WHAT WE DO AND DON'T KNOW ABOUT ALABAMA'S DAMS AND WHY IT MATTERS

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History of Dam Safety Efforts in Alabama

- Alabama is only state without a Dam Safety program

- Previous legislative attempts
  - 2002 – “Dam Security & Safety Act” initiate by ADECA/OWR with a coalition including ALFA and APCO; due to lack of consensus the proposed legislation was not introduced in 2003
  - 2008 – “Alabama Dam Inventory and Classification Act” by Representative Randy Wood and cosponsored by Canfield, McCutcheon, Laird, Bridges & Fite; merely required Alabama to count and classify dams and included ability of OWR to enter on to private lands as a part of the data gathering effort
  - 2014 – Legislation was introduced based on ASDSO model legislation by Mary Sue McClurkin in response to the mayor of Indian Springs concerns of the condition of a dam at Oak Mountain Park. Thanks to efforts by ASCE member Ben Gallagher

- Other progress
  - After 2008, ADECA’s Office of Water Resources has been slowly working on developing an inventory of dams using a small annual grant from the federal government
  - ASCE National and Alabama Section joined with ACEC to research previous efforts and reach out to stakeholders
Safe Dams Efforts in 2015/2016

• Report card research to create 2015 report on dams for Alabama Infrastructure Report Card
• Dams received a “?” or Incomplete due to lack of information; media attention continues
• Small committee formed in Spring 2016 to focus on issue and how to move forward
  • Using SPAG funds, Alabama Section funds and funding from ASCE, The Carter Group was hired to help facilitate research and develop a plan of action
• Results
  • Continued to learn what we did not know to help develop path forward
  • Successful meeting with ADECA & OWR gaining insight on current status of inventory efforts
  • Reached out to other agencies that would be affected by a dam failure – EMA, ALDOT, ADEM
  • Reviewed most recent legislation
  • Gathered & reviewed dam safety regulations from other states
  • Big takeaway is there is APATHY and LACK of AWARENESS of the potential risk
Why worry? Why care? Why us?

  - “Of the 676 high-hazard and significant-hazard dams in Alabama, 625 didn’t have an EAP in place, according to the 2015 Army Corps of Engineers survey. The dams that have EAPs are primarily federally regulated, hydroelectric utility dams that require oversight from the FERC.”
  - EAP’s talks “about how we communicate with the state, EMA, first responders. They also include inundation maps, which show where the water would go, when it would get there and what the depth would be.” Richard Mickwee
  - “The Alabama EMA is confident in its ability to handle a dam failure, EMA Executive Operations Officer Jeff Byard said. While the state doesn’t have a database of EAPs for each individual dam, Byard said the state employs a one-size-fits-all “all-hazards plan” that is expected to handle any disaster scenario. The same plan that is in place for a dam failure would also be used for a tornado or hurricane……”

- **Things to consider**
  - Importance of prevention
  - Roughly 25% of dams that would be required to have an EAP in any other state in the nation, have an EAP in Alabama
  - Is it as simple as a plug and play assumption indicates?
Want to Help?

- Why does it matter?
  - EVERYONE is at risk – home owners, residents, business owners, employees, motorists
  - Who else is better prepared to explain these risks?

- Do you know your Risk?
  - Do you live or work downstream from a dam or on a lake supported by a dam?
  - Do you drive/ride across a road on a dam or downstream from a dam?
  - What about members of your family?

- How do we combat APATHY and LACK of AWARENESS?
  - Within ASCE
  - Public agencies and officials
  - Members of the public

- Based on all you have heard what comes to mind?
  - A few short words that pack a punch & are memorable!
  - Something that “compels people to be better do more or go further”
  - Think of all the memorable and effective messages you have heard in the past
What is the message for safe dams???

