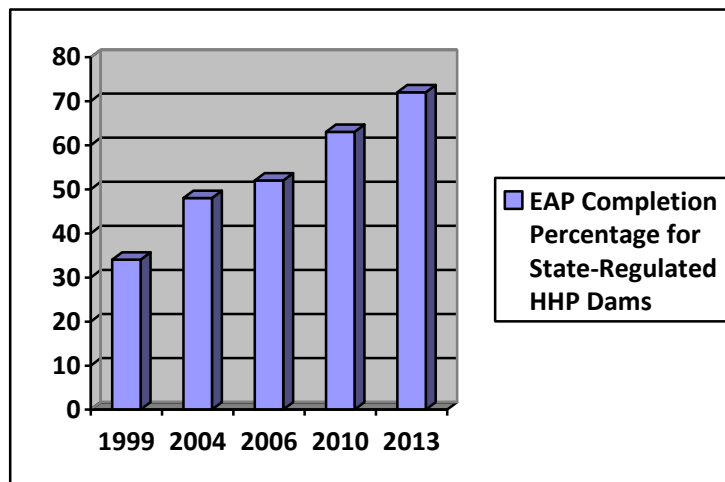


Figure 4. This chart shows the EAP completion percentage for State-regulated HHP dams.

Several states report that less than 50% of their HHP dams have an EAP. When this outreach campaign began, Georgia, Kentucky, Indiana, and California were among the states with the lowest number of EAPs for their regulated HHP dams. Georgia had 21 EAPs and 464 HHP dams. Kentucky had 54 EAPs and 164 HHP dams. Indiana had 45 EAPs and 245 HHP dams. California had 344 EAPs and 684 HHP dams. By the end of 2014, the conclusion of the “base year” of implementing this campaign, Georgia had 30 EAPs instead of 21. Kentucky had increased from 54 to approximately 125 EAPs. Indiana had gone from 45 to 78 as 33 more EAPs were in process or completed. California DSOs did not provide a current total for EAPs.

State	State-Regulated HHP dams	EAPs in 2013	EAPs End of 2014	Percent Increase
Georgia	464	21	30	43
Kentucky	164	54	125	132
Indiana	245	45	78	73
California	684	344	(unreported)	(unreported)

Figure 5. This chart shows the four targeted states and their increase in EAPs from 2013 to 2014.

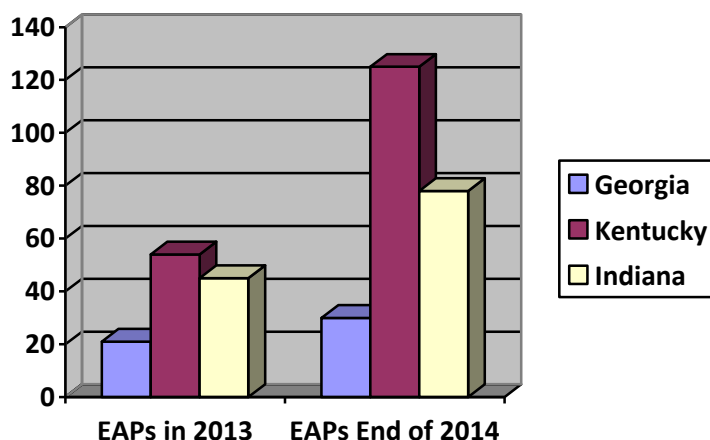


Figure 6. This graph is a reflection of Figure 5.

The DSA outreach campaign created considerable awareness and concern that has prompted dam owners and emergency managers to begin or complete EAPs. The outreach team helped owners understand the need for EAPs and how to get started by working with their state DSOs and local EMDs. This successful aspect of the campaign was demonstrated through direct conversations with dam owners and/or emergency managers in the target states who used the DSA toll-free number or email. The role of the campaign in stimulating EAP interest also was mentioned in comments by the states' DSOs, whose EAP initiatives the campaign was tasked to support. This is elaborated further in the four state-specific sections of this report.

While DSA laid the groundwork with communications and the website, some DSOs used grant funds from FEMA and their states to hire qualified independent engineers to develop breach analysis and inundation maps, and then create the EAPs for HHP dams of greatest concern. The outreach campaign integrated as much as possible with these and other DSO EAP initiatives. Educating dam owners about their responsibility to have EAPs prompted many of them to take action by beginning the process. The campaign also reached local EMDs who may be new to the job and not fully aware of the importance of EAPs for HHP dams as part of their required comprehensive mitigation planning and their community's preparedness. The postcard to EMDs specifically mentioned this aspect of their planning. The campaign also has informed city and county officials, watershed managers, city planners and others who have a stake in mitigating the risks presented by HHP dams.

Recommendations

Based on the results of the campaign in working with the seven states, the campaign recommends the following steps and has identified several issues for follow-up discussion.

Build on the momentum. While the campaign contributed to an initial increase in EAPs in the target states, this impact can be expected to continue for many more months or years. Outreach and marketing programs typically build momentum slowly at first and then will grow as more people look for the information, tune into the messages, and respond. Initial audiences continue to engage, while new audiences discover the information and its importance to them. Synergy is created as the research, website content, mailings to target audiences, and other public relations communications activities leverage one another. This is illustrated by the fact that during 2014 the campaign continued to receive contacts from citizens and owners of dams in North Carolina, Texas, and Missouri who were interested

in EAPs. As a public service the contractor had maintained the DSA website featuring those three pilot study states even though the contract for that work ended in the spring of 2011 and this campaign did not start fully kick in until early 2014. The website remained high on search engines and even three years later was a source of information and education for dam owners and stakeholders in those three states. Similarly, FEMA can expect that the DSA website will continue to be discovered and keep the EAP messages alive and pertinent to citizens of the seven states for several years.

This will be particularly important for the four new states. It has taken five years, but by mid-2015 Missouri will have gone from near the bottom to among the top states in EAP compliance – from only 34 EAPs to all 469 state-regulated HHP dams having EAPs, complete with inundation mapping. It is an illustration of award-winning determination and achievement at the state level. It also shows the complexity and years required for a state to move to the NDSRB goal of 100 percent EAPs on HHP dams, even with an intensive effort and focus on achieving this goal. The DSA website and campaign elements can continue to support the efforts of the other six states as they reach for the top.

Link to 2015 EAP initiatives. Each of the campaign four states made progress in 2014 with the support of the outreach program, and DSOs have described their plans for 2015 and suggested ways the campaign could help them. Georgia plans more workshops with EAP stakeholders. Indiana is working to integrate exercises into the presentation of EAPs and inundation maps to dam owners and will be looking for interested dam owners who are ready to start the EAP process. Kentucky has another 25 percent of HHP Dams needing EAPs. California remains far behind in compliance, and the challenge of more urgent emergency situations is likely to continue overshadowing the need for EAPs on HHP dams.

Add more states. A primary goal of the Workgroup and NDSRB is to move states with the least EAP authority and the most EAPs toward 100 percent compliance. The more states that are part of the campaign, the greater the overall impact as the dimension of the EAP issue becomes clearer to each state's emergency managers, policymakers, and the public. Comparative progress on EAPs, or the lack of it, will be more apparent to DSOs in other states. While outreach is targeting additional states, support for EAP efforts in these four states can be tweaked and focused tighter to push more owners toward beginning EAPs. The outreach campaign contract includes an option to continue the program for another year and add five more states. Funding could limit the number of states that can be added, and they will need to be selected carefully. DSO enthusiasm for the campaign's assistance in their states also will be important.

The map shown below is from the 2013 U.S. Army Corps of Engineers (COE) National Inventory of Dams (NID) and provides a more current snapshot of the states with authority to require EAPs on state-regulated HHP dams and the percentage of those dams with EAPs at the time state DSOs submitted data. Percentages of EAPs in the four outreach campaign states have now changed.

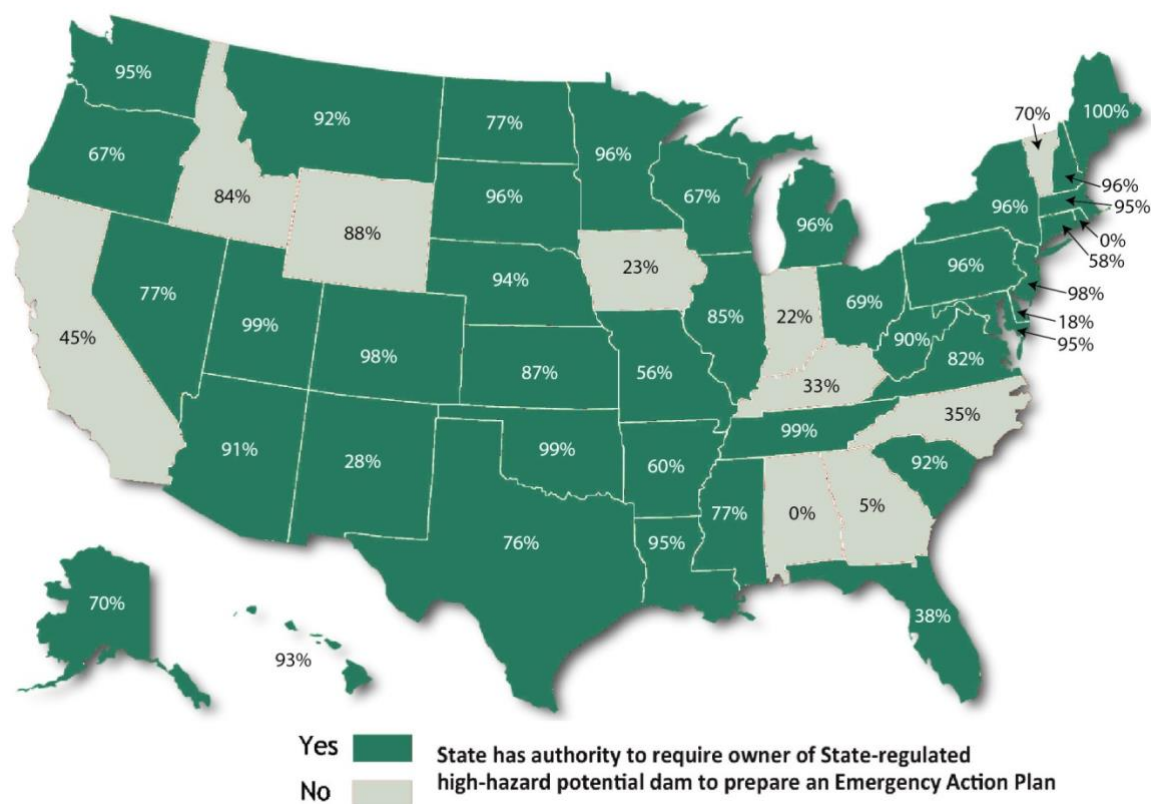


Figure 7. Map shows the percentage of states with EAPs and whether the state has authority to require EAPs on HHP dams.

The chart below shows the current estimated number of EAPs for HHP dams in each of the five states the Workgroup identified as additional targets, based on combined data provided by:

- The COE's 2013 NID
- The 2012 summary from the Association of State Dam Safety Officials (ASDSO)
- Grade cards from the American Society of Civil Engineers (ASCE)
- Conversations with the DSOs of each Phase 1 target state and data from some DSO websites where the state inventory of dams is posted

The numbers shift as new dams are added, laws and regulations change, and dams are reclassified. The NID includes all HHP dams, while ASDSO cites only state-regulated HHP dams. This means the percentage of dams with HHPs in ASDSO data differs from NID, and with data sources mixed the numbers do not always align. This chart provides an adequate benchmark. An important number in the NID data reported by DSOs is "EAPs Not Required." This usually reflects the lack of statutory authority to require EAPs on HHP dams. The figures in this chart are from 2015 ASDSO data.

