

9/19/2014



## Some Dam – Hydro News™ And Other Stuff



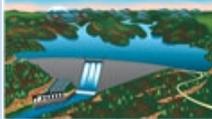
**Quote of Note:** *“Wine is constant proof that God loves us and loves to see us happy.” - - Benjamin Franklin*

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**“Good wine is a necessity of life.” - -Thomas Jefferson**

**Ron’s wine pick of the week: 2011 Luca Syrah & Shiraz (Other than French) "Laborde Double Select"**

**“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson**



### **Dams:**

#### **NC says Duke Energy coal ash dams are high hazard risk**

By John Murawski, newsobserver.com, September 5, 2014

State officials said two dams at a Duke Energy power plant pose a “high hazard” of killing downstream residents if they were to breach and spill, as regulators begin a systematic safety review of 49 coal ash lagoons and cooling ponds across North Carolina. One of the two dams at the W.H. Weatherspoon Power Plant near Lumberton had previously been classified as posing an intermediate risk, requiring a safety inspection once every five years, while the other dam was exempt from safety inspections. One pond contains coal ash; the other stores water in a cooling pond. A high hazard rating by the state Department of Environment and Natural Resources calls for increasing annual inspections for structural integrity to once a year. “If the coal ash storage pond were to fail, material from the coal ash storage area would likely flow southeast and could impact four occupied homes located closely together on the east side of both the coal ash storage pond and the cooling pond,” said DENR spokesman Jamie Kritzer. “All four homes are within a mile of the coal ash storage pond.” The hazard rating does not reflect on the condition of the dam but the potential risk to lives and property if the dam were to burst. However, a high hazard rating is significant because it will be a factor used to determine how coal ash ponds are prioritized for

closure by the newly created N.C. Coal Ash Management Commission under legislation awaiting Gov. Pat McCrory's signature.

By reclassifying Weatherspoon as a high hazard this week, DENR officials are signaling the ash pits should be reviewed for early closure, and the ash may have to be removed to a safer location. Charlotte-based Duke had previously opted for the most economical option: leaving the ash at the site in place and covering it with a layer of soil. The two Weatherspoon dams are the first to be reevaluated for safety by the N.C. Department of Environment and Natural Resources, a review prompted by the February coal ash spill of 39,000 tons of slurry and sludge into the Dan River. Most of North Carolina's 33 coal ash pits already have a high hazard ranking. Kritzer, the DENR spokesman, said some could be reclassified to a lower hazard rating. **A coal ash dam that is exempt from inspections is either under 25 feet high or contains less than 50 acre-feet in volume.** North Carolina dams have been assigned hazard ratings since 1967. The Weatherspoon coal ash storage site was the first in the state set to be decommissioned after the coal-burning power plant there was mothballed in 2011 and demolished two years later. **Duke inherited the facility when it acquired Raleigh-based Progress Energy in 2012. Duke planned to submit a closure plan earlier this year but suspended the application after DENR filed lawsuits alleging the facilities are causing groundwater contamination across the state.** The Weatherspoon site contains 1.7 million tons of ash, one of the smaller ash pits in Duke's system. DENR's hazard rating is based on an emergency action plan Duke submitted in response to a March request for such a plan after the Dan River spill. **The emergency plan is considered confidential and for security reasons is not available for public review, said Duke spokesman Jeff Brooks.**

## Rahall announces \$9.6 million in Bluestone Dam funding

9/5/14, m.bdtonline.com

Washington — U.S. Rep. Nick Rahall, D-W.Va., the top Democrat on the House Transportation and Infrastructure Committee, announced Friday the award of an additional \$9.6 million in improvements to the Bluestone Dam. "The one sure way to grow our economy and create jobs is to invest in our infrastructure — from our highways and bridges, to our dams and drinking water systems. The work at the Bluestone Dam is not only protecting the lives and property of residents and businesses from Hinton to Charleston, it's putting our people to work building for the future," Rahall said. In 2012, Rahall announced that the Corps had awarded a \$55 million dam safety assurance contract to Heeter Construction of Spencer. That contract included eight potential options for continued work on the dam that would increase the value of the original contract to as much as \$94.7 million. **The latest option exercised by the Corps and valued at \$9.6 million involves installing additional rock anchors to strengthen the dam and its flood storage capacity.** According to the Corps, the Bluestone Dam has prevented nearly \$5 billion in flood damage to those living along the New and Kanawha Rivers.

(Dam history.)

