Dams:
(TVA’s Boone Dam headache just got bigger.)

TVA: Separate underground water near Boone Dam a “potential problem”
By Josh Smith, November 4, 2015, wjhl.com

BOONE LAKE (WJHL) – The Tennessee Valley Authority is closely monitoring a second area of water moving underground near Boone Dam. That’s according to a newly released report on the plan to stop a separate area of water movement under and through Boone Dam, something the utility says would have jeopardized the safety of communities downstream if unaddressed. A year ago, TVA rapidly dropped the level of Boone Dam after discovering a sinkhole and water seeping

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
out of an embankment near the base of the dam. This past summer, TVA announced its plan to spend 5 to 7 years and as much as $300 million on the repair.

“What we believe is that this proposed repair project that we have laid out for Boone Dam will take care of all of this issue,” said Jim Hopson, TVA spokesman. At the July 30th meeting in Johnson City, TVA also said the movement of water around Boone Dam was more complex than first thought, and it would require on-going monitoring and possible future remediation.

In its draft environmental assessment of the Boone Dam repair project release last week, TVA released more details about a “potential problem” involving a second area of water movement underground near Boone Dam. In the dam’s right rim, the ridge to the east of the dam.

According to the report, “Seepage from the right abutment area is recognized as a potential problem for the long-term performance of Boone Dam. However, more study is needed to characterize the problem, identify possible mitigations, and evaluate options.”

Here’s the full quote from the report: **TVA is also considering taking action to address seepage of the right rim at the dam site.** Data from instrumentation installed at the dam site have shown that groundwater flows under the dam embankment originate in the ridge to the east of the dam (in the right abutment or right rim of the project). Seepage from the right abutment area is recognized as a potential problem for the long-term performance of Boone Dam. However, more study is needed to characterize the problem, identify possible mitigations, and evaluate options. Many of the instruments needed to better understand the nature and areal extents of the problem were installed only recently. TVA will determine at a later date how to proceed to address this seepage, and will conduct additional environmental review if necessary.

“We just happen to be able to find the right rim water movement because of the extensive sensor network that was put in place to detect the cause of the seepage under the earthen embankment.” Hopson said. TVA released more details about a “potential problem” involving a second area of water movement underground near Boone Dam. Hopson said the second area of water movement would not impact the Boone Dam repair project or the plan to return lake levels to normal in 5 to 7 years. "If we correct that issue, that allows us to return Boone Reservoir to its normal operating levels. There may be additional remediation in other parts of the Boone reservoir system that we have to be looking at. But our primary concern right now is to ensure the stability of that embankment and by making the repairs return the reservoir to its normal levels," Hopson said. "It's just something we've got to look into further to determine if there are additional steps that need to be taken below the dam independent of the earthen embankment that we're going to be repairing to restore the reservoir." The draft environmental assessment will be the focus of a public hearing at Daniel Boone High School Thursday from 5:30 to 7:30 pm.

“We're going to have to continue looking at that right rim water seepage issue to determine if there is any potential downstream considerations that we have to be aware of,” he said.

(Good question!)**

**The Price of Disaster: Who pays up and what could change?**

By Brian Mcconchie, November 2nd 2015, wach.com

COLUMBIA, SC (WACH) - Elliott Powell has lived in the Lake Katharine area almost his entire life and is still trying to take stock of last month's historic flooding in the region. His home wasn't damaged, but so many of his neighbors were impacted after something he never could have imagined back on October 4. "This was a freak event that nobody could've designed a dam for, period," said Powell. He recorded the flooding with his cellphone as he drove his
boat right up to his neighbor's homes, looking to help in early October. A month later, the waters have receded, but reminders of what washed through his community are still there. Docks are destroyed, debris hangs from tree branches more than a dozen feet in the air, and homeowners are still struggling to recover.

The Lake Katharine dam, originally built in 1940, and upgraded in the 1990’s by the Army Corps of Engineers, did not give way during October's flooding. Because the dam is privately owned by community stakeholders there, homeowners contracted an engineering firm to assess the dam for any possible upgrades in the wake of the flooding. While most agree there would have been no way to stop the historic floodwaters, Powell wonders if they could have been managed better and can be handled more efficiently in the future. "If we want to solve the problem long-term, then we look at it for what it is," says Powell. "It's a storm-water system. It's the drainage system."

There's a similar issue roughly two miles upstream in Arcadia Lakes where the Cary Lake dam buckled during last month's storm. According to the state Department of Health and Environmental Control, it's one of 36 dams state-wide that failed during what has been called a "thousand-year flood" that had a major impact on the Gills Creek Watershed. The watershed contains more than 70 miles of streams and lakes, and 47,000 acres of land. The watershed includes the cities of Columbia, Cayce, Forest Acres, and Arcadia Lakes, also Richland County, and Fort Jackson.

At the peak of October's flooding National Weather Service estimates show Gills Creek crested at 19.6 feet. The previous record was 9.4 feet. Advocates say the area has been in need of remediation and controlled development for years, and now, in some areas, rebuilding. "If the lake's not here or you don't want to help restore the lake, what do we do with the water?" says Arcadia Lakes mayor Mark Huguley. "Where do you want us to put the storm-water? It's got to go somewhere," Huguley says a permit from DHEC is required to take on storm-water in his town's series of lakes. Since the Cary Lake dam burst, the area has nearly dried up, leaving behind an empty bowl. The dam, like many in the area, is privately owned, but inspected by DHEC. Huguley also points out the road that used to be on top of that is state-maintained. It likely won't qualify for FEMA assistance. However, with so much at stake, and so many different agencies involved, some argue there should be cost-sharing between state and local governments and people who live in the entire watershed. "If you have a lakefront home with no lake it's not going to be as valuable as when there is a lake there," says Huguley. "So property values will go down and that in turn will have an adverse impact on the revenue for schools and the ability to perform other governmental functions." WACH Fox News reached to DHEC officials about a review of the agency's dam safety program.