Phase 2 Option States	Number Dams State Regulated	Number HHP Dams	Percent EAPs on HHP Dams	Number of EAPs Needed
Connecticut	3,235	261	58%	125
Mississippi	3,847	269	82%	48
New Mexico	297	162	24%	225
Ohio	1,503	361	70%	108
Rhode Island	668	96	0%	96

Mississippi and Ohio have made significant strides in percentage of HHP dams with EAPs. Another state highlighted on the map that has not shown as much progress is Iowa, with 91 state-regulated HHP dams and 23 percent having EAPs as of 2013 data, for a shortfall of 70 dams that still need EAPs. In terms of percentage and number of dams needing EAPs, Iowa may be a better choice than Mississippi for expanding the outreach campaign.

Other considerations include the possibility that Alabama might institute a dam safety program and the ongoing shortfall of EAPs in North Carolina. Duke Energy's coal tailings leak into the Dan River has created political turmoil for the Department of Environment and Natural Resources (DENR) and the dam safety program. This may present an opportunity for the outreach campaign to provide positive support for improving EAP emphasis for conventional HHP dams in North Carolina.

If the campaign is to be expanded, contractor staff can discuss the current situations with DSOs in each of these states to evaluate the prognosis for their EAP program reaching NDSRB goals, which will help the Workgroup decide the best states to support.

Improve evaluation of DSO enthusiasm. The NDSRB Workgroup directed the campaign contractor to work "as needed" with DSOs, but some needed more attention than others. There were unanticipated delays and issues with DSOs in Kentucky and California. Kentucky DSOs were initially resistant to being part of the campaign even though interest had been expressed earlier. Their participation remained somewhat reluctant, leading eventually to the complaint that the outreach created more work for a limited staff.

The campaign direct mail generated numerous phone calls to the dam safety offices by dam owners, and DSOs said that increased their work load. While this result of getting dam owners thinking and inquiring about EAPs was the intent of the campaign, there should be ways to address the work load issue. Campaign materials always urge dam owners to contact their DSOs, since they know best what they want the dam owners to understand. It may be possible to steer more of the initial inquiries to the campaign staff for basic information, and only forward more complex or urgent calls to the DSO. This need will vary from state to state. It would have been helpful in Kentucky, but was not necessary in the other three states.

In California, the campaign experienced a lack of responsiveness to the campaign staff's questions, suggestions, and attempts to elicit CalOES ideas for outreach. The reasons for this are explored in the California section of this report. Much of it seems to have been simply because of the overwhelming number and extent of emergencies the state experienced in 2014, and the lack of CalOES personnel with responsibility for dam EAPs. The campaign can succeed even without full participation by some DSOs, but it is most effective when they embrace it for the greater good of public safety and community preparedness. These situations also indicate the importance of campaign staff staying in closer contact with DSOs who express doubt or reluctance so they better understand and provide input for the communications, if DSOs are willing.

Refine dam owner lists. The lists provided by Georgia, Indiana, and Kentucky demonstrated that while dams may be inspected regularly, the information about who owns them is not always reliable. Indiana provided a list of dam owners that was four times the size of the actual HHP number, and more than 200 of those addresses were not deliverable or were incorrect. Georgia and Kentucky also had numerous returns. The Kentucky list included SHP dams, but they were not identified separately from the HHP dams. And yet Kentucky DSOs noted they were receiving calls from lower-hazard dam owners.

A lesson learned may be that the campaign should be more insistent on only getting lists of HHP dam owners, especially in states where there is sensitivity about DSO staff time and work load. In situations where the DSOs provide a copy of their actual inventory of dams, complete with hazard classification, it is easy for the campaign staff to sort it according to HHP status and mail accordingly. That also makes it easier for the campaign staff to use search engines to find the correct address and provide the DSOs with corrections. The campaign may need to devote more resources to helping the DSOS update their lists.

Reduce dam owner confusion. Some DSOs said that several dam owners thought the campaign direct mail pieces were from the state dam safety program and that DSA was part of it. DSA staff closely looked at the wording in the letters and brochures. These had very prominent DSA branding. Letters stated clearly that the DSA program is supported by the NDSRB and FEMA to assist the state dam safety program but is not part of it. This also is stated in the “About Us” page of each state’s DSA website section. Nonetheless, the creative staff should take any extra steps possible to further clarify this matter.

Determine when to use open records laws. Sometimes it may be necessary to use state open records laws to obtain mailing lists for owners of HHP dams. Deciding when to do that is a delicate question. Dam safety chiefs at two of the seven states asked that the campaign not directly contact dam owners with mailings. During the Texas Pilot Study that was not a difficult request to honor because the dam safety program was actively working with dam owners while implementing new authority to require EAPs. Instead the program focused on local EMDs and officials. The head of California’s DSOD made a similar request. This was more problematic, but was honored. In hindsight the campaign may have had more impact by at least attempting to obtain the list.

In California the DSOD inspects dams, determines hazard category, and orders modifications. EAPs, however, are the responsibility of CalOES. This split of dam safety authorities between two completely separate agencies is a dynamic that has some negative aspects. While DSOD has a large staff and significant funding, the CalOES dam safety program staff seems to consist of just two people with no EAP priority, in a mitigation division that in a year like 2014 is overwhelmed by emergencies from forest fires to mudslides and flooding, in dozens of locations, often at the same time. The DSOD requested that the campaign work only with CalOES.

The campaign tried to work with CalOES staff much as had been the case working with emergency managers in Texas. Unfortunately, the campaign received little cooperation from CalOES even though early planning discussions indicated that CalOES would be pleased to have help in promoting EAPs for HHP dams. It became clear that a full outreach program including dam owners would have been more effective. This may have been opposed by DSOD, and a state public records request probably would have been necessary, and it might have been rejected. In the future it is recommended that the campaign seek the guidance and assistance of FEMA mitigation staff in determining how to handle such situations.

Navigate conflicting concerns. Another dynamic that was expressed by California DSOs is the conflict between DHS concerns about HHP dams possibly being a terrorist target, and FEMA mitigation efforts to promote awareness of HHP dams and EAPs for them. Campaign staff need to stay informed as to how this dynamic is playing out, where the sensitivities lie, and how best to navigate an outreach campaign.

Rely more on FEMA regional staff. The campaign also should call upon the regional FEMA mitigation staff more often for insight and assistance in some aspects of the outreach campaign. This

might have been more helpful in California, where there were months of delays getting the campaign rolling while waiting for CalOES responses to campaign questions, information needs, and coordination efforts – most of which never came. The campaign had to go ahead with mailings to EMDs and providing background information to the news media without the assistance or input of CalOES dam safety staff. If the NDSRB decides to extend the campaign with new states, it may be possible to also find ways to work better with CalOES, particularly if the dam EAPs program is revitalized as the CalOES mitigation leader hopes.

Encourage FEMA grants for mapping and EAPs. The FEMA grants to state dam safety programs remain a key component of progress on EAPs as long as they are tied to inundation mapping and production of EAPs. DSOs rely on the grants, which gives FEMA leverage in setting EAP goals. The progress on EAPs in Kentucky, for example, appeared to be directly tied to requirements built into the grant for the state.

Appendix A

Overview/Analysis of EAP Issues and Situations Influencing the Campaign

The National Dam Safety Review Board (NDSRB) and others involved in dam safety continue to be concerned about the number of High-Hazard Potential (HHP) dams in the United States that do not have Emergency Action Plans (EAPs).

A dam is categorized as HHP if a breach would be likely to take human lives. An EAP provides essential information to those responsible for protecting the safety of human lives and property at risk below a dam if it were to fail. An EAP also may be triggered by other emergencies – such as unusually heavy inflows to the impoundment – requiring controlled flood releases from the dam to protect its structural integrity. More emergency situations such as that may be seen in the coming years if the recent weather extremes experienced in some regions continue due to climate change. This underscores the imperative of the NDSRB objective to achieve 100 percent compliance for EAPs for HHP dams. Compliance currently is estimated at just over 70 percent.

The NDSRB Emergency Action Planning for Dams Workgroup has determined that one reason many HHP dams do not have EAPs is a lack of communication to and between dam owners, dam safety officials, emergency responders, and the at-risk public. As a result, the benefits and importance of EAPs are often misconceived and underappreciated. Unaware that EAPs prepare a community by identifying potential emergency conditions at a dam and specifying actions to reduce property damage and loss of life, stakeholders have traditionally bestowed minimal importance on the document.

This four-state EAP Outreach and Marketing Campaign represents a significant step in a multi-year national roll-out of a program to increase EAP awareness and implementation in states with high numbers of HHP dams that lack EAPs.

The four target states – Georgia, Kentucky, Indiana and California – have hundreds of HHP dams that do not have EAPs, and none of the states has authority to require EAPs. Many of these dams are well past their design lifetime, usually 50 years. The National Inventory of Dams shows that in Georgia, 1,294 dams were built before 1960, with 289 in Kentucky, 294 in Indiana, and 878 in California. Not all of those dams are HHP, but the majority of them may well be after more than 50 years for development below them.

While they are not necessarily in danger of failure at present, they could be compromised by such stresses as very heavy tropical or seasonal rains, landslides, earthquakes and aftershocks; the malfunction of neglected key dam components such as gates that have become inoperable; and undetected or unrepaired problems such as seepage, clogged spillways, vegetation, and animal burrowing. All this makes having an EAP on 100 percent of them an important objective.

Most state dam safety programs have long been under-funded and under-staffed, including Georgia, Indiana and Kentucky. The severe economic recession of 2008 and resulting sharp reductions in state tax revenue have had lingering impacts on state dam safety programs that experienced cutbacks in funding and staffing. This has resulted in state DSOs focusing on priorities such as inspections and normal regulatory oversight of dam operations and maintenance, leaving little time and money for outreach to HHP dam owners for EAP communications and workshops. This EAP outreach campaign is intended to assist state EAP dam safety programs. California's dam safety program has not been cut in recent years,

but the state's emergency coordination and response budgets, like many other segments of state government, have had severe cuts. This has left a very small segment of the mitigation staff to handle EAPs.

The potential for a dam failure and loss of life is often not included in local level emergency management hazard mitigation planning. Locally, dam failure is a rare occurrence, so county and municipal EMDs typically have planning priorities they rank above dam failure – flooding from excessive rain, wind and ice storms, tornadoes, hurricanes, forest fires, train derailments, HazMat responses, and earthquakes. Furthermore, EMDs in more rural counties may be part time and have little, if any, support staff. The EMD work load since 2011 also includes increased emphasis on terrorism-related prevention, response, and communications systems. This means EMDs have even less time to devote to planning for a dam failure in their jurisdiction.

Stovepipes

Compounding the low priority of dam EAPs is the “stovepipe” communications in many states. This results from the state DSOs typically working within the environmental division of state government and the EMDs within the public safety division. Another continuing type of stovepipe can exist between a state's dam safety program and some federal agencies in some states. For example, some states have hundreds of watershed and water supply dams built with USDA help in the 1950s-1970s, usually with 50-year design specifications. NRCS directives state: “For new or rehabilitated high hazard dams (and other structures as required by State and local regulations) designed with NRCS assistance, an EAP shall be prepared prior to construction. Dam owners of existing high hazard dams that were originally designed and constructed with NRCS assistance shall be encouraged to prepare EAPs for their dams.”

The watershed dam sponsor or land user has responsibility to prepare and implement the EAP in coordination with first responders, emergency managers, and DSOs. They are to be reviewed and revised annually and exercised at least once every five years. Training is supposed to be provided for people with specific responsibilities for EAPs. The NRCS has been directed to provide technical data, breach inundation maps, EAP preparation assistance and review, and participation in annual reviews and testing for new and rehabilitated HHP dams. For existing dams NRCS is required merely to “encourage” development of EAPs, and any technical or review assistance is “if the State Conservationist determines resources are available.” This creates considerable variability from state to state.

The NRCS directives state that: “All individuals or groups who are signatory parties to the EAP shall receive copies of the EAP. **Copies shall be provided to the State dam safety officer** and other federal, state, local, and tribal authorities with responsibilities identified in the EAP. Each copy shall be identified with a control number so the landowner/sponsor can record the individuals and organizations that have official copies so they can be updated on a regular basis. Large-scale maps needed for evacuation purposes for some projects shall be provided to the authorities responsible for evacuation operations. To minimize the potential for improper use of information contained in the plan, the EAP should not be distributed beyond the preparers and emergency service personnel.”

