Some Dam – Hydro News™
And Other Stuff

Quote of Note: “Money can’t buy you happiness, but it does bring you a more pleasant form of misery.” -- Spike Milligan

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“Good wine is a necessity of life.” --Thomas Jefferson
Ron’s wine pick of the week: 2012 Chappellet Cabernet Sauvignon "Signature"
“No nation was ever drunk when wine was cheap.” -- Thomas Jefferson

Dams:
(Flood control is a beautiful thing.)
Ever wonder how Army Corps meteorologists deal with the dam weather?
BY Scott Sistek, 2/6/15, komonews.com

We all know it rains a lot in Seattle, but what about when it pours? I mean, REALLY pours. This fall and winter has been one Pineapple Express warm storm after another and while we have managed to dodge a lot of major flooding this season, those whose job it is to protect us from flooding have been busy. And that includes those at the Army Corps of Engineers -- among the unsung heroes of keeping people and property safe during

Ross Dam pictured during a heavy rain event on Oct 22, 2003. It shows the water spilling from Ross dam. The peak flood waters had been stored behind Ross dam on the upper Skagit, during the height of flood inflow. The water is being evacuated from the reservoir flood pool into the Skagit river, after the storm had passed. (Photo: USACE Seattle District)

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intense rain storms as they are tasked with, among other things, regulating the amount of water coming through the dam-controlled river flood plains. As heavy rains are in the forecast again this weekend, I asked Larry Schick, a meteorologist with the Seattle District of Army Corps of Engineers (and former TV meteorologist at KING and KSTW) to explain the science of how dams are managed during heavy rain periods. In a perfect world, they strike a delicate balance between allowing enough water out of the reservoir so that the dam doesn't overflow or fail, without releasing so much water that you inundate everyone living down-river. And that starts with determining and maintaining a target water level downstream. "For downstream flood risk management, there is usually a downstream control point on the river, which we target and try to keep the water flow from exceeding that target flow at that point," Schick said.

For example, for Howard Hanson Dam, it's the Green River at Auburn gage as the control point, he says. "We never want to get above 12,000cfs (cubic feet per second flow), or it will threaten to overtop levees," he said. But during major rain events, the upstream flow can be considerably more, sometimes exceeding 30,000 cfs in a major flood. To keep the downstream flow below that 12,000 cfs threshold, they use the dam to capture the excess. So part of the challenge is when major rains are coming, to empty the dam as much as possible before the heavy rains arrive, and even then, it fills fast once the rains come. 

"(An) empty reservoir (before the storm) fills very quickly - more than 65% in 48-72 hours in one case. (That is the volume of 20 Green Lakes). Once you close the gates, the 'filling' clock is ticking, because the reservoir flood space is not infinitely sized - there is a limit. You must time it right -- not too early, not too late." He says accurate forecasts are critical to their operations.

"How one operates the dam depends on what might happen with the uncertainties of the weather/hydrologic forecasts and your target goal at your control point," Schick said. "Also, pre-existing conditions -- is there water already behind the dam? Also, reality - what is actually happening vs. the forecast. Sometimes it's tricky. Forecasts sometimes change." And around here, we can get big flood flows, really fast. "I have seen a 2-foot deep stream turn into a 30-foot deep monster in 18 hours! (The Doty gate along the Chehalis River in 2007) -- that was caused by was 14 inches of rain 24 hours."

Once the storm passes... Schick says once a heavy rain storm passes, now the focus is to try and get as much water as they can get out from behind the dam before the next storm comes, but not releasing SO much water that they cause their own flood. "After the peak of the storm we must dump the stored water ASAP, but safely in a controlled way," he said. "We dump it quick because there might be another storm might coming (future is uncertain). It might take a week or more to get rid of the water. You don't want to have water still in your flood space in the reservoir and a new storm bearing down." Thus, people who live along dam-regulated rivers like the White, Green and Skagit might be surprised to see the river may run fairly low during the actual storm, then very high during the dry sunny days following the storm as the Army Corps releases the stored water in an aggressive but safe way. And the challenges persist even after the rain stops falling. "Remember too, even after the rainfall ends, the rivers are usually still rising, because runoff takes time to develop and follow through a large river system," he said. Schick also wanted to diffuse the myth that during warm, Pineapple Express-type rain events that melting snow contributed to flooding issues, "The high runoff is always driven by intense rainfall, never snowmelt in Western Washington. The snowmelt myth causing floods continues, but it's NOT true!"