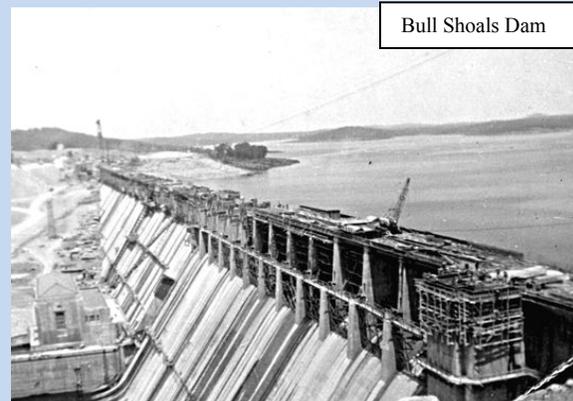
## A Look Back: How dams came to the Ozarks

From Baxter County Historical & Genealogical Society, September 7, 2014, baxterbulletin.com

This story was researched and written by Richard Sheid.

**In the 1930s, the country needed jobs and the Ozarks needed flood control. Work began on Bull Shoals Dam in 1947.**

My ancestors came up the White River in 1802 and settled on land along the river in 1806, before the New Madrid earthquake and before Arkansas was a state. I always have been interested in the history of the White River and its tributaries. My ancestors and family have farmed along the White River Valley for over 200 years, and my son does it today.



Bull Shoals Dam

I recently found maps of the proposed dams on the White River watershed. I knew they needed to be preserved and I have donated them to the Baxter County Historical & Genealogical Society. History helps us learn from our past — good and bad. We must protect the Jewels of the Ozarks. Early possibilities for dam. In 1902, private power companies had explored the possibility of building a dam on the White River at Wildcat Shoals above Cotter in Baxter County, but they never began any work on it. Finally, Congress, under the leadership of President Theodore Roosevelt, pushed for infrastructure to create jobs in America.

A U.S. Corps of Engineers report in 1930 had recommended the Wildcat Shoals site, along with seven others as being the most effective of the 13 streams being mapped and invested. Some of the original stream maps that the Corps surveyed currently are in the Baxter County Archives at the Baxter County Heritage Center at 808 S. Baker St. in Mountain Home. In 1926, Congress asked the Corps of Engineers to study 180 rivers and their tributaries to examine the feasibility of federal construction or reservoirs. The first report was delivered to Congress in 1933. In 1933, the report was completed and concluded that America needed jobs after the Great Depression. Infrastructure created jobs. All over the country, CCC Job Corps built bridges, roads, courthouses and other public structures. In the late 1930s, before construction of the Norfolk Dam began, the local economy of Baxter County was deteriorating. The yearly per capita income had fallen to \$100 to \$200. In 1940 alone more than 600 small farms were abandoned. Those who remained looked forward with enthusiasm to any solution that promised relief from their economic problems. Mountain Home was described as having no prospect for new business and very few paved roads. When construction of the Norfolk Dam finally began in the spring of 1941, it was said that "before the first shovel of dirt was thrown, or the first tree dozed down, the Mountain Home people knew that a new era had dawned." As the largest nearby community, Mountain Home was to derive the most spectacular benefit from the Corps projects in the area. Centrally located between Norfolk and Bull Shoals dams, few citizens could foresee the economic change Norfolk Dam would bring to the poor agricultural community. We owe much of the credit for our prosperity to one man, Clyde T. Ellis, who defeated Claude Fuller in the 1938 congressional race for the Third District. He envisioned a smaller Arkansas version of the Tennessee Valley Authority. Ellis made Norfolk Dam his personal project and fought for it until construction began in the spring of 1941.

Authorization for construction of the dam was included as part of the Flood Control Act of June 28, 1938. Norfolk was to be one of six dams built to accomplish flood control on the White River Basin. The act later was revised, due to the encouragement of Ellis, to include Wildcat Shoals and Table Rock Dam. In 1940, a problem arose on the Wildcat Shoals site. It was discovered that the



The conveyor belt carrying rock stretched from the quarry near Flippin to the Bull Shoals Dam construction site. (Photo: Courtesy of BCHGS)

base rock for the foundation was unsuitable where the dam was to be built and another site would have to be found. The engineers studied their maps and decided that upriver at Bull Shoals would be the best site for the huge dam. When finished, it would be the fifth largest dam in the country. The Corps recommended the construction of the dams and lakes as multipurpose reservoirs, not only for flood control, but also for hydropower generation and recreation. The dams would put an end to multi-day fishing and camping trips along the White River from Branson, Mo., to Cotter. To replace tourist dollars lost on the rivers, new revenue would have to be created on the lakes. Finally, in the spring of 1941, construction of the Norfolk Dam began. Between 3,500 and 4,000 people came to witness the first blast, touted by advertisers as the biggest blast in the world. Four hundred thousand tons of bedrock and earth had to be removed before the first yard of concrete could be poured.