While DSOs are supposed to receive copies of EAPs for new and rehabilitated HHP watershed dams, some DSOs have said they do not believe they have copies of many of these EAPs, particularly those completed voluntarily with NRCS encouragement. This problem may not be as significant with dams managed by the Federal Energy Regulatory Commission (FERC), the Bureau of Reclamation (BoR), and the U.S. Army Corps of Engineers (COE). One way the campaign staff may be able to help DSOs with this issue would be to correlate EAPs the DSOs have with known watershed dams to identify

missing EAPs, then work through FEMA mitigation staff to help obtain copies for the DSOs since NRCS is unlikely to provide campaign staff with the EAPs directly.

Outreach to address the issues

The NDSRB Task Group on Emergency Action Planning and Response has determined (FEMA 608 report) that one reason many HHP dams do not have EAPs is a lack of communication to and between dam owners, DSOs and EMDs, as well as the public, segments of which are stakeholders even if they do not realize it. The activities included in this comprehensive, multi-media outreach Action Plan addressed each of those needs while providing direct support to the EAP initiatives of DSOs in the four target states. The program also continued to update and improve the DSA website support for Missouri, North Carolina and Texas, the three states in the 2009-11 Pilot Studies.

This Action Plan evolved from discussions with key DSOs, EMDs, and others in the four target states, as well as from a review of the recommendations and findings of the “Pilot Studies Final Report, National Outreach and Marketing Campaign To Promote Implementation of Emergency Action Plans For State-Regulated High-Hazard Potential Dams” (referred to herein as the May 2011 Final Report). This new outreach campaign is scaled and flexible to fit (1) prioritizing the target states by EAPS needed and lives at risk, (2) providing the level of outreach suitable for each state based on its EAP initiatives and needs, (3) the budgeting resources available, and (4) the desired timeframe as indicated in the contract’s Statement of Work and Deliverables Schedule.

The states received varying levels of interactivity between the outreach campaign staff and the DSOs. There was direct mail to dam owners (except in California), emergency managers, and stakeholders who can impact improvements in state dam safety regulations. Background information provided to the news media noted that when HHP dams lack EAPs, the result is an increase in the risk to those living below a HHP dam because the emergency response if a dam fails could be hampered by lack of planning. Where available and DSA was requested to help, EAP state workshops were supported with exhibits, handout literature, and other services as appropriate. In California, the campaign staff focused most on educating the local emergency management community responsible for EAP development and inundation mapping.

While some elements of the outreach campaign were somewhat “generic” and applied in each of the states, the importance of maintaining the state-specific, localized understanding and focus to the greatest extent possible was always paramount. Many of the communications elements had similar themes, but the approach and content took into consideration the state’s dam safety and political situation. One outreach and awareness strategy may work in many states, but some states will require different or differently implemented strategies.

Many HHP dams are now located in suburban subdivisions with considerable development below the dam. Even many rural dams built in the 1950s and 1960s for conservation or flood control now have housing development in their inundation zones. This outreach targeted both urban and rural dam owners, emergency managers, city and county officials, and other stakeholders. Outreach media relations and writing staff worked with news organizations and the business press that cover both urban and rural markets to multiply, balance, and broaden the campaign’s impact. The media contacts also included editors of blogs and “patches” (online community-specific news, information and engagement platforms).

The outreach campaign included a few secondary target audiences with interests in or near inundation zones – real estate brokers and building contractors; administrators of schools, hospitals, and nursing homes; and leaders of agricultural and scouting organizations. Each may be more important in one state than another. Some campaign elements also highlighted the need for EAPs for coal ash dams, a particular concern in some of the target states.

The campaign addressed EAP compliance barriers that DSOs and EMDs have helped identify. The lack of statutory authority to require EAPs is the leading impediment. The inundation mapping cost to dam owners is a difficult barrier, as is political/legislative indifference. The campaign took into account each state's barriers and its geography, demographics, number and types of dams in inventory, relationship of state DSOs with FEMA, social attitudes about regulations, and DSO activities within the state. The structure and organization of dam safety and emergency response agencies were analyzed, along with political factors such as new regulations and pending legislation related to dam safety.

The campaign customized research findings, creative messaging, strategic communications, and public education to each state's situation. To achieve "buy-in" from state VIPs (key legislators and influencers) who oversee or can influence dam safety programs, a letter introducing them to the outreach campaign was prepared. The campaign attempted to strategically integrate DSA activities with each state's initiatives and projects related to EAPs and public education. As implementation progressed, discussions with DSOs helped determine whether additional steps were needed or new opportunities were identified. This is an important "partnership" aspect of the campaign strategic approach, but it is highly dependent on the willingness and openness of DSOs.

The political atmosphere in most states still is not conducive to additional regulations to plug gaps in EAP authorizations for state dam safety programs, nor for additional funding for dam safety and infrastructure improvement. Some of the campaign elements addressed this problem by including cautionary messages that every year the Nation's HHP dams get older and their safety less certain, and states need to move past apathy, unawareness, uncertainty, and regulatory shortcomings. DSA materials continued to emphasize that an EAP is not only "a public health and safety benefit," but simply "the right thing to do." DSA provided dam owners with the needed information, some prompting, and links to help them start working on an EAP, while also urging stakeholder groups to get involved in ways that further their interests and those of their community and state.

Several key points cited in the May 2011 Final Report have been considered and incorporated into development of the outreach campaign.

- One key to the effectiveness of an EAP outreach campaign is the history of the state's own outreach effort, and its target audiences. Analyzing whether the state has ever had funds and programs for outreach was an essential first step in planning the campaign. Outreach will increase EMD awareness and interest well before dam owners begin to react, in most instances.
- Workshop support is one of the most productive ways to work with states that do not have well established outreach programs but are conducting workshops for dam owners and EMDs, perhaps for the first time. Brochures, magnets, postcards, providing letters of invitation, and EAP-themed tabletop displays all work well in helping DSOs produce high quality workshops and turn out attendance. Where states already have started workshops, efforts can be more effective if focused on the emergency management side of the dam owner/EMD partnership, with additional support

promoting tabletop exercises and public awareness. Georgia and Indiana are the states where these types of workshops are being scheduled.

- Flexibility is important in implementing outreach communications to improve EAP compliance. The campaign must anticipate that new or better ideas and opportunities may develop.
- Unanticipated political developments or controversies can overshadow and complicate outreach efforts, perhaps causing delays in deploying outreach tactics. Often a work-around or accommodation can be found that does not diminish the effectiveness of the outreach or create additional problems for the state dam safety program. This must not undermine the outreach from the FEMA perspective.
- State DSOs may have outdated contact information in their dam inventory databases. Updating this information seems to happen only after inspections, and sometimes not even then. There apparently is no systematic process in some states for verifying contact information for dam owners and managers. This is most likely a result of insufficient support staff for DSOs. The turnover in emergency management ranks requires updating of contact lists even more often than lists of dam owners. The campaign notified DSOs about direct mail that was returned and changes of address.
- The power of a good website and its 24/7 availability can be a very effective educational tool for dam owners, emergency managers and others seeking information and understanding. Dam owners and others do not always seek information during a normal government work day. DSOs often are out of their offices and can be difficult to reach for routine questions. This can frustrate callers. An alternative is to visit the DSA website and call the outreach program. The DSA toll-free line received 85 calls. Most of the calls from dam owners were from Georgia, Indiana, North Carolina, and Kentucky. A few were from Texas and Missouri. Phone calls to the DSA toll-free number continued well after the Pilot Studies ended, and picked up substantially as the new campaign rolled and the four new state sections were added to the website. The website solves several problems common across many states and even federal agencies: (1) current EAP information is often buried so deeply in state and some federal websites that it is difficult to readily find; (2) important information on one website may not be present on another website; (3) some current information on government websites is very technical in nature and is not readily understood by non-technical people; (4) some websites are not attractive and easy to navigate, and may be outdated; (5) many users become frustrated if they cannot acquire information within about “three clicks.” The DSA team focused on researching, acquiring, creating, and consolidating information from numerous sources and websites into www.DamSafetyAction.org. This included historic and legal background on each state’s dam safety laws/regulations and dam failures, EAP resources for the public and dam owners, and information for news media. A common landing page provides routes to separately branded state sections and web pages. Those sections are state-specific in content and to some extent in look, though common pathways for navigation and topics provide continuity among the states. Each is comprehensive in detailing the state’s dam safety/EAP laws and regulations, contact information for the dam safety programs, and other state information. Design facilitates further expansion of the website for additional states. The website also provides avenues for immediate access and response to relevant state and national dam safety news.
- Not all dam owners are experienced Internet users who seek information there. They may not even realize they need EAP information. Well-designed mailings and a toll-free phone number for

information will reach those individuals better than a website. The outreach campaign included multi-part direct mail to dam owners, EMDs and others as appropriate.

- Most dam owners will not know the importance of inundation mapping, and may be surprised by how far water will go if their dam fails. States providing maps for dam owners find that this can be the best opportunity for starting the EAP dialog and process. The campaign provided more information on inundation mapping as a means to start that conversation between DSOs, EMDs and dam owners. This included a new “generic” version of an Inundation Mapping Brochure originally created for Missouri stakeholders.
- Most dam owners are willing to complete an EAP, and often are anxious to get started. They may not know they are supposed to comply or know how to get started and where to get help. They are fearful of unexpected costs associated with an EAP and getting involved with state regulators. The campaign included ways to provide answers to these questions and facilitate contacts between dam owners and the DSOs.
- Many dam owners do not realize their liability. Most of them do not believe their dam could be a problem. And most do not realize how quickly a problem such as seepage can turn into a sinkhole or slide and then a collapse. They also do not realize their responsibility to their downstream community. Many are reluctant to call 911 or the state emergency action number. Some do not know what numbers to call and in what order. The campaign expanded information and images about dangerous dam “incidents,” re-emphasized dam owner liability, and provided dam owners in two states with refrigerator magnets that guide them through proper sequences of emergency calls.
- A sympathetic ear and some accurate information can be reassuring to dam owners. Some dam owners called a third party – the toll-free DSA number – before calling the state dam safety office for more information about EAPs. Owners may fear a call to the state will trigger negative consequences such as a fine or further inspection or high cost. This pattern continued during the campaign, with inquiries from numerous dam owners. The campaign staff fielded these questions and concerns in such a way that most dam owners became more comfortable with what they learned and usually were ready to follow up with their state DSOs.
- EMDs and first responders may deal with emergencies all the time, but that does not mean they know what a HHP dam is or the need and legal basis for an EAP. The emergency planning and response community, and perhaps also the watershed organizations, often need education and outreach as much as dam owners. Many EMDs do not know that they need to be involved in creating EAPs or that they should ask the DSOs for copies of EAPs that may already exist for dams in their jurisdictions. When EMDs change jobs or offices are moved, EAPs may be lost. And if an EAP has not been updated and exercised regularly, it may no longer exist or be fully accurate. These issues are important because local EMDs can be a driving force in convincing dam owners to complete EAPs regardless of whether the state has regulatory authority. Campaign communication to EMDs included messages to address these concerns.
- The local EMD is usually tasked with developing the EAP notification tree. Because some EMDs are part-time and/or volunteers, they have many responsibilities but limited resources and time. This can become a major bottleneck in the completion of EAPs. The problem is that even with inundation zone land parcels identified, the names and phone numbers of occupants or owners must be verified

and updated. With the move from land phone lines to cell phones, keeping a phone contact list current is now more difficult. Some suburban counties have between a dozen and three dozen HHP dams with hundreds of parcels in their inundation zones. Under the best of circumstances it can be challenging and time consuming for EMDs to develop and update notification trees when they have no support staff, perhaps no knowledge or availability of software such as ArcView, and other high priorities. Outreach communications to the public included suggestions to contact local EMDs if they believe they are in an inundation zone so they can be notified. The outreach campaign also worked with a Georgia Girl Scouts troop with a camp that has an HHP dam, suggesting the scouts may be able to help the EMD develop the notification tree.