**Protect the dam at all costs**

Schick says his team always has to balance between trying to prevent as much flooding as possible without causing harm to the dam -- and that dam integrity takes precedence. "At the end of the day, you never want the flood worse than with no dam. So in the end saving the dam is the most important thing," he said, but it's rarely an issue here as dams are engineered to handle the most extreme of weather events here. But not all dams have been so lucky. He cited a dam in Brisbane that came very close to failing in 2011. "The operators were faced with the 'dam operator's paradox' during an extreme rainfall event," Schick said. "This is something we all must..."
consider in an extreme case. The idea is you must let water out of the reservoir to save the dam during a big flood. The results are the added flow exacerbates the ongoing major flood, but ultimately save the dam avoiding a far larger catastrophic flood."

**Dodging a big bullet in 2006**

Around here, there was a massive rain storm and flooding event in November 2006 but as bad as it was, it was nearly oh-so-much worse. Schick said few people know what nearly happened on the Skagit River that extremely heavy rain event. The Corps was given flood control management of the Upper Baker dam (from Puget Sound Energy) and the Ross Dam (from Seattle City Light) during the big storm. About halfway through the storm, a new forecast came in that predicted so much rain it would double the record inflow to the Upper Baker dam. "This was an extreme and unprecedented forecast," Schick said. He said given the intensity of the storm and the fact it was stalling over the region, the forecast was plausible. "The reservoir was going to run out of flood space and we'd be forced to overtop, losing our ability to control the water," he said. "The river would have its way with us."

But as they began alerting residents downstream from the Skagit, the intense rain band took a very slight, but important drift to the south, instead dumping much of the rain into the Stillaguamish, Skykomish basins and many other areas, including areas of Mt Rainier National park. "Myself and a hydraulic engineer here at the USACE Seattle District were very disturbed by the intensity of this storm," he said. "We did an informal post storm analysis. If the storm would have unfolded as forecast and not moved south, there is little doubt most levees on the Skagit would have over-topped and the entire valley would have flooded. Many miles of I-5 would have been under water and many of the towns and cities would have flooded. The dams would likely of held, but possibly overtopped. The mighty Skagit would have been wild and free, unrestrained by dams, engulfing the Skagit Valley with a catastrophic flood." Still, the Stillaguamish had a 100-year flood event. "I would argue the forecast magnitude was good, but missed the focus location by a few dozen miles. Overall a good forecast, just a tad off in precise location." Flood risk management is the corps' highest priority, but most days when it's not raining, their job is just to keep the rivers and their basins healthy. "More typical decisions have to do with optimum flows for endangered Chinook salmon, general health of the river, controlling sediment, routine flood risk management, hydro power and local water supply," he said. "Also, one must consider what the unregulated flow below the dam is contributing to the main stream flow, because we can't control that with the dam. It's all a consideration - responsibilities we take very seriously and are guided by Federal law and well established hydrologic engineering standards - but there is a bit of art to it, which comes with experience."

(Not enough money to do the job right!)

**Despite proposed funding increase, Allegheny River lock and dam operations won't change**

By Mary Ann Thomas, Feb. 8, 2015, triblive.com

President Obama's 2016 proposed budget stays the course with steady funding of the locks and dams on the Allegheny River and the cleanup of the nuclear waste dump in Parks Township. The president's budget serves as a road map for federal spending. Congress draws up and passes the actual federal budget. Although the proposed $5.3 million for the Allegheny River locks and dams is 13 percent higher than the 2015 budget, operations will not change. Just like the previous year, the president's 2016 budget will pay for just operations and maintenance, according to Dan Jones, spokesman for the Army Corps of Engineers, Pittsburgh District. He added that the cost of materials for operations has increased. The workers are still maintaining and operating the locks to the best of their abilities," Jones said. "Each year, the locks get older and our employees do what they can do," he said. "There are no major maintenance issues looming on the Allegheny." Funding for the Allegheny's locks and dams has been steady since the Corps slashed the budget by half in 2012. The loss in funds was part of national budget cuts.