Two construction companies were awarded contracts to build the Norfolk Dam: Morrison-Knudsen and Utah Construction. These two companies already had a prestigious reputation for building Grand Coulee Dam and Hoover Dam. At the time it was completed in 1944, Norfolk was one of the six biggest concrete

dams in the country. It brought thousands of jobs to the Arkansas Ozarks and answered Ellis' dream of lifting the region out of the depths of depression. Ambitious plans In 1944, the maps were presented for the proposed dams on the White River watershed. Map No. 1 was Beaver Dam and Reservoir, west of Eureka Springs. Map No. 2 was Galena Dam on the James River, north of Branson. Map No. 3 was Buffalo City Dam on the Buffalo River, west of Buffalo City. Map No. 25 was Gilbert Dam, southeast of St. Joe. Map No. 30 was Lone Rock Dam, three miles upstream from Buffalo City. Map No. 43 was Blair Creek Dam on the current river above Van Buren, Mo. Map No. 48 was Doniphan Dam on the current river at Doniphan, Mo. Map No. 57 was Greer's Ferry Dam on the Little Red River, southwest of Batesville. And Map No. 62 was Judsonia Dam and Reservoir on the Little Red River, northeast of Searcy. In 1947, after Norfolk Dam was completed, contracts were awarded and construction of Bull Shoals Dam began on July 9, 1947, and ended July 1951 at a cost of \$106 million. On July 2, 1952, President Harry Truman dedicated the Norfolk Dam at 8:45 a.m. and then Bull Shoals Dam at 10:30 a.m.

After the completion of the dams, the economy of the Ozarks began to boom. From the bottom of the beautiful new lakes flowed cold water and crystal clear streams. Below the Bull Shoals and Norfolk Dams a new industry arrived — trout fishing. We now had the best of both warm water lake fishing for bass and crappie and cold water trout. Next came Table Rock Dam at the upper end of the White River Basin in the Missouri Ozarks, completed in 1959. The Corps' next project was taming the Little Red River three miles north of Heber Springs. It was started in March 1959 and completed in 1962. It was dedicated by President John F. Kennedy in October 1963.

Finally, in 1966, Beaver Dam at the west end of the White River Basin, the final leg of the White River dams, was completed. Nestled high in the Ozark Mountains in northwest Arkansas, there was fear among environmentalists, who thought the project would be the end to one of the most beautiful scenic rivers in the United States — the Buffalo River. Its pristine clear water and beautiful limestone bluffs were nature at its best.

Editor's Note: Find the conclusion of this story in the Sept. 15 edition.

#### Look Back Facts

Photographs and information for this series were provided by the Baxter County Historical and Genealogical Society (BCHGS). If you have additional photos and information you would like to have properly preserved, please contact the Historical Society by phone at 425-2551, by email at [bcarchives@centurytel.net](mailto:bcarchives@centurytel.net), or by mail to

Baxter County Historical and Genealogical Society, P.O. Box 2125, Mountain Home, AR 72654. Additional information on the organization may be found at [baxtercountyhistory.org](http://baxtercountyhistory.org). A Look Back can be found online at [www.baxterbulletin.com](http://www.baxterbulletin.com).



(This is a wacky idea! Comparing the Kennebec to the Susquehanna River is like comparing a toothpick to a redwood tree.)

#### Let the River Run Wild

By John Waldman, Karin E. Limburg and Amy Roesept. 7, 2014, [nytimes.com](http://nytimes.com)

If the Chesapeake Bay is America's Estuary, then its largest tributary, the Susquehanna River, could arguably be called America's River. But we certainly don't treat it as a national treasure:

This once magnificent watercourse, which runs through New York, Pennsylvania and Maryland toward the coast, is today an ecological disaster — largely thanks to four hydroelectric dams, built along its lower reaches between 1904 and 1931. An impending license renewal by the Federal