- One aspect of the Pilot Studies often cited positively by DSOs was that materials and communications tactics could be developed and deployed quickly and without cost to the limited state program budgets. One DSO said that it might have taken a year working through customary state channels of justification, approval and production to get an EAP tabletop exhibit that the Pilot Study provided in three weeks. State dam safety programs often have no budget for direct mail or the creative/production costs of brochures and postcards. The campaign included these types of projects for the four target states.
- Community/residential association dams received considerable emphasis in the campaign due to their increasing number, particularly in suburban areas, and the number of persons and properties that can be impacted by a breach. These association responsibilities and officers rotate periodically, often when a property is sold and the contact person for dam management relocates. EAP development may stop. EAPs completed may be lost. The campaign communications targeted associations that have HHP dams. EAP success story/case studies focused on this type of community HHP dam to further elaborate the issues and responsibilities that go with a lakeside community.
- News organizations may not readily see the importance of EAPs unless there has been a breach or a major weather event. Media relations outreach communication does not have to be overly dramatic or inflammatory, but does need to convey the importance of EAPs to the public in terms people can relate to, preferably localized. The campaign's media relations aspects included emphasizing the number of HHP dams without EAPs and the increased risk this creates for those living, working or passing through areas below a dam.
- Social media continues to develop and provide additional opportunities for communication with dam owners, EMDs, DSOs and stakeholders. A longer-term outreach program with more states made the addition of a blog and Facebook community a more viable element of the campaign. Results have been slow to develop, and the social media program may need more time.

Appendix B

Media Tracking and Sample News Articles of Interest

News tracking

Publication and broadcast of DSA news releases and feature stories, along with other news about dam safety, was monitored using VOCUS media software. Each month, Outlook Process Partners (OPP) media relations staff pulled a summary of print and broadcast news stories pertinent to the outreach campaign based on key words. Contractor media relations staff used search engines twice a month to find other news articles VOCUS may have missed or that were related to events that could impact dam safety in one of the target states.

Pertinent news items were summarized and posted on the appropriate state's DSA website News & Events page, along with links to the original publication. Reprints of some news and features also were acquired or built from online publications. These were made available to DSOs and EMDs as appropriate.

A typical monthly news summary based on VOCUS.

OPP used VOCUS media monitoring technology to prepare the following report on June 2014 news that was relevant to the outreach campaign. Two key terms (levee and spillway) were left off of this report due to the fact that thousands of articles mentioned those words. Many articles also mentioned more than one key term, which is a great way to spread visibility of different dam-related key terms.

Dam key terms: National Dam Safety Review Board, High-Hazard Potential dam, Emergency Action Plan, Association of State Dam Safety Officials, Dam Breach, Dam Emergency, Coal tailings dam, Mine tailings dam, Watershed dam, Dam Safety + Georgia or Kentucky or Indiana or California or Missouri or North Carolina or Texas.

This month there were three key terms did not render any traditional news media results: Coal tailings dam, Mine tailings dam, and Watershed dam.

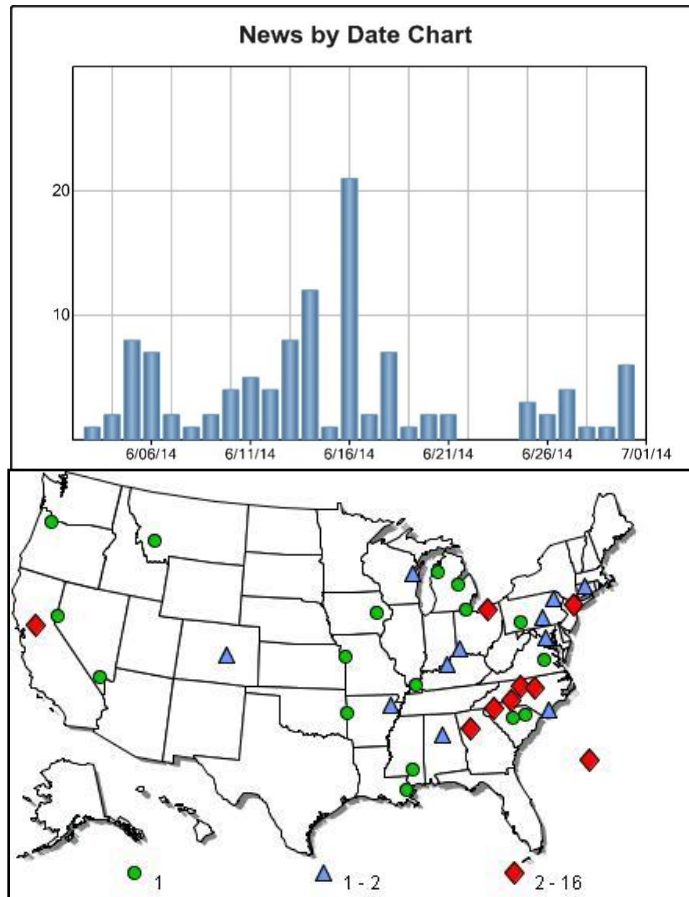
June	
Total Search Results: Articles	119 (10 articles in multiple keyword searches)

Word Cloud (most popular terms in search results)



The terms in the Word Cloud demonstrate the continued visibility of dams. Affected areas have been hit by a dam breach and lake flooding. Planning is taking place in other areas as residents are threatened by another dam break.

News by Date



The News by Date chart shows the average article counts for the month of June. The spike in news on 6/16 is an article out of Indiana that showcased the University of Evansville coming together with engineers and other partners to devise a plan for constructing a new dam and spillway to win a \$7,500 award.

Ne

News about dams and dam safety was more highly concentrated in the Georgia and North Carolina states for the month of June. North Carolina seemed to have the most issues with dams this month and the articles focused around that.

Search Terms	Analysis	Sample Articles
National Dam Safety Review Board Total Results: 1	This article talked about the need for high-hazard dams to have emergency action plans which is strongly encouraged by the NDSRB.	http://www.wdrb.com/story/25904890/kentucky-part-of-federal-program-to-add-emergency-plans-for-dams
High-Hazard Potential Dam Total Results: 9	Articles that mentioned high hazard dams were about the cost of rebuilding the dam due to the high hazard status, workshops for EAP planning for high hazard dams, and high hazard dams in North Carolina.	http://www.waupacanow.com/Content/Default/Breaking-News/Article/Costs-to-rebuild-dam-may-double-if-permit-denied/-3/37/23476 (reprinted 2 times) http://www.sequoyahcountytimes.com/news/article_42c3912c-fe21-11e3-80e5-001a4bcf6878.html http://www.godanriver.com/news/coal-ash/n-c-orders-duke-energy-to-act-after-finding-more/article_0a197c6a-fdf9-11e3-a69b-001a4bcf6878.html (reprinted 2 times)
Emergency Action Plan Total Results: 16	Articles that mentioned EAPs focused on lakes that are needing EAPs in case of a dam failure or spillway issue downstream; specifically Lake Peachtree in Georgia. Review boards are looking to see how much repairs would cost to prevent a spillway issue and dam break.	http://www.thecitizen.com/articles/06-08-2014/dry-summer-ahead-lake-peachtree (reprinted 4 times) http://www.thecitizen.com/articles/06-11-2014/ptc-fayette-%E2%80%98hurry-up%E2%80%99-lake-repairs (reprinted 2 times) http://www.thesuburbanite.com/article/20140606/NEWS/140609514 (reprinted 3 times)

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Search Terms	Analysis	Sample Articles
Association of State Dam Safety Officials Total Results: 7	The articles that mentioned Association of State Dam Safety Officials focused on reports or statistics that the Association has provided.	Structural issues could be the sunset of more lakes (Reprinted 2 times) The growing dilemma of the U.S.' aging dams National Dam Safety Awareness Day (Reprinted 3 times)
Dam Breach Total Results: 33	The majority of the articles were regarding a dam breach that occurred in Virginia due to a large rainfall. Apartments would completely flood if more water spills out. The lake is on the verge of being dangerous.	Dry summer ahead for Lake Peachtree (Reprinted 4 times) http://www.wnem.com/story/25773543/rain-causes-trench-at-chesterfield-apartment-complex (reprinted 17 times)
Dam Safety +States (GA, KY, IN, CA, MO, NC, TX) Total Results: 51	The first article that was reprinted 19 times was about University of Evansville Civil Engineering Students winning a 2014 NCEES Engineering Award for the Fairfield Reservoir and Dam Project. The article that OPP sent out through MyMediaInfo was also picked up in these keywords as well.	http://markets.financialcontent.com/stocks/news/read?GUID=27461472 (reprinted 19 times) http://www.erosioncontrol.com/EC/Articles/Program_Seeks_Emergency_Plans_for_HighHazard_Dams_26124.aspx (generated by outreach campaign)
Dam Emergency Total Results: 2	The articles rendered by Dam Emergency was a rescue emergency effort of kayakers out of a dam known to be dangerous and an evacuation based on high water levels at a lake that could lead to another emergency dam evacuation.	http://www.wjactv.com/news/features/top-stories/stories/evacuation-place-residents-part-somerset-co-2974.shtml http://www.pennlive.com/midstate/index.ssf/2014/06/kayakers_rescued_dock_street_d.html
Coal Tailings Dam Total Results: 0	Coal Tailings Dam rendered no articles.	
Mine tailings dam Total Results: 0	Mine tailings dam rendered no articles.	
Watershed dam Total Results: 0	Watershed dam rendered no articles.	

Published news stories

The following four news stories are examples of news and features generated by the outreach campaign.

EAP National Outreach and Marketing Campaign Pilot States Final Report

Program seeks more emergency plans for Indiana high-hazard dams – The Flyer Group: Local News


www.flyergroup.com/news/local_news/program-seeks-more-emergency-plans-for-indiana-high-hazard-dams/article_bc459398-5da5-5f1e-8000-000119080000

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Hendricks County News

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Program seeks more emergency plans for Indiana high-hazard dams

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Story

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Posted: Wednesday, July 2, 2014 2:50 am

Hendricks County Flyer

A new outreach and communications program has been launched to help increase the number of Incident and Emergency Action Plans (IEAPs) completed for Indiana's high-hazard potential (HHP) dams. Supported by the Federal Emergency Management Agency, the outreach program will aid the Indiana Department of Natural Resources (DNR) Division of Water efforts to increase public and dam owner awareness of the importance of IEAPs for the protection of lives and property.

Dam owners have the legal liability and social responsibility to provide IEAPs, although they are not mandatory under current Indiana dam safety laws and regulations. More than 200 of 245 state-regulated HHP dams do not have IEAPs, according to DNR records. DNR dam safety engineers and staff inspect the dams and can provide assistance to dam owners in completing an IEAP. Nationally, more than 3,100 state-regulated HHP dams do not have IEAPs.

High-Hazard Potential means loss of life would be likely in the event of a dam failure. The HHP designation does not in any way reflect the current condition of the dam's structural integrity. HHP dams under state regulation are inspected at least every two years by DNR dam safety engineers.

An IEAP is a plan of action to reduce potential loss of lives in an area affected by a dam failure. An IEAP can be instrumental in identifying an "incident" at a dam, such as seepage or a mechanical malfunction, and preventing it from becoming an emergency. The IEAP includes a map of the potential inundation area, along with procedures and information for notifying downstream emergency managers. Using the IEAP, county and local emergency managers can identify the location of businesses, schools, hospitals, nursing homes, residences, and highways at risk. The IEAP also specifies shelters, emergency resources, and other information crucial for an efficient response, including, if necessary, evacuation procedures and routes.

The centerpiece of the outreach program is the website www.damsafetyaction.org, which is intended for the public as well as dam owners, dam safety officials, and emergency management professionals. The website contains educational materials about the importance of IEAPs, links to state and national sources of IEAP information, IEAP forms, and completed samples of IEAPs. Also included is a section on the importance of inundation maps. Links to organizations involved in dam safety are provided, along with downloadable brochures created for the public and dam owners, news features, and graphics.

Many of these tools will help guide and ease the IEAP process for dam owners and those working with them.