The process is already underway.

"DHEC has partnered with HDR Engineering to conduct a complete review of the agency's dam safety program," says DHEC spokesman Jim Beasley. "In addition, HDR will conduct an engineering review and assessment of the Gills Creek Watershed, including developing a coordinated approach to dam maintenance and managing water levels among dam owners and the homeowners associations within the watershed." While that step is a potential sign of progress for residents like Elliott Powell, who not only lives in the Gills Creek Watershed, but is also a board member of the Gills Creek Watershed Association, he still has some concerns about the hard-hit area. "How do we get all those municipalities who have a history of (butting heads) to work together?" asks Powell. "It's been real easy for them to kick the can down the road to the other guy." Still, Powell hopes the watershed can someday be treated as if it's a public utility, dams within the watershed can be upgraded to 21st-century standards, and there can be buy-in from residents and government to develop a comprehensive management plan. "There's an opportunity to avoid flooding by systematically lowering the lakes. You start with the lowest one, like this one and work your way up the system so you don't overwhelm these folks downstream," says Powell. "And most all the flooding can be avoided."

(As we all should.)

**Army Corps takes Old Hickory dam safety seriously**

Copy obtained from the National Performance of Dams Program: [http://npdp.stanford.edu](http://npdp.stanford.edu)
A limestone rock quarry has been proposed on private land adjacent to Old Hickory Lock and Dam, which is owned and operated by the U.S. Army Corps of Engineers, Nashville District.

If you've driven by the proposed quarry site recently, it is well beyond just being a proposal, with heavy construction equipment on site having begun initial development and site preparation. The resulting grass-roots response and outcry from local residents has elicited the involvement of local representatives from all levels of government, and highlighted the roles of several agencies in the review of this proposal, to include the Corps of Engineers. What you may not know is how the Corps of Engineers is involved and how we are working closely with other state and local agencies to ensure applicable laws are enforced and the public’s safety is ensured.

The Corps’ primary concern is to ensure the public’s safety as we maintain critical infrastructure and to serve as good stewards of our nation’s resources. Our mission is to provide a high quality and safe experience to everyone who visits any Corps property or facility. As the property owner of an adjacent federal civil works project, the Corps has taken the proposed quarry very seriously, especially in regards to public safety, because public safety is paramount to all that we do — especially dam safety. The Corps’ dam safety program requires extensive annual inspections of every dam under the Corps’ authority. These inspections over the past decade resulted in the major repairs at Wolf Creek and Center Hill dams. This work was expensive and time consuming but in the end, the Corps ensured the public’s safety. We are actively and continually working to ensure that all of our dams meet the Corps' safety criteria. We want to keep it that way. The district is in complete agreement with the local, state and federal representatives that there must be a shared understanding of the proposed construction and operation of a rock quarry and its impact on the general public, the environment and on the adjacent lock, dam and recreation area. The lock and dam provide critical navigation, recreation and hydropower benefits locally as well as regionally.

The Nashville District is analyzing the possible effects that the proposed quarry’s blasting could have on the lock and dam facilities and operations. So far, our preliminary information leads us to believe that the resulting vibration levels are within an acceptable range of what the dam is designed to withstand, but we are continuing to look into this issue. The Nashville District also is reviewing whether we have any impacts to aquatic resources associated with the construction of the rock quarry. We will do our part, along with the other involved agencies, local citizens and representatives, to ensure the safety of the public and to maintain the proven integrity and performance of Old Hickory Lock and Dam. We look forward to our continued partnership and collaboration with federal, state and local leadership and the great citizens who live, work and recreate on and adjacent to our project. We will strive to keep our area beautiful and our national infrastructure well maintained and safe. Lt. Col. Stephen F. Murphy is commander, Nashville District, U.S. Army Corps of Engineers.

(MPF fixer, upper.)
MVSD to fix Meander dam

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
MINERAL RIDGE, OHIO - The Meander Creek Reservoir dam must be able to withstand a flood that would result from nearly 20 inches of rainfall within 24 hours, according to an engineering consulting firm. That firm recently presented a series of potential dam-modification strategies to enable safe passage of such a flood. That deluge, known as the "probable maximum flood," would result from a 19.32-inch rain within 24 hours, said Anthony Vigorito, chief engineer at the Mahoning Valley Sanitary District, which has budgeted $3.5 million for repairs and improvements to the 1924-vintage dam and its spillway. That theoretical event would be nearly three times the 6.88-inch rain within 24 hours, which the National Oceanic and Atmospheric Administration says is likely to occur here only once in 1,000 years, he added. Vigorito said the dam is structurally sound and inspected daily by MVSD staff. However, it is federally listed as a "high hazard" dam, meaning that loss of human life likely would be a consequence of its failure. As such, it must "safely pass 100 percent of the probable maximum flood," according to a report from MVSD's engineering consultant, Gannett Fleming of Harrisburg, Pa. The dam, which impounds Meander Reservoir, can't pass a flood of that magnitude without having water flow over the top of its embankment, the report said. "The depth and duration of dam overtopping would cause erosion of the vegetated downstream embankment slope and potentially lead to failure of the dam embankment" in such a flood, Gannett Fleming said.