Energy Regulatory Commission for two of these dams will lock in another half-century of measures woefully inadequate to remediating the dams' environmental consequences. Instead, all four should be removed. The Susquehanna's 27,000-square-mile watershed was once home to remarkable runs of migratory fishes — and none more so than the American shad, a type of herring. In 1827, one net hauled in was said to have contained an astounding 15 million shad and

river herring. A commercial fishing operation on the river stationed a sentry on a hillside to watch for the moving bulge in the waters that signaled another huge school approaching. Shad were such a mainstay of regional diets that traveling fishmongers would blow horns and shout “shad-o” to announce the availability of this delicacy. Despite efforts to create “ladders” and “elevators” for fish to travel past them, the dams have devastated shad migrations. The official goal remains the passage of two million shad beyond the fourth dam so they can reach suitable spawning grounds — a modest target, given the original run sizes. In 2014, exactly eight shad made it past the fourth dam. That’s an improvement over 2011, when none did. This isn’t an isolated occurrence: Ladders and elevators along other Atlantic Coast rivers have failed as well, and as badly for shad and other migratory species. But the four-step obstacle course on the Susquehanna is especially harmful, cumulatively confounding and slowing the migrations, so that very little reproduction actually occurs. Nevertheless, the federal government is doubling down on these failed approaches, with a new plan that makes at best minor changes to the existing, futile array of fish-passage devices. The destruction of enormous fish migrations is bad enough. But it gets worse. **Because the sprawling Susquehanna drainage is unusually sediment-laden, the reservoirs behind each dam have been filling with voluminous quantities of sand and muck; three of them have reached their sediment-holding capacity and the fourth, the Conowingo Reservoir, is quickly approaching it. If nothing is done soon, the sediment will no longer be trapped and will travel past the dams into the Chesapeake Bay.**

This would mean ecological devastation for the bay, which is already over enriched and would choke on the nutrient-packed sediment suddenly thrust on it. **The only other answer is expensive,** continuing dredging — and blind hope against an erosive storm or hurricane that would overload the dams and release the sediment. **With all this in mind, policy makers need to take the only responsible step and remove the dams.** True, they produce valuable electricity that would be tough to replace. But there are alternatives. By our calculations, a solar park built on the drained floor of the empty Conowingo Reservoir could allow the river to run beside it and replace the 575 megawatts the dam generates. And low-head hydropower arrays — devices that pull energy from the river without impeding it — could add even more. It’s hard to look at something as large as a dam and not think of it as a permanent part of the landscape. But that’s an illusion: Eventually the dams will deteriorate, and will someday have to be removed for safety reasons. Indeed, across the country people are starting to reckon with the environmental costs of large hydropower dams, and several have been removed already. **In 1999, the federal government allowed the removal of the Edwards Dam on Maine’s Kennebec River, a precedent-setting action that brought much of the river back to life. Removing the four lowermost dams on the Susquehanna and the sediments behind them would be a huge and expensive undertaking** — but one that we think is critical to restoring one of our most compromised rivers. Oliver Wendell Holmes Jr. once wrote that “a river is more than an amenity, it is a treasure.” The Susquehanna has been little more than an amenity for far too long. *John Waldman is a professor of biology at Queens College and the author of “Running Silver: Restoring Atlantic Rivers and Their Great Fish Migrations.” Karin E. Limburg is a professor of environmental and forest biology at the State University of New York College of Environmental Science and Forestry. Amy Roe is an independent conservation advocate.*

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(Would they reach the same conclusion if it was in the U.S.?)

### **Little impact was expected from Mount Polley dam collapse: failure ranking**

#### **Imperial Metals’ mine tailings dam subjected to ‘dam safety review’ only once every 10 years**

By Gordon Hoekstra, Vancouver Sun September 7, 2014, [vancouversun.com](http://vancouversun.com)

The Mount Polley mine dam collapse sent the contents from a tailings pond, going down Hazeltine Creek into Quesnel Lake near the town of Likely on Aug. 5.

Imperial Metals' Mount Polley tailings dam was rated one of the least likely in B.C. to adversely affect the environment, harm people or destroy roads or structures if it failed. As a result it was subject to fewer outside inspections. Safety rankings used by the B.C. Ministry of Energy and Mines are based on the "consequence of failure" of an earthen dam that stores mine waste and rely on guidelines created by the Canadian Dam Association. The five rankings are extreme, very high, high, significant and low. The Mount Polley mine dam in central B.C. was ranked significant, which means it was only subject to a "critical" dam safety review every 10 years by an independent engineer.



Tailings dams with extreme or very high rankings — such as the nearby Gibraltar mine or Imperial Metals' soon-to-open Red Chris mine in northern B.C. — are meant to get dam safety reviews every five years.