Persons at risk in a dam failure include those who live, work, or travel through an inundation zone. Campers, hunters, anglers, hikers, other recreationists, and farm workers (and their livestock) also may be in need of the warning system an IEAP can help provide.

An IEAP also helps emergency managers know who is outside the inundation zone and does not need to be evacuated.

Creative Communications Network, Inc. (CCN), based in Liberty, Missouri, is the contractor for this outreach program.

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The Latest

Program Seeks Emergency Plans for High-Hazard Dams

Wednesday, July 02, 2014

Comments

A new outreach and communications program has been launched to help increase the number of Emergency Action Plans (EAPs) completed for California high-hazard potential (HHP) dams. Supported by the Federal Emergency Management Agency, the outreach program will aid the California Office of Emergency Management (CalOES) efforts to increase public and dam owner awareness of the importance of EAPs for the protection of lives and property.

Dam owners have the legal liability and social responsibility to provide EAPs, although they are not mandatory under current California laws and regulations. About half of 684 state-regulated HHP dams do not have EAPs, according to state records. CalOES Emergency Management Coordinators can provide assistance to dam owners in completing an EAP. Nationally, more than 3,100 state-regulated HHP dams do not have EAPs, so the California shortfall represents more than 10% of the total EAPs needed.

High-Hazard Potential means loss of life would be likely in the event of a dam failure, along with extensive environmental and property damage. The HHP designation does not in any way reflect the current condition of the dam's structural integrity. HHP dams under state regulation are regularly inspected by dam safety engineers.

An EAP is a plan of action to reduce potential loss of lives in an area affected by a dam failure. An EAP includes a map of the potential inundation area, along with procedures and information for notifying downstream emergency managers. Using the EAP, county and local emergency managers can identify the location of businesses, schools, hospitals, nursing homes, residences, and highways at risk. The EAP also specifies shelters, emergency resources, and other information crucial for an efficient response, including, if necessary, evacuation procedures and routes.


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Persons at risk in a dam failure include those who live, work, or travel through an inundation zone. Campers, hunters, anglers, hikers, other recreationists, and farm and ranch workers also may be in need of the warning system an EAP can help provide. An EAP also helps emergency managers know who is outside the inundation zone and does not need to be evacuated.

Creative Communications Network, Inc. (CCN), based in Liberty, Missouri, is the contractor for this outreach program.


Source: DamSafetyAction.org



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Emergency plans lagging for high-hazard dams in Kentucky, Indiana - WDRB 41 Louisville News

SUNDAY EDITION: Emergency plans lagging for high-hazard dams in Kentucky, Indiana

Updated Nov 21, 2013 10:58 AM CST
By Marcus Green CONNECT

SHELBYVILLE Ky. (WDRB) — Created by implementing a local creek in the early 1980s, Quist Creek Lanes borders neighborhoods, rolling farmland and a ribbon of U.S. 60 east of Shelbyville.

Regulators consider the dam that contains the lake's 317 acres to have a "high-hazard potential" — not so much because of its condition, but because they believe there is a failure is likely to result in significant property damage and even death.

Yet the Quist Creek reservoir is a rarity among similar dams in Kentuckiana. It has an emergency plan by the vest of a license or other emergency.

In recent years, federal and state safety officials and regional engineering groups have urged owners of high-hazard dams to adopt emergency plans. The National Dam Safety Review Board "strongly recommends" states require the plans, and it advises owners of high-hazard dams to prepare them "irrespective of state law or regulation."

But those recommendations are falling short in Kentucky and Indiana, according to documents obtained under both states' open records laws and an independent evaluation by the Association of State Dam Safety Officials.

Most high-hazard dams overseen by the two states lack the plans, which typically include emergency contact information, detailed descriptions of first responders, evacuation maps and contact information for residents in the probable path of flood waters.

A WDRB.com review of data regarding an emergency action plan, or EAP, found that in Kentucky:

- 33 percent of all state-regulated, high-hazard dams have EAPs — 8th lowest in the United States, according to 2013 state compliance reports from the American Society of Civil Engineers
- Only 8 percent (14 of 179) of the high-hazard dams regulated by the Indiana Division of Water Affairs, according to documents provided under the Kentucky Open Records Act in November; Division of Water Affairs, however, says the figures are actually higher
- The Kentucky Department for Natural Resources has received a "small number of plans" submitted voluntarily for the 131 state-regulated dams it regulates, but the agency did not provide specific data
- The National Performance of Damages database, administered by Stanford University, shows no emergency plans for 77 dams listed as regulated by the natural resources department; none of the 58 dams regulated by the Mine Safety and Health Administration has EAPs.

And in Indiana:

- 22 percent of state-regulated, high-hazard dams have EAPs — 8th lowest in the U.S., according to the Association of State Dam Safety Officials
- 25 percent (29 of 240) of the high-hazard dams regulated by the Indiana Department of Natural Resources have EAPs, according to documents provided under the Indiana Access to Public Records Act

The plans help lower the risk during dam failures, said Lori Spragens, executive director of the Lexington, Ky.-based Association of State Dam Safety Officials, which supports making EAPs mandatory.

"Without significant emergency action plans in place ... if a dam fails there's still a likelihood that people aren't going to know. They're not going to get out of harm's way," she said.

Neither state requires emergency plans for the highest-risk dams, and efforts to add more are complicated by large numbers of dams in both states that are privately owned — from homeowners' associations to farmers.

Emergency action plans are the "last stopgap of public safety," said Jared Huss, a South Bend, Ind., engineer who helped author a 2010 review of Indiana dams for the American Society of Civil Engineers.

"These really are the most low-cost safety mechanisms that we can put into place," Huss said in an interview.

(Engineers would stand to gain financially if the plans were mandated.)

The plans are in place for some of Kentucky's most well-known dams — Wolf Creek Dam and Lake Cumberland, for example, and several others at Holston and Rivier rivers. But, in all, 18 federally regulated dams owned by the U.S. Army Corps of Engineers and Tennessee Valley Authority have EAPs, according to the Stanford database.

But most dams are much smaller. They're the responsibility of local governments, private landowners and businesses. While Kentucky and Indiana state agencies largely regulate those dams' permitting and inspections, they can't lead where they have emergency plans.

At least 22 states — but not Kentucky and Indiana — require EAPs for the riskiest dams. Legislation mandating the plans has failed to advance in the Kentucky General Assembly in recent years; no bills requiring the plans have been filed in Indiana's legislature, said Ken Smith, assistant director of the Indiana Division of Water.

The low rates of plans in Kentucky and Indiana are "very concerning to us as an association and should be to the citizens of the states and the policy makers in the states," Spragens said.

"An area of concern"

There were at least 400 failures or near failures of dams in the United States from 1990 to 2010, resulting in 15 deaths, according to the dam safety association.

No one died when two dams in Kentucky, and four in Indiana, failed during that time. But a partial collapse of Treasure Lake in Boone County, Ky., in 1993 damaged large sections of nearby roads and residential tracts, and more than 300 golf carts and cars were stranded into Big Shifty and Ohio rivers when a Martin County, Ky., impoundment broke in 2000.

"It is a fact that we have not seen that many failures," Spragens said. "But the notion that says that means there won't be failures in the future. Dams continue to age and without proper upkeep and rehabilitation, the likelihood of failure gets larger every day."

The 1980s marked a spike in dam building in Kentucky and Indiana. The vast majority of dams in the two states whose completion dates are tracked by the federal National Inventory of Dams were built before 1980 — 88 percent in Indiana and 83 percent in Kentucky.

The American Society of Civil Engineers' Indiana section has called the lack of required EAPs an "area of concern." The society's Kentucky membership recommended in a report card on the state's infrastructure two years ago that the plans be developed for all of the state's high-hazard dams.

"From a planning perspective, a dam owner needs to have a plan on how to do it or what's a problem," said Jon Keeling, a Lexington, Ky., engineer and member of the Kentucky engineering group who worked on the 2011 report.

Kentucky has used \$159,250 in federal safety grants over the past two years to beef up emergency plans for dams regulated by the Division of Water. Prior to the grant, 7 percent of the high-hazard dams regulated by the division had EAPs. But the plans are now in place for 35 percent of those dams, said Shane Cook, a division engineering supervisor for dam safety.

Cook said new technology, including software that eliminates the need for costly surveys of downstream areas, will allow the state to create more EAPs. Within a year, Cook predicts the plans will be in place for up to 60 percent of high-hazard dams.

"This time next year this number will be quite a bit higher," Cook said.

Indiana officials also are optimistic that more EAPs will be developed in the coming years. There were "zero" plans for high-hazard dams a decade ago, but since then nearly 60 have been adopted, and another 40 more are expected within two years, said Smith, of the state Division of Water.

Using federal and state funds, Indiana state government has worked to draft the plans for publicly-owned, high-hazard dams and is now targeting private dams as part of a broad effort that involves states, federal and local agencies, Smith said.

But he noted that Indiana is among the states without laws requiring the plans.

"That gives those programs a great leg up," Smith said. "We have to encourage volunteer creation of these things, and that makes it a little more difficult for our state and Indiana to rise under the curtain."

A legislative answer?

Legislation to require EAPs for high-hazard dams died in the Kentucky General Assembly in recent years.

In 2007, then-Sen. Robin Webb introduced a resolution that would have required the state Environmental and Public Protection Cabinet to develop regulations making the plans mandatory for high- and significant-hazard dams. The measure died in the House budget committee.

Two years later, Webb and fellow eastern Kentucky Sen. Ray Jones revived the push before the effort stalled in the Senate. Jones, a self-described "pro-dam" lawmaker, claims coal, business and anti-regulatory interests for derailing the resolution.

At the same time, Jones said, he doesn't consider the regulations he proposed to be unfriendly to business. A significant failure at a coal-related dam would be "another relying cry to crack down on coal," he said.

"It is a legitimate issue," said Jones, D-Pikeville. "If you have some of those impoundments full of surface water, people are going to die."

Bill Bassett, president of the Kentucky Coal Association, said federal regulators with the Office of Surface Mining Reclamation and Enforcement are discussing mandating the plans. At the state level, he said, his organization "is open for a dialogue" about requiring EAPs — as long as they apply to all high-hazard dams.

"We can't single out coal," he said.

"Legislation would be helpful," said Smith, the Indiana official. But, he added, the cost for a dam owner to create an EAP can run as high as \$15,000.

"Given what the costs might be to individuals," he said, "I'm not certain I'd expect to see legislation like that any time soon."

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Dam owners, emergency manager, engineers say IEAP process informative and rewarding

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Posted: Thursday, October 23, 2014 12:27 pm | Updated: 12:29 pm, Tue Oct 28, 2014.

By Joy LeConte | 9 comments

ROME CITY — When the Ice Age came to a close and the last glacier withdrew from Indiana, it left behind a gouge and a river system that about 12,000 years later, with some human intervention starting in 1837, would create one of the many scenic lakes that dot the northeast area of the state between Fort Wayne and South Bend.

Recently, all of the partners involved with the dam at Sylvan Lake went through the process of revising a plan of action for maintaining the dam as well as a plan for evacuation - should that ever become necessary due to failure of the structure.

When discussing Sylvan Lake Dam, which is the earthen structure that runs parallel with State Road 9, one must also consider the spillway which has an operational "tainter gate" that can be adjusted to control the lake's water level.

The Dam and the Lake

Today the 669-acre Sylvan Lake has houses and boat docks around its perimeter, and the town of Rome City is near its dam. The woodlands, hills and marshes in the watershed feed 5,985 acre-feet of water into the lake at normal pool. State Highway 9 traverses the dam that forms the lake's northeastern boundary. Development of houses and businesses downstream of the dam has given the dam a designation of High-Hazard Potential (HHP) because a breach would almost certainly take human lives. In fact, the dam already has taken three lives, when it failed in 1844, the second of three failures within a few years of its initial construction. Later there would be at least two near-failures before reconstruction and improvements in 1986 and onward resulted in the addition of a tainter gate, spillway improvements, and other stabilization actions.