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The Allegheny took a hit because of its lack of commercial boat traffic, particularly in the upper reaches of the river's navigable waters in Armstrong County. As a result of the budget cuts, the Corps shut down Locks 6 through 9 — Clinton, Kittanning, Mosgrove and Rimer — except for special events to recreational boaters. Commercial watercraft can enter the locks by appointment. A local nonprofit is trying to reverse the tide: The Allegheny River Development Corp. is in final negotiations with the Corps to pay to operate those upper locks for the 2015 boating season, according to Linda Hemmes, president of the nonprofit's board. The effort looks promising, as state Rep. Jeff Pyle helped the group to snag a $120,000 PennDOT grant for those operations last year. Along with a required $40,000 match, the ARDC can cover the $160,000 cost of operating the locks through the summer, according to Hemmes. The bulk of the increase for the president's proposed budget for the Corps' Pittsburgh District in 2016 will go toward lock and dam projects in other parts of the state. The budget included $52 million for the construction of new locks at the Charleroi dam on the Monongahela River spanning Allegheny and Washington counties. A $59 million boost is proposed for the East Branch Clarion River Lake Project in Elk County to repair internal erosion of the dam.

(Sometimes removing a dam is not a good idea.)

Opposition to breaching Rodman dam grows

The controversy surrounding Jax Chamber's plans to breach the Rodman Dam is deepening, especially with residents of Putnam and Marion counties. Jax Chamber President Daniel Davis held a town hall meeting in Palatka in order to pitch breaching the dam to residents, but he faced more backlash than support, as reported by the Florida Times-Union. "So-called environmentalists who want Rodman destroyed could care less about what Putnam County feels and needs, and what Palatka needs as far as our water system is concerned," a local teacher, Bill Bailey, said in the meeting. Most of the residents in the meeting voiced concern and even anger toward Jax Chamber and the St. Johns Riverkeeper for the proposal.

Environmentalists – and the Jacksonville Port Authority – both have something significant to gain from breaching the dam and restoring the Ocklawaha River. Removing the dam, according to Jaxport, would significantly impact the St. Johns River for the better and open up new economic opportunities. The alliance between Jaxport and environmental groups is to stop a lawsuit that would challenge dredging in the St. Johns River. Supporters of breaching the dam aren't giving up, though. They plan to have another discussion within the next two weeks. "We're dedicated to sitting down with the community in Marion County, in Putnam County and all the folks concerned to have that technical discussion," St. Johns Riverkeeper Lisa Rinaman told the Florida Times-Union.

(Lanesboro seeks public support for historic dam)
By Bretta Grabau, Bluff Country News Group, February 11, 2015, bluffcountrynews.com

A month into the Minnesota Legislative session brings to the forefront one of the most poignant issues for Lanesboro — funding to repair one of the most prominent historic markers of the town.
The Lanesboro dam is vital to the town's economy, but it is also a significant part of the town's history. In 1868, construction began for a dam to be used for powering mills in the town. Many modern day dams utilize concrete for the structure. But back in that time period, the builders of the dam used unmortared limestone block to create the 25-foot tall, 220-foot long structure. Lanesboro's city administrator, David Todd, noted this block was "apparently quarried from the adjacent railroad cut along the west river bank;" Lanesboro's dam is a gravity arch dam and one of the six remaining masonry arch dams left in the United States. Over the years, the dam transitioned from running the mills to providing hydropower generation and enhancing recreation and aesthetic benefits for locals and tourists alike. Tourists often stop for photos with the dam in the background and the dam is often viewed in tourism brochures. A couple of years ago, surveys showed the dire straits the dam was in and the necessity to repair it. Prior to that, the last repair done on the dam came in 1985. "The dam's concrete cap was last replaced in 1985 by Indeco Construction, who also replaced several damaged limestone blocks on the downstream side of the dam," Todd added. "However, these surface repairs did nothing to address questions raised by multiple consultants who have concluded the dam is unstable when analyzed solely as a gravity dam."

Reviews of stability analyses conducted by Ayres Associates, the engineering and surveying firm, indicate the stability of the dam is inadequate for gravity alone. Also, the steel cramps have corroded enough to bring into question how reliable they are to hold the blocks together. This places the dam in a high risk category with tremendous potential to devastate the Lanesboro community, economy and perhaps even bodily harm. "In summary, without any arch capacity, the dam does not meet the required factors of safety for stability, and this dam's failure could cause loss of human life," Todd described. There are many reasons for the dam to be preserved and restored. The dam is a unique structure and worthy of preservation as an unmortared, dry laid stone arch dam, especially since it is one of only six left in the country. This particular dam required restoration several years ago, and that matter was brought to the attention of both Senator Jeremy Miller and Representative Greg Davids in the state legislature. For the past several years, the condition and deterioration of the dam's integrity has been at the forefront of many community members' minds. At one point, a Lanesboro city official approached Davids about the concern. "It is a very interesting issue. Lanesboro said they needed funding to fix the dam and I want to get it all," related Davids.