MVSD treats Meander Reservoir water and supplies it to Youngstown, Niles and surrounding communities. Water has flowed only over the dam's spillway and never over the top of its embankment, Vigorito said. However, he added that an inflatable rubber bladder installed atop the spillway during the 1990s, which gives the reservoir extra storage capacity in case of a drought, adds to the pressure on the dam. The 7-mile-long reservoir has a 10 billion-gallon capacity at the top of the spillway, with the bladder adding 1 billion gallons to that. To help reinforce the dam, MVSD is studying the possibility of raising the concrete core wall within the center of the dam to the level of the concrete road atop the dam, Vigorito said. The top of that wall is now between 1 and 2 feet below the road. Gannett Fleming's report outlined various potential methods of modifying the dam to enable it to safely pass the probable maximum flood, including raising the top of the dam or raising the curb atop the dam. "The dam obviously is the most important structure in the whole works of any water system," because it impounds the water source and because its safety is critical to the well-being of downstream residents, Vigorito said. "We are working to get that project started here as soon as possible," Vigorito said of the dam improvement effort, adding that the total project cost isn’t known yet. The project would also include repairs to concrete sections of the dam, where cracking and spalling has occurred, he said. "It’s a high priority because it first is a safety issue," Jamael T. Brown, a member of the MVSD board of directors, said of the dam-improvement effort. "Our top priority is to make sure that we have the most modern facility and factory that produces water in the state of Ohio and bring it up to the 21st century, and that’s what we’re doing right now," he concluded.

(There are those that see something else in a dam failure (dam removal), never mind the cost to people. If you don’t want to pay to maintain them, maybe this is what you should do. The market will have a lot of boats for sell and cheap.)

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Holleman: How we can turn SC dam failures into a win-win for lake residents, community
Frank S. Holleman III, Guest Columnist

Lakes are viewed as amenities, but they carry significant risks, and expenses
Open green space is equally valuable, for recreation and property values, without the downside of dams
Dam owners should convert tragedy into opportunity, convert lakes to green space
OPINION EXTRA, NOVEMBER 7, 2015, thestate.com

Columbia, SC - The failure of dams in the Midlands and elsewhere in South Carolina has been a tragedy, but it also offers the state an opportunity to take a step forward for public safety, neighborhoods, rivers and streams. Rather than rebuilding them, why not consider eliminating many of these dams and converting the former lake beds into neighborhood parks with free-flowing streams? Dams and small lakes are sometimes viewed as neighborhood amenities that provide for recreation and increase property values. But open green spaces and walking trails continue to grow in popularity, can be used by more people and increase property values too. And they do not have the downsides that come with dams and small lakes.

Will lakes be restored? Rebuilding dams will be costly
Tommy Wyche, the Greenville conservationist who founded one of the state’s first land trusts, had one land acquisition rule: Never buy a dam. He learned the hard way that owning an earthen dam is expensive and dangerous. As the dams age, it is difficult and costly to safely maintain them. For many dams, particularly those in urban settings, failure threatens not only downstream property but people’s lives. In short, if you own a dam, you are taking on a big expense and risking significant legal liability. Dams can make bad weather events more dangerous. Heavy rains, tropical storms and hurricanes cause flooding in any event. But a reservoir behind a stressed earthen dam raises the stakes. Even when dams hold, they increase upstream flooding during periods of high water, as water backs up behind the lake. The existing lake occupies a flood plain that otherwise would absorb the stream overflow caused by a storm. And if a dam breaks, the consequences are much more severe than those from a rain-swollen stream. Dams are also bad for rivers and streams. Contrary to what many people think, dams and small lakes waste water. A great deal of water evaporates from the lake because the flat, large surface area is exposed to the sun. More water is lost through seepage into the ground, when it otherwise would flow downstream. Both evaporation and seepage rob streams and rivers of large amounts of water that would support healthy natural river systems and the animals and fish that depend upon them. Small lakes can also contaminate clean water. They receive and collect polluted stormwater runoff and fill up with dirty sediment. The water behind dams is heated because the large, open surface is exposed to the sun. Dams result in shallow reservoirs of unnaturally hot and polluted water that harms native fish and wildlife.

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Flaws likely in dams that failed, researchers find
Imagine this alternative for a neighborhood: If the dam is gone, the former stream can re-establish itself. The stream and connected river system will have more water flowing through them day in and day out, and a more natural flow. Instead of an expensive, problematic dam and a lake, a neighborhood or subdivision can have an area of green space and trails with a stream flowing through it. And restoring the green space and the free-flowing stream can be much cheaper in the short and long run than reconstructing a failed dam or repairing, maintaining and insuring a defective one. If the dams that failed are not rebuilt, communities can still have recreational space while also enjoying free-flowing streams, more water in the streams during normal and dry periods, cleaner streams and rivers, fewer worries, much less expense and a reduced risk of major catastrophes. It was a tragedy when these dams broke. Now, there is a chance to choose a different path forward.