• Where is the beef
• Buckle up
• You're in good hands
• You deserve a break today
• Like a good neighbor
• A diamond is forever
• A little dab'll do ya
• Be all you can be
• Betcha can't eat just one
• When it rains it pours
• Please don't squeeze the Charmin
• Think different

• Can you hear me now
• Don't leave home without it
• Fly the friendly skies
• Finger licken good
• Good to the last drop
• Plop plop fiz fiz
• Snap crackle pop
• What happens here stays here
• Reach out and touch someone
• Just do it
• Our roads Our Future Our Responsibility
• Give a dam

Help us find our message and define the problem!
Now what?

• We need:
  • People that are fired up and ready to make a difference; share knowledge with others
  • People to help on the committee
  • People to talk to officials and general public
  • People to reach out to legislators
  • People to engage the media, pursue op-eds, articles, interviews
  • People to make social media posts and tweets, retweets

• We will provide:
  • The message
  • Information and backup
  • Assistance preparing op-eds and articles and preparing for interviews
**St. Francis Dam**

- **Failure**: March 12, 1928; The dam failed.
- **Influence**: 52 miles east of Los Angeles.
- **Causes**: Collapsed under pressure from a flood, leading to a tragic loss of life.

**Tacoma Narrows Bridge**

- **Failure**: November 7, 1940.
- **Influence**: The bridge was designed by the same team that designed the Golden Gate Bridge.

**New Orleans Hurricane Protection System**

- **Levees and Floodwalls**: Designed to contain the river during periods of heavy flooding.
- **Failures**:
  - **Collapse of levees**
  - **Overtopping**
  - **Levee builders used incorrect data**
- **Causes**:
  - Collapse of levees
  - Overtopping due to incorrect data
- **Influence**: Hurricane Katrina caused significant damage.

**New Orleans**

- **Network**: 544.5 billion network of levees, floodwalls, and pumps installed around New Orleans.
- **Protection System**: Most extensive and comprehensive flood control system in the U.S.

**Hurricane Katrina and Subsequent Levee Failures**

- **Statistics**:
  - 1,118 deaths
  - 135 missing, presumed dead
  - $21 billion in residential property damage
  - $8.7 billion in public infrastructure damage
  - 12,400 thousand jobs lost

**Improved Materials**

- **Designs** account for sinking soils and project sea level rise caused by global warming.
4 QUEBEC BRIDGE

Saint Lawrence River
COMPLETED IN 1917
1,801 FT. SPAN
LONGEST CANTILEVER BRIDGE in the world at the time
67 FT. WIDE, accommodating:
2 RAILWAY TRACKS
2 STREETCAR TRACKS
ROADS

FAILURE
TWO COLLAPSES:
August 29, 1967
19,000 TONS OF STEEL fell into the water KILLING 66 WORKERS

February 11, 1916
2,000 TONS OF STEEL fell into the river KILLING 13 PEOPLE

INFLUENCE
The first collapse was due to ENGINEERING MISGUIDANCE, ignoring a need in compression blocks.
The Quebec Bridge was one of the first bridges to use the composite bridge design INVOLVING 2.5 TIMES AS MUCH STEEL as the first bridge design.
The second collapse of the Quebec Bridge was one of the first large projects to use ALCANO ALLOY STEEL that suggested versions of 4 TIMES MORE THAN CARBON STEEL and still stands today.

5 RONAN POINT APARTMENT TOWER

East London
THE 22-STORY APARTMENT BUILDING
was built using a panel system of precast panels joined together without a structural frame.

FAILURE
May 16, 1968
18th floor tenant took a blowtorch to a gas leak, causing an EXPLOSION that tore through the supporting walls
4 FLOORS COLLAPSED before the building's entire core gave way, KILLING FOUR PEOPLE

INFLUENCE
This type of panel system was popular because it was FAST and CHEAP in a city with an ongoing housing problem, BUT IT WASN'T RECOMMENDED for BUILDINGS TALLER THAN SIX STORES.

BUILDING CODES WERE UPDATED and REQUIREMENTS FOR STRUCTURAL REDUNDANCY WERE CREATED in the U.S. and parts of Europe.

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