Five years ago, Miller began his legislative career and even at that time, the dam posed as a large concern for him. "When I first got in, the price tag for the project was around $1 million. But then the Minnesota State Historic Preservation Office (SHPO) stepped in and said if there is any restoration of the dam, it must be preserved in the original form," Miller explained. As it is dated back to the 1860s, the dam is a piece of history for the town, state and nation. But because it is such an historical artifact, repairing the dam falls under certain requirements from SHPO. With this stipulation, the price tag for the reconstruction more than doubled. "This presented challenges for Lanesboro. It's a very small community and did not have resources readily available after SHPO got involved," Miller noted. The matter with SHPO did complicate things and increased the amount of money necessary to revitalize the dam. But since it would require more money, the Minnesota Historical Society and Department of Natural Resources (DNR) provided grants for the fix. The Minnesota Historical Society (MHS) contributed $300,000 to fund half the costs of preserving full historical aesthetics. The DNR has contributed $450,000 for construction with some indication of adding another $450k later, according to Todd.
He also related the USDA Rural Development may assist in funding the project, but the repayment per month is too high and the town does not have much bonding capability left. But the issue now lies with the requirement that Lanesboro contribute a large amount of money the community would find very difficult to furnish. "The project could be funded now, except the Lanesboro community would have to come up with $600,000," Davids commented. However, because the price is so steep for the community, Miller and Davids both presented bills in the Legislature to waive the city's matching requirement. "I think it is unfair to the community and taxpayers for the price tag to be doubled. The bill would totally fund the project," Miller stressed. "I've worked closely with Lanesboro. The bill says it would waive the matching requirement, but I will stress to the Senate that the city has put in $100,000 to the project since 2007 and also in kind contributions." The capital investment committee did visit the dam last year and, as a result, many of the members are familiar with the project. "There are many safety concerns as the project is delayed, due to the erosion," Miller commented.

The dam's repair is critical for public safety, potentially endangering lives at its failure. If the funding for the repairs do not come through, and since the dam is so unstable, it will end up being removed. "Dam removal would release hundreds of thousands of cubic yards of silt, 140 years worth," Todd explained. "Dam removal would fill the bedrock channel downstream with silt, destroy canoe industry and smother pristine trout habitat." Along with the physical and visual ramifications if the dam were to be removed, Lanesboro would be severely affected economically as well. The Root River has always been an attraction for fishing, canoeing, kayaking, tubing and more. "The dam supports canoe business downstream, attracts people to the adjacent state hiking trail, has a RV campground next to it and forms the central image of most historic photos of this town," Todd stated. Lanesboro has proved to be a tremendous source for the Fillmore County economy. Many forms of amusement and recreation, such as river canoe rentals, generate about $5 million. The bed and breakfast capital of Minnesota also produces nearly $4 million in lodging and $10 million in eating and drinking from the approximate 200,000 annual tourists and visitors. Todd also noted the Minnesota 2008 "Revenue by County" database listing another $285,496 as directly attributable to Fillmore County museums and historical site revenues. But today, the historic dam is classified as a high hazard structure and is regulated under the dam safety program in the Minnesota Department of Natural Resources' Division of Waters. To meet the high hazard structure dam safety requirements, Ayres Associates has completed a gravity structure design of an upstream cutoff wall to stabilize the existing structure, significantly reduce seepage, comply with the permitting agency requirements and eliminate the uncertainty of how much arch action contributes to this dam’s structural sufficiency. For any who wish to express their support for the Lanesboro Historic Dam and the need to fund and replace it, contact the state legislators. Sen. Jeremy Miller can be reached at Sen.Jeremy.Miller@senate.mn or (651) 296-5649. Contact Rep. Greg Davids at rep.greg.davids@house.mn or (651) 296-9278. Finally, Leroy Stumpf, Senate Capital Investment Committee chair can be reached at leroy@senate.mn.

**Hydro:**

(Maybe the generator Gremlins are at work!)