Sylvan Lake is on the Middle Branch of the Elkhart River and is located above a chain of West Lakes in sequence or adjacent to one another. Heavy rains at various times in recent years have brought the lake to high levels, but have not progressed beyond the stage of monitoring the dam and lake levels very carefully. The dam was owned by private homeowners, the Sylvan Lake Association, Noble County Commissioners and the State of Indiana prior to reconstruction of the dam in the 1990s. The Rome City Conservancy District was then formed and took ownership of all the dam properties along with the maintenance and care of the dam in perpetuity.

Sylvan Lake team finds efficient, mostly 'paintless' path to IEAP benefits

A Conservancy District is a legal mechanism by which landowners, through a circuit court process, can organize a special taxing district as a local unit of government to solve specific local issues related to water resources management. With Sylvan Lake it was a means to take ownership of the dam and raise the funds to maintain it and pay for improvements necessitated by its hazard classification. The District levies an assessment on about 750 property owners who benefit from the lake and the dam. The lake is an "Indiana Natural Lake," ownership of which is held in a state public trust under the Indiana Lakes Preservation Act. The separate Sylvan Lake Improvement Association of homeowners is involved with maintaining the quality of the lake as well, particularly its recreational, community and aesthetic qualities. The Indiana Department of Natural Resources (DNR) has regulatory oversight of lakes held in trust, and the Indiana Lakes Management Work Group makes decisions regarding recreational usage, permits, water quality and environmental matters.

The Team

DNR prefers the term Incident and Emergency Action Plan (IEAP) to underscore the fact that in most circumstances planning for and managing an "incident" with a dam will prevent it from turning into an emergency. Indiana law requires an IEAP on state-regulated HHP dams, even those for lakes the state holds in trust, but concerns about public safety, liability, and responsible governance led the District's board to the conclusion that an IEAP was needed. The team that worked on the project for several months concluding in 2003 was led by:

- Leigh Ann Pranger, Rome City Town Manager and Secretary for the Rome City Conservancy District,
- Slavash Belk, Vice President and Principal Engineer, Christopher B. Burke Engineering, LLC, Indianapolis. He also was head of the DNR Dam Safety Program from 1990-93.
- Michael P. Mickl Newton, Director, Noble County Emergency Management Agency.
- David Nance, Engineering Geologist in the Project Development Section of the Division of Water.

Additional participants included the Noble County Sheriff, the Rome City Town Marshal, an Indiana DNR Conservation Officer, representatives from the Indiana Department of Homeland Security and the National Weather Service, leaders of the Sylvan Lake Improvement Association, board members of the Conservancy District, and the District's outside on-call engineer from Geosyntec Consultants.

Earlier in October, Noble County Emergency Management Agency Director Mick Newton conducted a table-top exercise for all agencies that would be involved should there be a breach of the Sylvan Lake Dam. Newton explained that there are three event levels, with three being the lowest and one being the most dangerous situation.

Newton has developed four evacuation areas and every residence below the 900 foot above sea level elevation has been identified by house number and street address. Should an evacuation become necessary, emergency response teams will visit each household in the evacuation areas involved to make certain all are apprised that an emergency exists. He was quick to point out that flooding isn't the only type of emergency that can impact the dam. Other situations such as seepage, gate failure, sabotage, or a vehicle crashing into the dam can cause problems.

"Hopefully, those lists will never be needed," Newton said, "but we must be prepared for any eventual emergency."

— Editor's Note: Some of the material in this article is courtesy of IEAP.

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Wednesday	High 14°/Low 9°	Friday	High 20°/Low 24°
Thursday	Mildly cool and very good		Low clouds

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Appendix C

Website Analytics for January 1, 2014 to December 31, 2014

The following charts and data summarize traffic to and through the www.DamSafetyAction.org website. The first two charts were generated from Google Analytics for the period April to December 2014. Following those charts are statistics and charts of the entire year 2014.

The reason for the shorter period for Google Analytics is that the website was moved to a new server when the revised version went live with Georgia, Kentucky, Indiana and California added. Users, Time on Site and Page Rankings are only shown for the period after the new site launch. Some reports prior to the changeover were no longer available, but there are Sessions (formerly called Visits) and Page Views for the whole year. During the analysis months prior to the launch of the new website the old site's data and news for Missouri, North Carolina and Texas were updated.

The analytics show that even three years after the initial Pilot Studies, North Carolina and Texas continued to have numerous page views, with some ranking in the top 10 most popular pages overall in the DSA website.

Peaks in Sessions occurring during any given month usually correlate with mailings to dam owners, emergency managers, or news media. Mailings during the May-August period included brochures and news backgrounders. Mailings in November and December included the emergency contacts magnets.

EAP National Outreach and Marketing Campaign Pilot States Final Report



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All Web Site Data

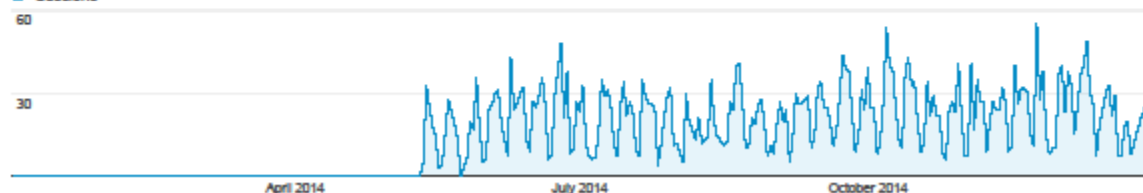
Audience Overview

Jan 1, 2014 - Dec 31, 2014

All Sessions
100.00%

Overview

Sessions



Sessions

5,155

Users

3,885

Pageviews

15,353

Pages / Session

2.98

Avg. Session Duration

00:03:14

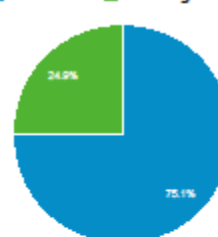
Bounce Rate

59.65%

% New Sessions

75.05%

New Visitor Returning Visitor



Language	Sessions	% Sessions
1. en-us	4,601	89.25%
2. pt-br	198	3.84%
3. en	57	1.11%
4. en-gb	51	0.99%
5. ru	40	0.78%
6. it-it	24	0.47%
7. es-es	17	0.33%
8. pt-pt	14	0.27%
9. c	10	0.19%
10. fr	8	0.16%

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Pages

Jan 1, 2014 - Dec 31, 2014

All Sessions
100.00%

Explorer

Pageviews



Page	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit	Page Value
	15,353 % of Total: 100.00% (15,353)	10,134 % of Total: 100.00% (10,134)	00:01:38 Avg for View: 00:01:38 (0.00%)	5,155 % of Total: 100.00% (5,155)	59.65% Avg for View: 59.65% (0.00%)	33.58% Avg for View: 33.58% (0.00%)	\$0.00 % of Total: 0.00% (\$0.00)
1. /	1,964 (12.79%)	1,435 (14.16%)	00:01:59	1,351 (26.21%)	55.59%	47.61%	\$0.00 (0.00%)
2. /NC/dam_owner/know-la w.php	490 (3.19%)	315 (3.11%)	00:02:15	258 (5.00%)	58.14%	45.92%	\$0.00 (0.00%)
3. /NC/about-eaps/where.p hp	445 (2.90%)	229 (2.26%)	00:01:43	192 (3.72%)	45.31%	39.55%	\$0.00 (0.00%)
4. /TX/dam_owner/know-la w.php	361 (2.36%)	247 (2.44%)	00:03:11	228 (4.42%)	69.30%	62.33%	\$0.00 (0.00%)
5. /NC/about-eaps/mapping .php	327 (2.13%)	210 (2.07%)	00:01:23	126 (2.44%)	57.14%	34.86%	\$0.00 (0.00%)
6. /GA/dam_owner/damsafe typrogram.php	290 (1.89%)	206 (2.03%)	00:02:25	199 (3.86%)	43.72%	47.59%	\$0.00 (0.00%)
7. /TX/about-eaps/where.ph p	288 (1.88%)	186 (1.84%)	00:02:53	163 (3.16%)	60.12%	55.90%	\$0.00 (0.00%)
8. /NC/news-events/in-the-n ews.php	246 (1.60%)	116 (1.14%)	00:01:38	70 (1.36%)	75.71%	37.40%	\$0.00 (0.00%)
9. /CA/index.php	224 (1.48%)	146 (1.44%)	00:01:12	10 (0.19%)	30.00%	8.93%	\$0.00 (0.00%)
10. /GA/index.php	220 (1.43%)	157 (1.55%)	00:00:28	11 (0.21%)	45.45%	10.91%	\$0.00 (0.00%)

Rows 1 - 10 of 395

EAP National Outreach and Marketing Campaign Pilot States Final Report

Totals for 1/1/2014 - 12/31/2014

6,461 Sessions
28,120 Page Views
3.93 Pages/Session

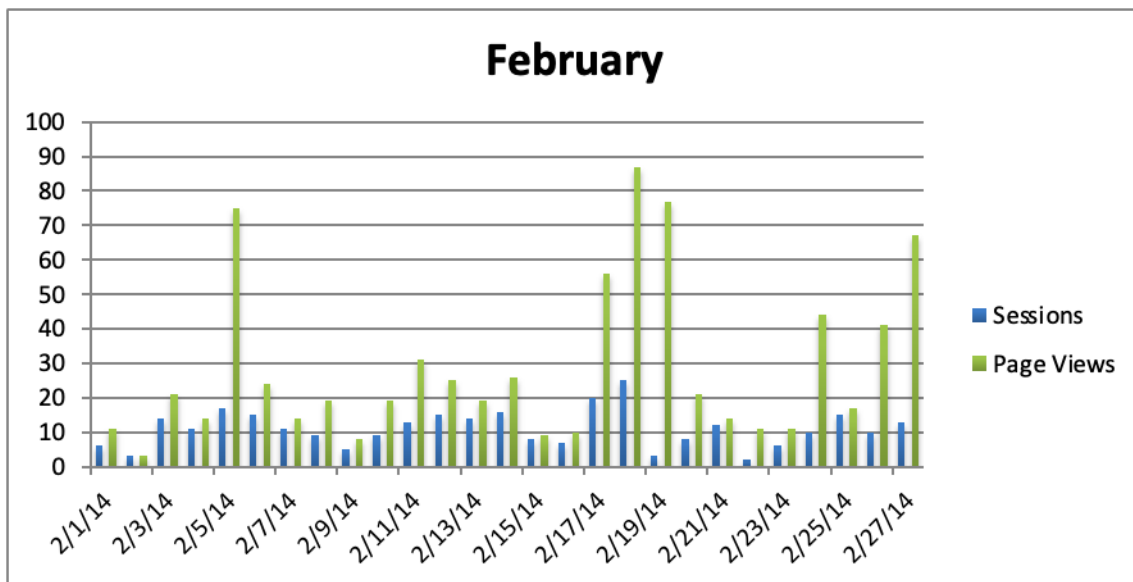
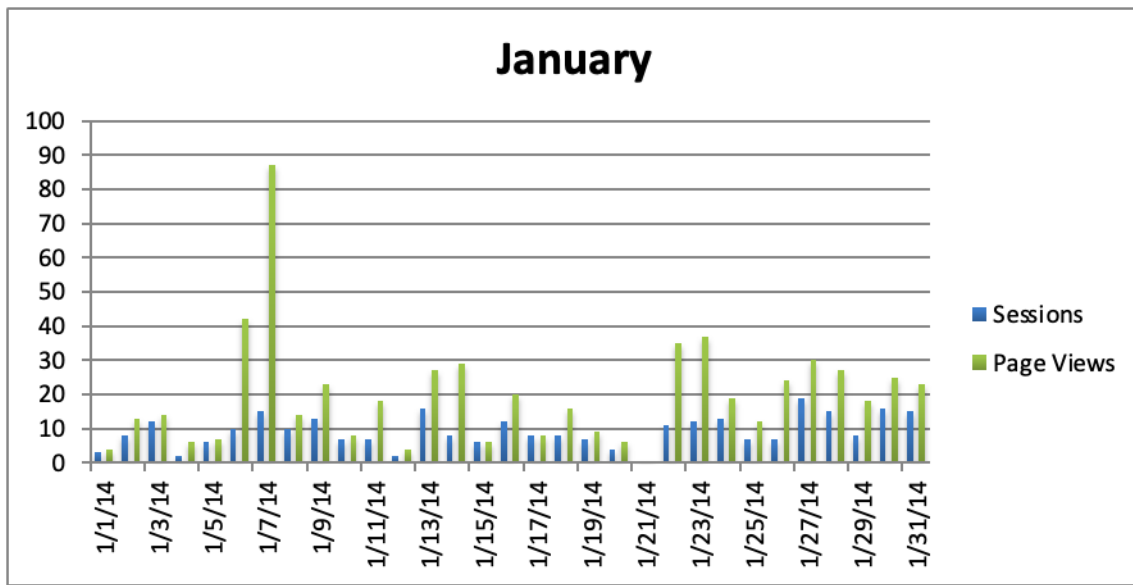
Totals for 5/11/2014 - 12/31/2014