Historic flooding raises questions about dam safety
November 9, 2015, by Debi Chard, live5news.com

CHARLESTON, SC (WCSC) - Dam failures across South Carolina last month caused catastrophic damage, raising new questions for many Lowcountry residents. A total of 36 dams statewide breached during last month's historic rainfall. Homes and businesses flooded, roads washed out, and many bridges weren't safe for travel. In the aftermath come new worries: How many dams are here, how did we escape the damage and could the same thing happen to us?

Safety measures at the Santee Cooper Project
Forty miles of dams and dikes surround Santee Cooper’s Lakes Marion and Moultrie. It is Mark Carter’s job to oversee them, keeping an eye on the inspection process and the weather, not just in the Lowcountry, but also in the upstate and parts of North Carolina. Rainfall there flows into Lake Marion. "The lake system has a 15-thousand square mile drainage basin," Carter said as he took our crew to the Pinopolis Dam in Berkeley County. To prevent catastrophe such as an overflow or dam break, water is released through the Santee Spillway to the Santee River. Carter said no water is routed toward Charleston because of the Pinopolis Dam. "The potential for flooding on the Cooper River is almost non-existent because we can't release a significant amount of water here," Carter said. Santee Cooper engineers inspect at least monthly. They've used stakes to mark some shallow slides caused by the historic rainfall. "It saturated the soil and that water and that added weight causes the soil and water to slide down the hill," he said. Carter calls it maintenance, and repairs will prevent further erosion. "And grass can provide protective cover."

A backup dam built in the 1980s below the primary dam built in the 1940s serves as an earthquake safety measure. But no threat, he believes, is greater than another. "Because the consequences of failure are very severe, and so from our point of view we try to look at all the threats and address them appropriately," Carter said. There are three levels of inspections: year round by company engineers, an independent inspector every five years, and a yearly inspection by the federal government. While that federal report is classified, a government spokeswoman said the 2015 inspection in June found “No outstanding dam safety issues.” Santee Cooper plans to share its Emergency Action Plan for Dam Failure to residents living on the Santee River floodplain below the Santee North Dam. The company will explain what to do in the event of a dam failure at Sampit Elementary School in Georgetown on Tuesday at 6 p.m.

Tracking hazard potential for neighborhood dams
While that may ease your mind, don't relax just yet. There are more than two thousand dams regulated by our state, 86 percent of them are privately owned and maintained. They look more like grassy dikes than dams. One of them is in a Moncks Corner subdivision, and at least one person who lives there said there is no dam in his neighborhood. But the state government says there is, and considers it to have significant hazard potential. A high-hazard dam is only feet away

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from a major highway thousands of you travel every day. It is one of several state-regulated dams in the Lowcountry many of you may not know exist. The Lowcountry is home to seven state regulated dams. Three are in Dorchester County and four are in Berkeley County. One is in a Moncks Corner subdivision, but some people who live there have no idea it’s classified C-2, having significant hazard potential. The Moss Grove Plantation Dam was in "fair" condition when inspected last December, with the inspector noting it had been "neglected." The Homeowner’s Association president said bids are in hand to clear the vegetation, as outlined in a post-inspection letter. He said the dam had no issues during the record rainfall. Whitesville Rural Fire Department Chief Timothy Stephenson said when most of us think of a dam breach, we think of catastrophic failure. "But that’s not what usually happens," he said. "Although we did have some levees or dikes that failed, they didn’t actually fail at the dam or dike portion itself. They failed because of the erosion from the overflow of the water." He said that happened at Compton Road, which runs atop Crystal Springs Lake Dam. While the dam didn't break during the historic rainfall in October, "The amount of rain overwhelmed the lake," Stephenson said. And through erosion, a water main broke, closing the road. The Crystal Springs Lake Dam passed state inspection in November of 2014 with a satisfactory rating. That dam, the Moss Grove Plantation Dam and the Lake Hastie Dam in Pimlico in Berkeley County are classified C-2, having significant hazard potential. A dam considered to have high hazard potential, classified as C-1, is just off Highway 61 at Middleton. Traveling Highway 61 daily are 7,700 vehicles according to the South Carolina Department of Transportation. A dam break could flood, even take out the highway, and that’s why the Middleton Lake Dam carries the highest hazard rating. "We take the responsibility seriously and DHEC does as well." Middleton’s Colby Hollifield said. DHEC, the Department of Health and Environmental Control oversaw construction of the Middleton Dam when it was rebuilt about ten years ago. "We packed it with clay every six inches," Middleton’s Josh Hair said. "It is a very solid wall of clay."

DHEC inspects it.
"They look for rodents, they look for large trees growing, so we keep it all mowed down, we like to have grass," Hollifield said. A watershed drains into the lake from a mile around. Video of the swamp during the historic rainfall showed water rushing toward Middleton Lake during October’s deluge. Hollifield said the Friday before the storm, DHEC notified them to lower the lake level, if possible. "So we opened the spill gates, we opened that up," he said. Through the spill gates, the flow of water is controlled. The lake water is piped under the dam to the other side. Hollifield said during the storm, DHEC called constantly and he could hear conversations on the other end of the line. “They almost didn't believe that it was working as well as it was, and so they kept asking, are you out there, have you seen it, how close is it to going over 61?" he said. No water flooded the highway there: the Middleton Lake Dam held. “It worked as designed here for sure,” he said. National dam experts say our state needs to fund more inspectors. While it costs money, they point out, the consequences of dam failure are far more expensive. Of the 36 dams that breached last month, 31 are regulated by the state, one by the federal government, and four others were unregulated dams.