**Mystery defect causes powerhouse evacuation at Rocky Reach Dam**

By Christine Pratt, Feb. 5, 2015, wenatcheeworld.com

WENATCHEE, WA — An unknown defect in one of four repair-plagued large generating units at Rocky Reach Dam created a hazard Wednesday, causing personnel to evacuate the powerhouse. The C8 unit began spinning faster than it should have when water was allowed to run through it, said Chelan County PUD spokeswoman Suzanne Hartman said.
SHERIDAN, WY — The city of Sheridan received funding approval for three water projects from the State Loan and Investment Board Thursday that will allow the city to produce hydropower, to install more efficient water meters and to install a larger water main along Leopard Street. "We are blessed in Wyoming to have many funding resources and appreciate the legislative support for these projects," City Public Works Director Nic Bateson said. Bateson, Utilities Manager Dan Roberts and Mayor John Heath attended the SLIB meeting in Cheyenne. All three projects submitted by the city received funding from the board, which is comprised of the top five elected state officials. A water meter replacement project, which was granted $1.913 million in principal forgiveness and a $1.913 million zero percent interest loan, will allow full replacement of all city and Sheridan Area Water Supply meters. This will result in cost savings and efficiency improvements by enabling meters to be read remotely. The Sheridan Hydropower Project was awarded $628,000 in principal forgiveness and a $628,000 zero percent interest loan. This project will allow the city to produce hydropower on one of its raw water mains near Beckton Hall Road and sell the power back to Montana-Dakota Utilities. It will be the first production of hydropower in the city. The Leopard Street waterline replacement project was awarded $504,613 in principal forgiveness and a $504,613 loan with 2.5 percent interest. This project will upsize the line to increase capacity.

MILLTOWN, MT – The cherry red and baby blue paint jobs on Milltown’s powerhouse equipment still look fresh, more than a century after they were installed at the confluence of the Clark Fork and Blackfoot rivers. “I haven't seen these models,” said Mary McCormick, an architectural historian from Butte reviewing the remains for a possible museum display. “The powerhouse in Madison was from a year later and they already had newer versions. Things happened so fast in technology, even then. It’s like computers today.” Nevertheless, at least one of Milltown’s five power-generating flywheels is back in action at a dam in the eastern United States. The remaining flywheel at Milltown probably won’t spark another watt, but it may illuminate some imagination for visitors at the future Milltown State Park historic site. "We have these cool old artifacts," said Milltown State Park manager Mike Kustudia. "So how do we use them to tell a story?" The state Parks Department has about $100,000 banked for interpretive features and visitor displays at the park. Right now, the powerhouse relics sit in a windowless shed. They range from ancient rusted wheelbarrows and wagon wheels to the dam’s wall-sized control panel, mounted on a 2-inch-thick slab of marble. Antique as they look, the powerhouse equipment recalls a time when Montana underwent radical changes. Thomas Edison introduced the first practical electric light bulb in 1879. Barely 30 years later, dam builder and copper king William Clark was using the hydroelectric power generated at Milltown to electrify a street car line from Missoula to Bonner. His hydro-station continued generating electricity until Milltown’s dam was removed and reservoir drained in 2008, as part of a massive environmental cleanup on the Clark Fork River.

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McCormick has inventoried numerous dams around the state for Rossillon Archaeological Consulting, a firm that specializes in documenting the value and relevance of cultural resources. Missoula County contracted with Rossillon to sort through the Milltown jumble in search of gems. Some stuff looked like it was left over from Dr. Frankenstein’s lab. Other hulks refused to give any clues to their former purpose. McCormick worked her way around a pair of hydraulic floodgate pistons that once controlled the amount of Clark Fork water running into the powerhouse.

“These are really old ones,” McCormick said. “That’s a technology that advanced really quickly. They were finding new ways to sense the speed of the water flowing into the turbines, which determined the frequency of the electricity. But for a museum, you’d only need one.”

You’d also need access to the park. A legal dispute continues to work its way between Gov. Steve Bullock’s office and International Paper Co., which owns the land between the park and its main entry point. The state wants assurances there’s no hazardous waste or other issues in the ground the company has offered to donate. Given the dam reservoir and nearby sawmill complex were both federal Superfund cleanup projects, such debates surround almost every acre of industrial land in Milltown.

The dam held back a shallow reservoir covering the confluence of the Blackfoot and Clark Fork rivers. It also restrained more than 300,000 tons of toxic mine sediments deposited after a 1908 flood that poisoned the upper Clark Fork drainage. The Superfund cleanup got underway in 1992 and was declared finished at Milltown in 2012, at a cost of $115 million. Meanwhile, Kustudia is gathering other items for the site. He’s found old movie footage of the powerhouse in operation, and is running down rumors that the original flywheel belts were made of buffalo hide.