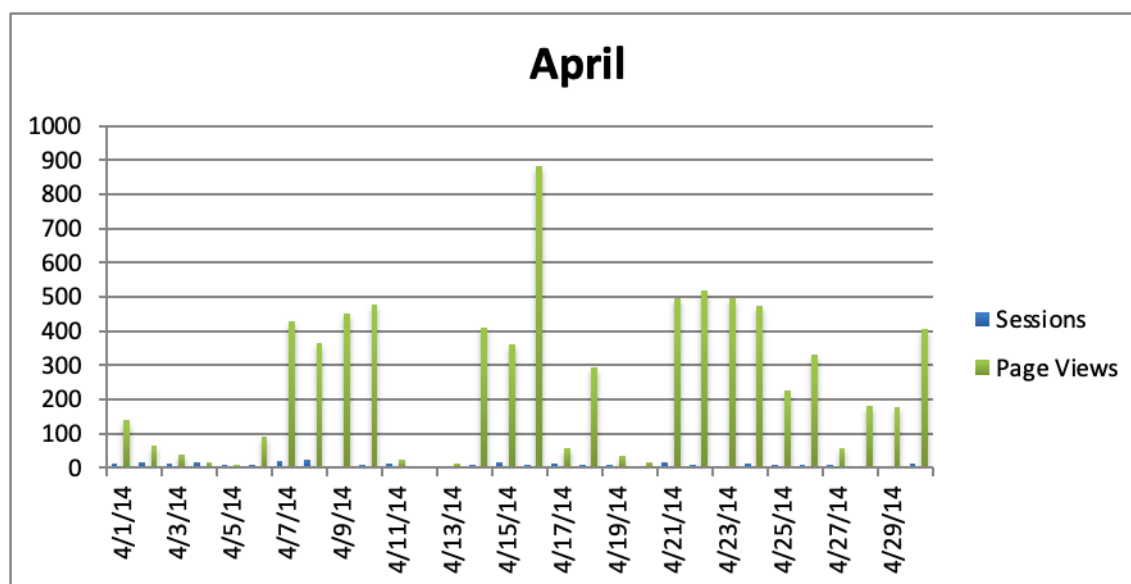
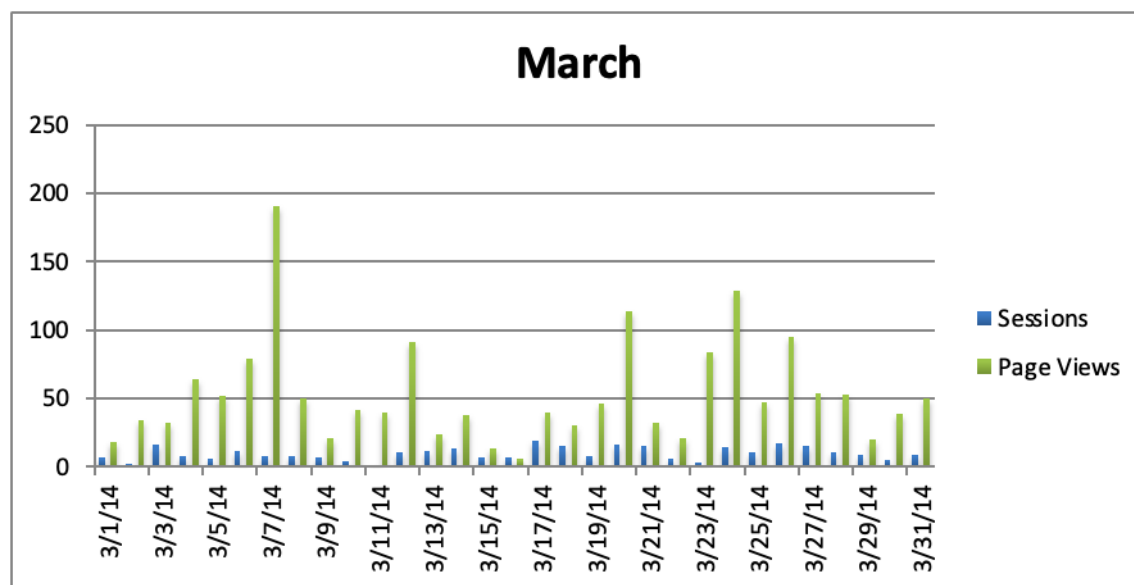
(new site design launch and GA, KY, IN, and CA added on 5/11/2014)

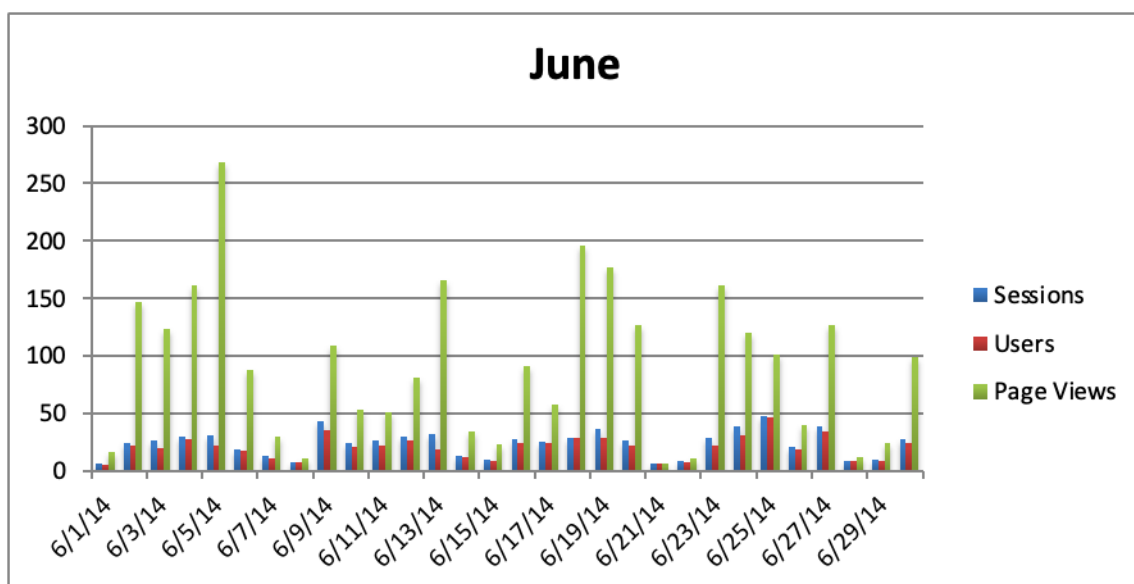
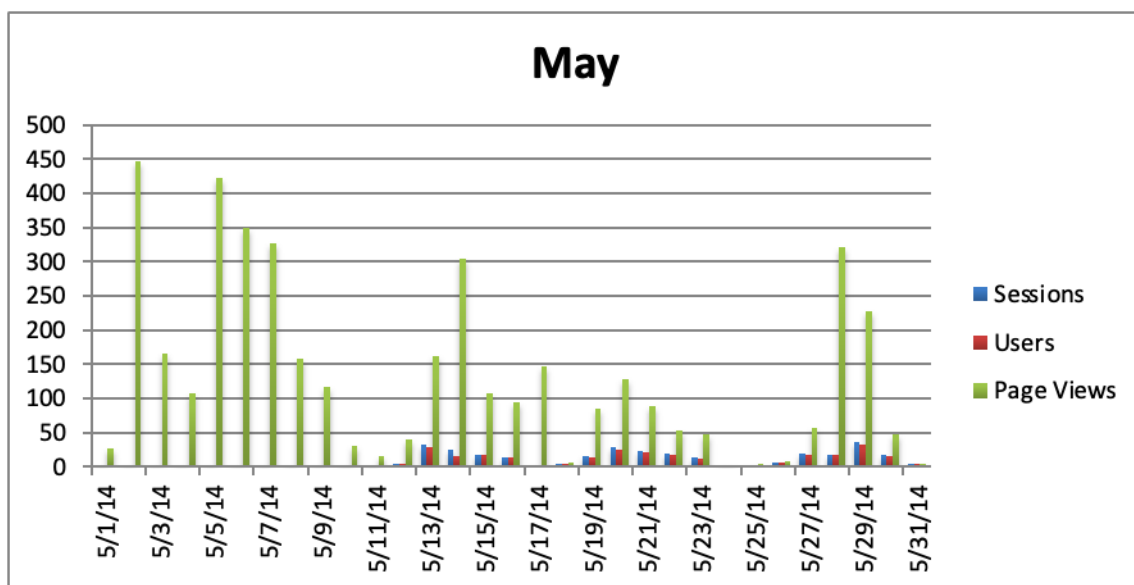
4,596 Users
3.14 min. Average Time on Site

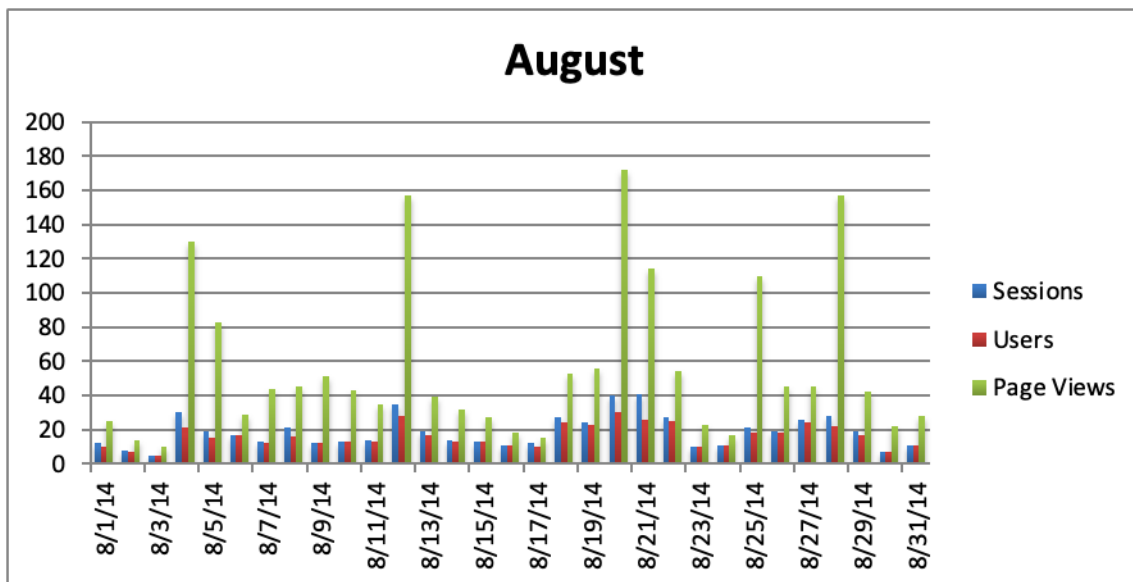
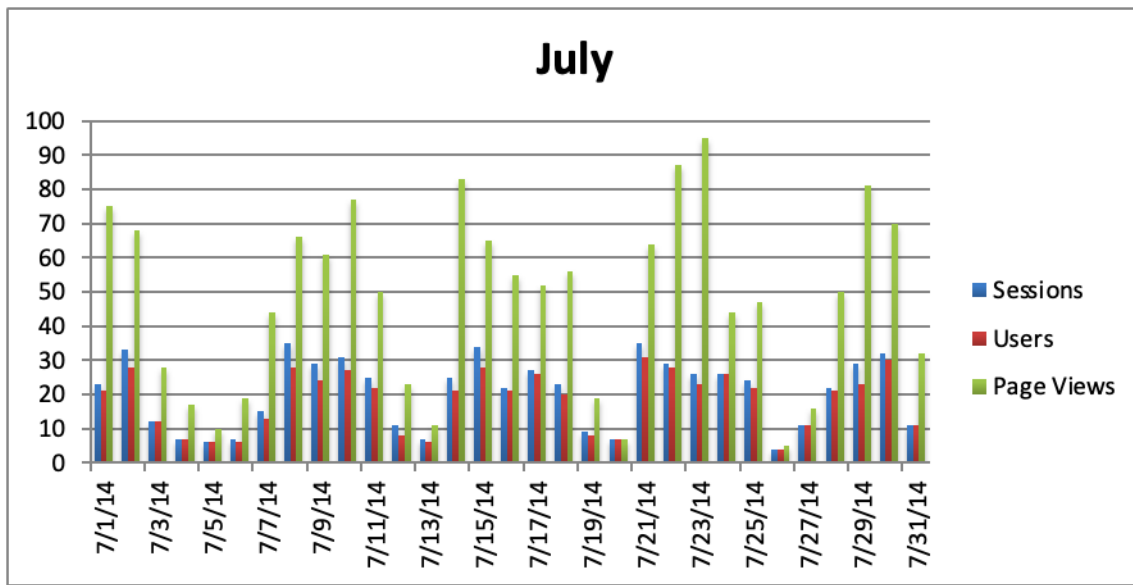
MOST POPULAR PAGES (5/1/2014 – 12-31-2014)