(Apparently there were issues! Possibly 28 dead and they’re worried about the share price.)
Report shows safety issues at BHP Billiton’s failed Brazilian dam were highlighted two years ago
November 11, 2015 – by Amanda Saunders, Lia Timson and Vanessa Desloires, smh.com.au

Concerns were raised publicly about the design of a BHP Billiton dam in Brazil more than two years before it catastrophically failed, killing as many as 28 people. The mining giant, which owns the mine in joint venture with Brazilian iron ore company Vale, has refused to say whether it was aware of a 2013 report that warned of design flaws in the tailings dam system. While the official cause of the catastrophic tailings dam failure is not yet clear, the report, by a Brazilian institute associated with a university, described how rainfall could combine with the local geography and the dam’s design in a potentially catastrophic scenario. A local state prosecutor pointed to the report to claim that the bursting of the dams last Friday was “no accident”. What happened was a

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
mistake in the operation and negligence in the monitoring," Carlos Eduardo Pinto said told Brazil's top broadcaster, Globo TV.

The official death toll from the massive mudslide stands at six, with 22 still missing. The report was written by The Instituto Pristino, a not-for-profit environmental and geotechnical modelling institute that is linked to the Federal University of Minas Gerais. It was commissioned by the state's Environment Ministry. BHP declined to comment when asked if the miner was aware at any level of the concerns raised by the report, including if its directors on the Samarco board had heard of or read the report. "As you will appreciate, an issue like this will be relevant to any investigations that follow this tragic incident," a BHP spokesperson said. "In those circumstances we need to let those investigations take their course. So it's not appropriate to comment any further." BHP shares fell again on Monday and are down 10.7 per cent in the last five days to sit at $20.95, the lowest since November 2008. The Instituto Pristino report recommended a contingency plan be drawn up and made conditional of any licensing "because of the existence of a rural community, the town of Bento Rodrigues" downstream. It said the contingency plan was a legal requirement, but it had not been mentioned in the renewal application by the applicant nor the government department issuing it. The report highlighted the potential contamination of the dam by adjacent waste piles could result from regular rain patterns and water table rises. "[Rain] would cause the surging of water up the face of the waste pile... resulting in the collapse of the structure". It said depending on the extent of any breaches, several collapses could occur, creating a massive waste flow towards the dam's wall and neighbouring areas. It recommended further studies of the impact of the structures be presented and that the agency responsible for issuing the licence answer to the safety of the construction. Reuters reported that insurers could pay up to $US600 million ($850 million) in claims, citing a source with direct knowledge of the matter.

Samarco's bond rating was cut to junk on Tuesday by Moody's Investors Service. Its $US2.2 billion of notes, which have lost a third of their value since November 5, now trade at US56¢ on the dollar. Former BHP executive, and now Orica chief executive, Alberto Calderon said the disaster was a "shocking tragedy", and he felt "almost personally for the people [affected] … for Andrew [Mackenzie, BHP's chief executive] and Jimmy [Wilson]". When asked whether monitoring of the mining industry in South America was first world, "or up to scratch", he said "with Vale and BHP both on the board it should be first world". Andrew Hines, Commonwealth Bank's executive director of natural resources, said the disaster was yet another blow for the miner already battling tough conditions. "Unfortunately, this tragic event adds more pressure to a company that was already under significant stress from weak commodity prices," Mr Hines said. UniSuper chief investment officer John Pearce said the $49.2 billion industry fund for university employees was "assessing" its position in BHP Billiton. "The problem for investors at the moment is that no one really knows what the financial cost of the disaster is going to be and you can't measure the human cost," he said. "I imagine this event will be hanging over the BHP share price for some time to come". With Matthew Stevens and Sally Rose

(They'll need all the help they can get in CA.)

Temperance Flats dam supporters seek help
By Gene Haagenson, November 11, 2015, abc30.com

FRESNO, Calif. (KFSN) -- Millerton lake is only about 30-percent full. A wet winter is expected to help increase the level, and hopefully boost the water supply for Valley farmers. But after four years of drought many see a long term solution as a construction of another, much bigger, dam further upstream on the San Joaquin River, at an area known as Temperance Flat. Supporters of the project, like Orange Cove Mayor Victor Lopez, feel it has to be done. "This is a dream that we have to make come true." Lopez and Mayors from several Valley cities joined the Latino Water Coalition at Friant Dam to urge Democratic Congresswoman Loretta Sanchez, of Orange County, to join their cause. Sanchez is a candidate for U.S. Senate, and her support could be crucial. When asked if she supports the dam she said, "I am going to have to sit down and discuss it with
my colleagues and figure out what the solution for the dam is. I am for more supply and if it's one of the most viable, and we can get the community and the federal support for it, we would build it.”

Getting federal and statewide support can be tough. While money from the state water bond has been designated for storage, that doesn't mean it will go for a dam. Environmental groups and others question whether the expected $3-billion cost is worth the environmental impact and damage it would cause. But farmers, like Kole Upton of Chowchilla, sees the dam as a potential lifesaver if the water it saves is used in the Valley. "If Temperance Flat was built that would give us the ability to have a lot more water available, assuming the water made available goes to us and not to metropolitan or the environmentalists." The State Water Commission will begin allocating money from the state water bond at the end of next year. If they agree to fund Temperance Flat, construction could start in a few years, however, even supporters acknowledge lawsuits over environmental damage, loss of wildlife habitat, destruction of Native American resources could add years or even decades to the project.