“We’ve already got benches and picnic tables made from old saw-logs we recovered from the reservoir,” Kustudia said. “We’re trying to figure out what other things to save. We’ve got two exciter units from the powerhouse and we only need one. Who out there would want an exciter? It can’t be only scrap.”

Maine’s hydropower potential examined in study

BANGOR, Maine (NEWS CENTER) -- The Governor’s Energy Office has released a study with some ideas on how Maine’s hydroelectric dams can boost their output.

The LePage administration started the study last spring. It looked at the more than 800 dams across the state and what potential they have to produce power. The dams range from ones that span the entire river and have the potential to produce many megawatts of power to small dams built for old mills. Some of the mills don’t have power producing equipment it would have to be installed. The state’s consultants looked at the potential of different dams producing power and ranked them into three different categories from limited to significant development potential, taking into account the investment needed.

They found 110 dams they said could be outfitted with new equipment or upgraded all across the state, generating power for an additional 120,000 homes. However, the study notes that investing millions of dollars into dams is not worth it in Maine’s current energy market conditions. The Natural Resources Council of Maine agrees. “Wind power and even solar power have much better payback periods than the study showed for some of the hydro potential,” said Dylan

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Voorhees, the council's clean energy and global warming project director. "The conversation we're more likely to have about renewables is about wind power and solar power and maybe a little bit of tidal power." Still, the director of the Governor's Energy Office said the study answers some questions his department had which will inform a discussion on whether or not the state should find ways to make itself more hydro-friendly. "What we were trying to assess is what resources are available, what are the ballpark economics and how can we promote more production from our existing infrastructure," said Patrick Woodcock. "The next step is to try to determine if there are some policies that we should amend in our laws and in our policies to try to promote hydropower within the state."

(If life was simple.)

Increasing hydropower hits a bipartisan sweet spot
February 11, 2015, pbs.org

Energy will be a key issue for the new Congress, and hydropower is one of the few areas of agreement between Democrats and Republicans. Legislative changes have made it easier to develop small-scale hydroelectric projects and both parties find it advantageous. Special correspondent Dan Boyce of Inside Energy reports on what else proponents are seeking from lawmakers.

TRANSCRIPT
JUDY WOODRUFF: The topic of energy often fuels political debate. But, as our next report shows, water might be putting out some of those fires. The U.S. Department of Energy says hydropower has the potential to generate electricity for more than four million homes. Our story comes from Dan Boyce of Inside Energy. That's a public media collaboration working with the NewsHour.

DAN BOYCE, Inside Energy: This is what a lot of us think of when we hear the word hydropower, but in a lot of ways, this is the old face of hydro in the U.S., and this is the new face.

BEVERLY RICH, San Juan County Historical Society: This is it.

DAN BOYCE: A generator the size of a wheelbarrow pulling in water from a mountain stream, generating enough power for about 10 homes. This little generator has helped change the course of hydro-history.

BEVERLY RICH: Come on, really? This little, tiny thing in a 5-foot-by-10-foot building is causing all of this?

DAN BOYCE: Beverly Rich and other members of the volunteer San Juan County Historical Society started taking care of this old mill site about 15 years ago, a mill with a water pipeline the workers used decades ago to help process precious metals like gold and silver.

BEVERLY RICH: At that time, we kept thinking, gee, there really ought to be a way we can use that water.

DAN BOYCE: They started trying to get the federal licensing needed to install a power generator.

BEVERLY RICH: And had no idea how really onerous it is for really tiny, tiny, little projects. We were having to jump through the same hoops that if you're going to build Boulder Dam.

DAN BOYCE: That's the old name for the Hoover Dam. And she's not exaggerating. A lot of projects generating electricity from water had to go through the same federal scrutiny as the giant dams of old, that is, until August of 2013.

REP. ED WHITFIELD (R), Kentucky: The other bill under consideration today is hydropower legislation.

DAN BOYCE: Advocates of small hydropower projects worked up a pair of bills for Congress. And the mill project in Silverton was on full display as a prime example of their problem.

KURT JOHNSON, Hydropower Consultant: It's a long overdue, cost-effective, commonsense measure.

DAN BOYCE: This legislation streamlined the federal licensing process for small hydropower projects, cutting it down from years to as little as 60 days. And the legislation didn't just pass.