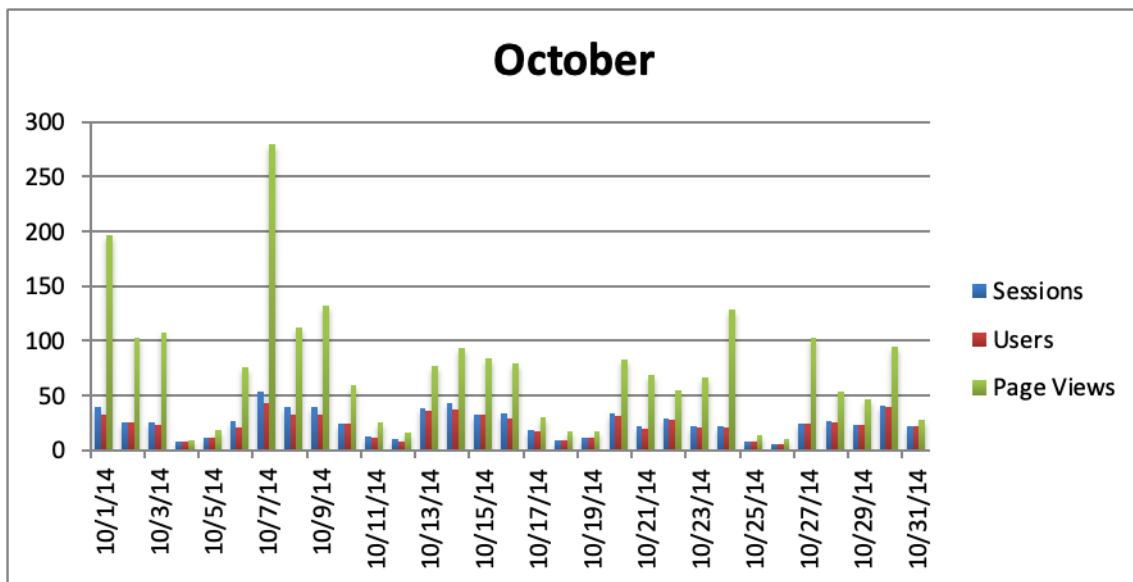
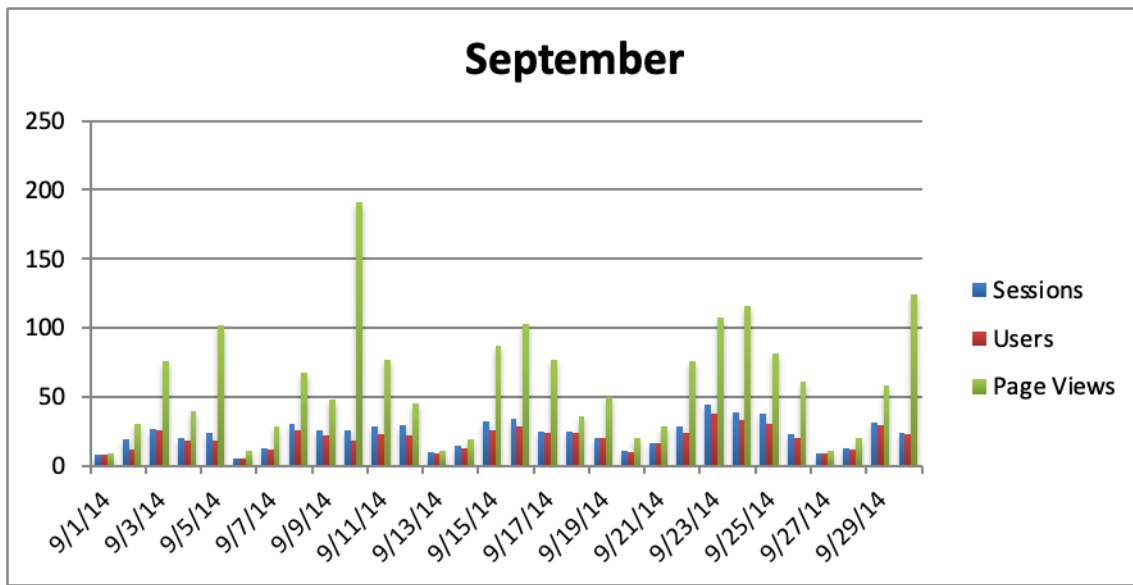
RANK	PAGE	PAGE VIEWS
1.	/index.php	1,964
2.	/NC/dam_owner/know-law.php	490
3.	/NC/about-eaps/where.php	445
4.	/TX/dam_owner/know-law.php	361
5.	/NC/about-eaps/mapping.php	327
6.	/GA/dam_owner/damsafetyprogram.php	290
7.	/TX/about-eaps/where.php	288
8.	/NC/news-events/in-the-news.php	246
9.	/CA/index.php	224
10.	/GA/index.php	220

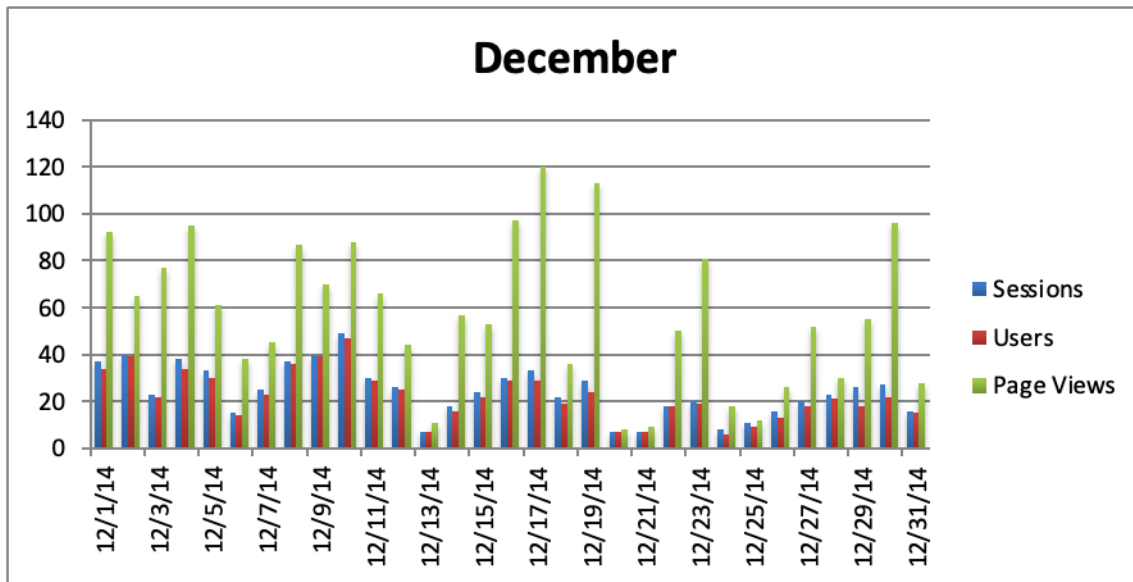
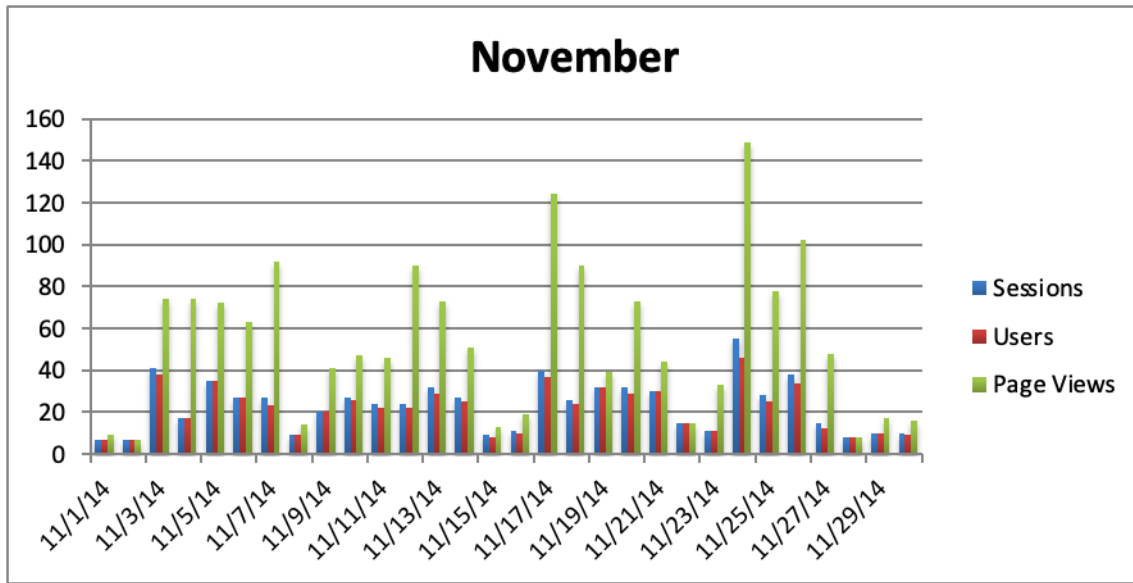












Acronym Key

ASDSO American Society of Dam Safety Officials
ASCE American Society of Civil Engineers
BoR Bureau of Reclamation
CalOES California Office of Emergency Services
COE U.S. Army Corps of Engineers
DENR Department of Environment and Natural Resources
DEP Department of Environmental Protection
DHS Department of Homeland Security
DNR Department of Natural Resources
DOW Division of Water
DSA DamSafetyAction.org
DSO Dam Safety Official
DSOD Division of Safety of Dams
DWR Department of Water Resources
EAP Emergency Action Plan
EMD Emergency Management Director
EMC Emergency Management Coordinator
EMS Emergency Medical Services
ESC Emergency Services Coordinator
EPA Environmental Protection Agency
ESP Emergency Survival Program
FEMA Federal Emergency Management Agency
FERC Federal Energy Regulatory Commission
FFA Future Farmers of America
HHP High-Hazard Potential
IEAP Incident and Emergency Management Plan
ISJ Indiana Silver Jacket Partnership Project
NDSRB National Dam Safety Review Board
NID National Inventory of Dams
NRCS Natural Resources Conservation Service
RC&D Resource Conservation & Development Councils
SHP Significant-Hazard Potential
SIMS Simplified Inundation Maps
USDA United States Department of Agriculture