(Someone gotta pay.)

Negligence likely behind Brazil dam bursts, prosecutor says
By Associated Press November 10, 2015, (Felipe Dana/Associated Press)

SAO PAULO — Negligence and human error likely caused two mining dams in southeastern Brazil to burst last week, unleashing a wave of mud that killed four people and left 22 others missing, the Minas Gerais state environmental prosecutor said Tuesday. Carlos Eduardo Ferreira Pinto said the Thursday breaches of the dams at the Samarco iron ore mine, which all but erased a nearby hamlet and contaminated the water source for hundreds of thousands of people downstream, were "no accident." "What happened was a mistake in the operation and negligence in the monitoring," Pinto told Brazil’s top broadcaster, Globo TV. In a 2013 document, Pinto had suggested that the Samarco facility presented risks of destabilization and erosion and recommended against renewing the company’s license for its operations around the city of Mariana, where the breaches occurred. At the time, the state regulator nevertheless decided to renew the license. It reversed that decision on Monday and the license was suspended.

Samarco, a joint-venture between mining giants Vale of Brazil and Australia's BHP Billiton, did not respond to The Associated Press' request for reaction to the prosecutor's comments. The company said that 85 percent of its 3,000 workers were on paid leave starting on Tuesday. The remaining 15 percent were working to clarify the cause of the breaches, the company said in a statement.

Also on Tuesday, the state fire department lowered to 22 the number of people missing after one local resident was discovered holed up with relatives in a nearby city. The fire department also said the body of a 5-year-old girl had been found, bringing the official death toll in the accident to four. Another body may be linked to the dams bursting, but it hasn't been identified yet, the fire department said. Police say 631 people who lost their homes in the worst-hit town of Bento Rodrigues, which was all but flattened by the tide of lava-like mud, were being put up in hotels in Mariana. The scope of the accident continued to spread as waters contaminated by the red mud...
flowed up the Doce River, reaching the neighboring state of Espirito Santo. Espirito Santo Gov. Paulo Hartung said at a news conference that water utilities in the state could suspend siphoning operations on the river in the coming days.

(Now, the fun starts.)

**Lawsuits filed due to damage from 'neglected dams'**
By Tara Petitt, November 12th 2015, wach.com

COLUMBIA, SC (WACH) -- Multiple lawsuits were filed Thursday in the wake of last month’s historic flooding. Plaintiffs, including homeowners and one business, say the devastating consequences are a result of poor maintenance of dams. Four separate lawsuits in Richland and Lexington counties name insurance companies, homeowners groups and, in one case, SCE&G as defendants.

Pete Strom, one of two attorneys bringing the lawsuit, says it could have been avoided. "It was not the rain that caused all this damage, it was the fact that these dams failed," said Strom. "There’s no insurance for just about everybody because this was not in the flood way or flood plain or anything else that had flood. This was ALL a result of Fort Jackson." Two lawsuits allege that the U.S. Army on Fort Jackson was not properly maintaining their dams. Strom, who lives in Kings Grant near the base, says Fort Jackson has yet to acknowledge that his neighborhood was ruined and lives were put at risk. "We’re asking them to step up and be a good neighbor and be transparent about what happened out there and be honest with us and be accountable. That’s what neighbors do for neighbors." The suits specifically blame failed and eroded construction of dams, lack of maintenance on pipe and drain systems and neglecting to slowly release water before the heavy rainfall. Before the flooding, the dams listed in the lawsuits were classified as ‘highly hazardous’ by the South Carolina Department of Health and Environmental Control. The suits claim nothing was being done about it. Strom says he believes these four lawsuits are the first of many to come. "There’s gonna be suits against probably every dam that failed that caused damage downstream." WACH FOX News reached out to Fort Jackson Thursday for a comment on the lawsuit, but they have not responded as of Thursday night.

**Hydro:**
(Everyone wants to buy cheap hydro.)

**Alcoa electricity sales from Yadkin dams nearing $200 million**
The Associated Press, Nov 05 2015, wcti12.com

RALEIGH, NC - Alcoa Inc. is nearing $200 million in electricity sales from dams on a North Carolina river that once powered a factory that employed hundreds. Alcoa reported to federal regulators this week that the Yadkin River dams generated 517,919 megawatt hours of electricity.
in the year ending in September, down about 40 percent from the previous year due to very dry conditions. That would have generated revenues of about $15.3 million over the 12-month period, based on wholesale price data provided by energy information company Platts. Those electricity sales might be more valuable depending on how much was sold during peak Monday-through-Friday hours.

The dams powered an aluminum smelter for generations before Alcoa closed it in 2007. The company has sold more than $190 million in electricity to commercial customers instead.

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Hydropower Proposed For Lebanon
By Nora Doyle-Burr, Valley News Staff Writer, November 9, 2015, vnews.com

Lebanon, NH — A Boston-based hydropower developer is exploring the possibility of using two dams along the Mascoma River — one existing and one proposed — to generate electricity.

Grafton Hydro has filed for a preliminary permit from the Federal Energy Regulatory Commission to see if it is feasible — economically and environmentally — to generate power from the existing Mascoma Lake Dam and from a new dam proposed to be constructed on the Mascoma River in downtown Lebanon.