BEVERLY RICH: Incredibly enough, in this — in this horrible time of gridlock, it passed unanimously.

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DAN BOYCE: The bills hit this rare bipartisan sweet spot, says energy analyst Cameron Brooks. For Republican lawmakers, the legislation shrunk federal bureaucracy.
CAMERON BROOKS, Energy Analyst: It's really cutting through red tape and helping push forward something that can create jobs.
DAN BOYCE: And for Democrats, it meant a win for renewable energy and, most importantly, doing so without putting new dams on America's rivers. The result? More small projects like the one in Silverton are getting approved more quickly. So, for the small hydropower industry, national lawmakers really did their job. There are still problems for hydro, though. And so advocates are still looking for more still from Capitol Hill.
KURT JOHNSON: This is a great example of enormous amount of mechanical energy, which is currently completely wasted.
DAN BOYCE: Hydropower consultant Kurt Johnson testified at the congressional hearing on the 2013 bills. As helpful as he thinks that legislation was, he compares it to gently taking a kitchen knife to the government's red tape.
KURT JOHNSON: We need another round of legislation, perhaps to get a machete, and further clear out some of those regulatory barriers.
DAN BOYCE: For starters, hydropower advocates want bigger production tax credits, like wind power used to enjoy, but those credits came to an end of last year. And many Republicans express reservations in continuing them further. Also, as far as Johnson is concerned, for little generators like the mill in Silverton, it shouldn't just be a matter of reducing the licensing process.
KURT JOHNSON: If projects are tiny and non-controversial, why is the federal government involved at all?
DAN BOYCE: Legislation to ease hydropower expansion will likely make a reappearance in the new Congress. Why? Alaska Senator Lisa Murkowski has taken over as the new Republican chair of the Senate Committee on Energy and Natural Resources. She's on record as a hydro-booster, saying it's an undeveloped resource and could do more to support economic development and job creation. As far as the country's energy needs, there is vast potential. This is Button Rock Dam in Northern Colorado. There's no generator hooked up here. If there were:
KURT JOHNSON: It would generate enough electricity to power about 500 average local homes. DAN BOYCE: And that project would still be considered small hydropower. Projects more than twice as big are lumped in as small.
There are some 80,000 dams in this country, small, and medium-sized and giant. Right now, only 3 percent are being used to generate hydropower, so there's a lot of room for growth, equal to the power generated by about a dozen coal-fired power plants.
Dan Boyce in Denver for the PBS NewsHour.

**Water:**
(Hope this doesn't happen or the U.S. economy will crumble.)
Megadrought may plague parts of USA
By Doyle Rice, USA TODAY, February 12, 2015, usatoday.com

We ain't seen nothing yet: The intense drought in California is only an appetizer compared with what's coming this century across much of the western and central USA, according to a study out Thursday. During the years 2050 to 2100, the Southwest and Great Plains will face a persistent "megadrought" worse than anything seen in the past 1,000 years, and the dry conditions will be "driven primarily" by human-induced global warming, scientists said. **There's at least an 80%**
chance of a megadrought in these regions if climate change continues unabated, Toby Ault, an atmospheric scientist at Cornell University and co-author of the research, said at a news conference Thursday in San Jose.

A megadrought is defined as a drought that lasts for decades or longer, such as those that scorched portions of the West in the 12th and 13th centuries. Ault said megadroughts should be considered a natural hazard on par with earthquakes and hurricanes.

To identify past droughts, scientists studied tree rings to find out how much — or little — rain fell hundreds or even thousands of years ago. Scientists used that historical data in combination with 17 different computer model simulations to predict what changes we may see this century. The computers showed robust and consistent drying in the Southwest and Plains, due to a combination of reduced precipitation and warmer temperatures that dried out the soils.

"Megadroughts like the 1930s Dust Bowl and the current drought in the Southwest have historically lasted maybe a decade or a little less," Ben Cook, climate scientist at NASA's Goddard Institute for Space Studies and lead author of the study, said in a statement.
"What these results are saying is we're going to get a drought similar to those events, but it is probably going to last at least 30 to 35 years," Cook said.

Though previous papers predicted the Southwest would dry because of global warming, this is the first to say such drying could exceed the worst conditions of the distant past. "The study is strong scientifically," said Jonathan Overpeck, a scientist with the Institute of the Environment at the University of Arizona, who was not part of the study. "It strengthens our understanding of what is ahead, and it isn't pretty," he said. **They do the best job yet in linking likely future change in drought severity to that of the last 1,000 years as recorded by tree-rings.** Overpeck said in an e-mail. "The results are striking, and highlight how future temperature increases will trump precipitation change in driving totally unprecedented levels of drought unless we make dramatic reductions in greenhouse gas emissions." The study was published Thursday in the journal Science Advances.

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**Environment**
(Oh oh! Are they going to fine them by the fish?)

**Update:Biologist says Boise River flow stopped completely below Barber Dam early Wednesday**
By Frankie Barnhill, Boise State Public Radio, February 6, 2015, idahostatesman.com

Idaho Fish and Game biologists are looking closely at the shallow areas of the Boise River right below Barber Dam, Boise State Public Radio reports. They're trying to determine how many trout hatchlings may have died when the river's flow dropped dramatically earlier this week. Biologist Joe Kozfkay says flows immediately below the dam were at 0 cubic feet per second (cfs) for up to seven hours after the privately-owned dam's alert system failed. Enel Green Power owns the hydroelectric plant. Kozfkay says the department is most concerned about the habitat impacts between Barber Dam and Broadway Avenue bridge, where the river was at its lowest.

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**Sometimes dams are good for other things.**

**Dams near Louisville serving as barrier to invasive Asian carp's march up the Ohio River**

THE ASSOCIATED PRESS, February 08, 2015 - therepublic.com

LOUISVILLE, Kentucky — A highly invasive fish commonly called Asian carp is proliferating in the Ohio River at Louisville, with a spawning area below the McAlpine Locks and Dam. A report from
the U.S. Fish and Wildlife Service says two species of the fish, Bighead and Silver carp, are spawning at Louisville. The recent report to Congress on the invasive fish says they have been detected as far up the Ohio River as Greenup Lock and Dam near Huntington, West Virginia, and there are reports of Bighead carp just southwest of Pittsburgh. Kentucky's top carp expert, Ron Brooks, with the Kentucky Department of Fish and Wildlife Resources, told The Courier-Journal (http://cjky.it/1Ii32Z8 ) that there are enough of the carp below the McAlpine dam for spawning to occur.

The fish's exploding population has infested lakes and tributaries all along the Mississippi River. The concern is that the hungry fish eats up food supplies and starves out other more favorable species like crappie and bass. Brooks said the dam structures at the Falls of the Ohio near Louisville have acted as a partial barrier to Asian carp movement upriver. For that reason, it took longer for carp to make it through that area than it did in almost any of the other dam structures below or above the falls. "For this reason, we believe that special methods may be employed in the future at that dam to significantly reduce the chances that future migration above the dam will be extremely limited," Brooks said. The news about the McAlpine population was among the many tidbits of information included in the report, which covered both the Mississippi and Ohio River basins. Kentucky plays a prominent role in the new report, particularly the state's efforts to control the carp through commercial fishing. State Fish and Wildlife hosted a first-ever commercial fishing contest in 2013 at Kentucky and Barkley lakes to reduce the populations. The report says Kentucky will have three major fish processing companies established with ultimate goals of removing up to 150 tons a day of Asian carp from the Mississippi River basin. Brooks said the third and final processing company will begin fishing later this year.

(It's good for kWhs, but not drinking!)
San Francisco Water Manager Faces Suspension After Seen Urinating In Reservoir
February 9, 2015, sanfrancisco.cbslocal.com

SAN FRANCISCO (CBS SF) — A $111,000-a-year San Francisco water manager will likely be suspended after he was seen urinating in a reservoir that supplies drinking water to nearly 2.5 million Bay Area residents. The San Francisco Chronicle reports Public Utilities Commission employee Martin Sanchez could receive a five day suspension without pay after the Jan. 6 incident took place at the Priest Reservoir in the Sierra foothills. A commission insider sent the SF Chronicle an anonymous complaint that alleges a number of employees saw Sanchez urinating "several times" in the reservoir. Utilities commission spokesman Tyrone Jue said the reservoir had been drained for maintenance at the time and poses no health danger. Still, Jue said his action were "not acceptable." "The bottom line is — you pee in the wrong place again, and you are toast," Jue told the SF Chronicle. The Priest Reservoir is one of the four Hetch Hetchy holding reservoirs. Untreated water from the Sierra is treated with ultraviolet light and chlorine before it's sent by pipeline to Bay Area customers.