Thomas Tarpey, the executive vice president of Grafton Hydro, has been working in the field since 1980s. He is a partner in Boston-based Essex Hydro, which, through a subsidiary, 10 years ago revived a hydroelectric generating station near the North Hartland Dam. Tarpey said he’s been watching the Mascoma River in Lebanon for about 30 years. He noticed no one else has received a permit to explore the area’s potential and he now has some time to pursue it.

He hopes to put in a “nice little development there,” he said.

Tarpey hopes to generate approximately 1.5 megawatts of power from the downtown dam, according to the FERC filing. He aims to generate 600 kilowatts from the Mascoma Lake Dam. One megawatt of power generates enough electricity to power roughly 750 homes, according to the California Energy Commission’s website. As proposed, the new downtown dam’s intake would be located between High Street and Route 120, behind the Mascoma Village Apartments. A pipe would carry water to a power house located between Foundry Street and Water Street — between Mason Racing and the Whitman Communications building. Before construction, Tarpey said he would need permission from the landowners along the river in the affected area — which would extend approximately from the Route 120 bridge over the Mascoma to the section between Kleen dry cleaners and Central Supply. The preliminary permit, if granted, would allow Tarpey to explore the feasibility of generating power from the two dams and prevent any possible competitors from doing the same. “It sounds like a great idea to me — subject to all the details,” said David Brooks, Lebanon’s director of planning and zoning. “It would be nice to make better use of the river.”

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
The plans don’t call for any changes to the nearby Rivermill Hydroelectric Dam. Without knowing the details of the plan, Brooks said he couldn't think of a problem with installing a new dam to replace the old ones. He said he is hopeful current uses such as kayaking, fishing and fish spawning will be taken into consideration. “In a perfect world, we wouldn’t want a dam to preclude other uses of the river,” Brooks said. Regarding the Mascoma Lake Dam, Brooks said it would make sense to generate power from the existing structure. “The Mascoma Lake Dam always struck me as a missed opportunity,” he said. “It’s already there; already having any impact it’s having.” The Mascoma Lake Dam is owned by the state and managed by the New Hampshire Department of Environmental Services Dam Bureau. In order to generate power from the facility, Tarpey would need to enter a lease agreement with the state, according to Jim Gallagher Jr., chief engineer with the bureau. Leasing out the dam for hydropower generation would not be unprecedented, Gallagher said. The state leases out approximately 11 hydropower dams around the state, he said.

The idea of generating power from the Mascoma Lake Dam is not new, Gallagher said. Since the 1970s developers have explored the possibility, but so far no one has found that they would earn the necessary return on investment from doing so, he said. In addition to a FERC permit, Tarpey would likely need to obtain wetland permits from DES and the U.S. Army Corps of Engineers. Tarpey may also need a shoreland permit, and should historic resources be impacted, the Division of Historical Resources may get involved, Gallagher said. Tarpey is familiar with the necessary steps. His company, Essex, operates six hydropower facilities in New Hampshire, he said. While concerns about problems relating to flooding may have deterred previous developers, Tarpey said he is familiar with technology that can allow the dam to store water during normal periods, but improve flow during flooding. “I’m not seeking to cause people problems,” he said.

Hartland Town Manager Bob Stacey said the town’s arrangement with Tarpey’s Essex Hydro has worked well, and he described Essex Hydro as a “good outfit.” Under a revenue sharing agreement, Hartland gets about $20,000 annually, receiving 2.5 percent of the revenue up to $400,000, 5 percent of power sales between $401,000 and $800,000, and 7 percent of any power sales above that. “The more they make, the more we make,” Stacey said. “We’re very happy with what they’re doing.” FERC is accepting comments on Tarpey’s request for a preliminary permit. The filing — docket number P-14718 — can be viewed on the FERC website at [http://www.ferc.gov/docs-filing/elibrary.asp](http://www.ferc.gov/docs-filing/elibrary.asp).

(Everybody has an opinion, but politics will decide.)

**Letter: Fish and hydropower can coexist with Snake River dams**

tri-cityherald.com, 11/9/15

The issue of breaching the dams continues. Activists have been effective at attracting press coverage but fail to make a strong case for dam removal. Here’s why: The Snake River dams produce reliable, low-cost, carbon-free energy. Together, these dams on average supply 12 percent of all the energy produced by the federal hydro system and are essential to the Northwest electric grid reliability. Yet anti-dam groups ignore the benefits and say they must be removed to save salmon. That’s not true.

The dams are equipped with state-of-the-art technologies to ensure that salmon travel safely downstream. Survival rates for young salmon at these dams are astounding, with 97 percent safely traversing each dam. Northwest residents care deeply about both salmon and dams. Polling shows 70 percent of Northwest residents recognize the value of the dams and 77 percent said dams and salmon must co-exist. The good news is, they are. The Corps of Engineers reports that last year brought some of the highest fall chinook, coho and sockeye salmon returns to the Lower Snake River since Snake River dam construction began in 1962. The naysayers may capture the headlines, but the fact remains — fish can be protected while also preserving our hydropower.

**CHAD BARTRAM, GENERAL MANAGER, BENTON PUD, KENNEWICK**

Copy obtained from the National Performance of Dams Program: [http://npdp.stanford.edu](http://npdp.stanford.edu)
Environment:
(If you build a safe dam – no problem!)

Mining Industry Waste a Challenge Dams Can't Always Contain
Danielle Bochove, November 6, 2015 — bloomberg.com

Unwanted tailings go into water that can threaten environment
With iron ore, biggest issue is the high-volume produced

The dams that ruptured in Brazil Thursday, sending a wall of mud along the countryside, were built to contain the leftover materials from mining known as tailings, and disposing of them safely has long been a challenge for miners. Typically mixed with water and stored in a slurry form, these scraps can pose threats to wildlife and water supplies if not properly contained. With iron ore mining, the biggest issue is generally one of volume: there is simply too much produced to dump safely into local waterways. That’s forced miners to find other ways to contain the tailings, including in artificial ponds secured by dams. “You can’t just dump it in rivers,” said David Chambers, president of The Center for Science in Public Participation, a non-profit group based in Bozeman, Montana. “Because most of what you mine becomes waste.” The cheapest way to deal with the waste materials is to build a dam, he said.

Brazilian authorities today resumed a search for victims of the five-mile long mudslide in Minas Gerais state at an iron-ore project jointly owned by two of the world’s biggest miners, BHP Billiton Ltd. and Vale SA. One person is confirmed dead, four are injured and 13 are missing, according to the state fire department.

Support, Assistance
Vale expressed solidarity with those affected and said it has offered support and assistance to local authorities. The joint venture, Samarco Mineracao SA, has set a news conference for later today. "We cannot at the moment confirm the causes or the extent of the incident or the number of victims," Samarco CEO Ricardo Vescovi said in a video posted on the company’s Facebook page, adding that dams called Fundao and Santarem had ruptured between the towns of Mariana and Ouro Preto. “Our focus is on assuring people’s safety and protecting the environment.”

While tailings from iron-ore operations like this one typically don’t contain hazardous materials, according to Chambers, other types of mining do produce toxic leftovers. Minerals such as cadmium, arsenic and zinc are naturally dangerous if poorly handled. And other types of sulfidic minerals, such as copper and nickel, contain large amounts of pyrite, which can produce sulfuric acid once exposed to air and water. Additionally, chemicals used by miners to extract specific metals, including cyanide, can sometimes find their way into tailing ponds. In the past, tailings were frequently dumped into rivers or wetlands in the past. Today, it’s common to use them as backfill in underground mines, after removing the water to create a dry material, or to pump them into ponds contained by dams.

Dam failures have been one of the biggest environmental risks posed by mining. Unusual events, such as earthquakes or flooding, can cause tailings dams to fail, as can design or construction flaws. When the ponds become full, they’re closed, and the slurry is allowed to dry out, leaving a more stable land form, Chambers said. The ponds are most dangerous when the tailings are wet and therefore mobile.
Other Stuff:
(What people do to be inconspicuous.)
What’s Behind the Door? Unraveling Olympia History
By Emmett O’Connell, November 12, 2015 | by ThurstonTalk Editor. thurstontalk.com

Tucked inside a quarter block of electric wires and transformers on Legion Way in Olympia sits an oddly ornate brick building. Not many people would know to call the property a substation, but the facility owned by Puget Sound Energy has been in downtown Olympia for almost 90 years. The architectural style of these otherwise utilitarian building is “French Eclectic,” making it (at least in terms of its design) kin to some notable homes in Olympia, including the Titus House (or more recently known as “the Castle”) just south of the Capitol.

Have you wondered about the purpose and origins of this building on Legion? In addition to its old-country European look surrounded by modern electric transmission facility is the interesting place the building holds in Olympia utility history. Beginning in 1890, Olympia Light and Power (OL&P) was the official power utility for the city of Olympia. Promoted and partially owned by Hazard Stevens (the son of the first territorial governor), OL&P produced hydroelectric power at a plant at the foot of the Tumwater Falls. Unlike the typical impoundment type of hydroelectric plant (like what you would see on the Columbia River), the Tumwater operation by OL&P was a known as a diversion plant. A pipe brought water to the powerhouse, dropping it the entire length of the falls at the very last minute. Hydroelectricity was not a long-term solution for Olympia and Thurston County’s electricity needs. The Deschutes River would run low in the late summer and fall, making power hard to supply in those months.

When the substation was originally built, the neighborhood was more industrial. There is now an outlet from Lawrence Lake, which originally had been dug by the OL&P to supply extra water to the operation in dry months. A headworks (evidence of which can still be found at Lawrence Lake) would partially drain the lake, sending water down to the river, eventually into the turbines at the base of the falls. Now the Plum Street Substation stands as evidence of the failure of hydroelectricity on the Deschutes River and of a small, plucky private utility that served Olympia. Puget Sound Power and Light came together in 1915 as a consolidation of smaller city-based private utilities around Puget Sound. Olympia Light and Power began working with the firm around the same time, extending power lines from Tacoma into Olympia to supply power to the city’s growing eastern neighborhoods. Eventually OL&P succumbed and joined Puget Sound Power and Light as a subsidiary. Like many other local power companies (including the parts that made up Puget Power), OL&P operated a street car system throughout Olympia and Tumwater. But, as Puget Sound Power and Light began the transition over the Olympia system, they began phasing out both the old hydroelectric project and the street cars. And, the final step was creating a way to transition the high voltage Puget Power electricity into Olympia. That was when the French Eclectic structure and the substation around it was built in 1927, when electricity was brought in from power plants across the region, replacing our own homegrown electricity. For additional reading, visit DAHP: Plum Substation or UW: History of Puget Power.
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