Mount Polley's ranking meant that if the dam failed there would be no significant loss of fish or wildlife habitat, and that it would only effect marginal habitat where restoration or compensation in kind is highly possible, according to the Canadian Dam Association guidelines. First Nations, local residents and environmental groups have called the dam's collapse on Aug. 4 an environmental disaster, although Imperial Metals and the B.C. government have downplayed its effects, saying the water in the tailings storage facility was near drinking-water quality. The dam collapse released more than 24 million cubic metres of water and mine tailings containing potentially-toxic metals. The rush of water and tailings scoured Hazeltine Creek and cut a wide channel, carrying tonnes of debris, including trees into Quesnel Lake. The creek was home to spawning coho salmon and rainbow trout. Samples of tailings have shown low but "potentially significant" arsenic and selenium concentration that will need monitoring, the environment ministry has said. "Given the outcome, this dam should have been receiving a dam safety review more than once every 10 years," said Calvin Sanborn, legal director of the University of Victoria's Environmental Law Centre, which has called for mining law reform. Imperial Metals did not respond to a request for comment. In a written statement, Mines Ministry spokesman Ryan Shotton said engineers base the failure rating on not just where the water and tailings will go, but what is in it. "These are non-acid tailings and (the) water is non-acidic," said Shotton. The mines ministry declined to release the most recent dam safety review for Mount Polley from 2006 while a provincial investigation into the incident is underway. The next dam safety review was scheduled for 2016. Senior officials with the mines ministry said dam safety reviews are "critical" because they are conducted by an engineer hired by the company other than the engineer responsible for the dam. The review is typically more detailed than an annual inspection carried out by the company, examines the original design, and determines whether more stability analysis is needed, said mines ministry officials. The province pointed out that Mount Polley has also had nine geotechnical inspections by government inspectors since it was reopened in 2005.

(Ya get what you paid for!)

## Removing GR dams would bring huge economic boost!

woodradio.com, September 9th 2014

A new study, paid for by the group that wants the dams removed from the Grand River in Grand Rapids, finds the decision would have a positive economic benefit. More tourists would arrive to take advantage of white water recreation. The



study says it would be at least 20 million dollars a year in new tourism spending by a half million visitors. It'll cost about 30 million dollars in local, state, and private funding to remove all five downtown dams.

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(All we want is a dam for our money!)

### **Kirby: Hope Mills gets last chance to build dam**

By Bill Kirby Jr., September 10, 2014 12:00 am | fayobserver.com

Hope Mills, NC - Wilbur Dees told 'em right, and so did Jessie Bellflowers. "We have one chance to get this right," Bellflowers was reminding the town board last week about building a new dam and spillway on Hope Mills Lake. "We've got \$9.4 million to spend wisely, and one more time to do it right." And, for heaven's sake, Dees pleaded ... build nothing akin to that unsightly \$14.8 million glob of concrete that breached June 17, 2010, less than two years after it was constructed to replace the earthen dam that stood vigil along the lake for 80 years before giving way May 26, 2003. The town brought a lawsuit against the dam's designers and engineers in 2012, and finally saw the controversial issue settled July 15 of this year, when Mayor Jackie Warner announced that the town had agreed to accept \$9.4 million to avoid a costly courtroom confrontation. "This is a time for us to celebrate," Warner said when learning that Crowder Construction, along with Specialized Services Inc. and Morrison Engineers and its insurers, will pay the town \$4.25 million; AMEC Environmental and Infrastructure and its insurer \$4.15 million; and McKim and Creed and its insurer \$1 million. And the money is on the way, according to the town manager. But be prudent in spending it, Bellflowers was saying, and Lisa Waring was right there with him. "Once this money is gone," she said, "there will be nobody to sue. And please, she begged of the board, give a listen to Wilbur Dees. "We have an engineer who grew up and swam in that lake," Waring said. "And he cares."

Yep, Dees is a seasoned construction engineer who is now retired and living in the Gates Four community, but he grew up on the lake at his daddy's bait shop. And he told Warner and board members Bob Gorman, Jerry Legge, Pat Edwards, Bryan Marley and Edwin Deaver just what he thought. "A dam failed, and I thought what was built was a monstrosity," Dees, 81, said. "I don't think that dam is anything anyone in Hope Mills would be proud of. So why would we proceed to restore that thing?" He rolled out original dam blueprints, and then said the dam was nothing more than a series of errors from the get-go. "If you had given these plans to another engineer, he would have said you have a certified idiot," Dees said. "No one with good sense would repair something as shown in these drawings. I think the townspeople want the old dam as it was, or something similar rebuilt. I've never seen anything look worse than that empty dam and monstrosity." Dees isn't alone. A lot of folks see the dam as gaudy, rather pretentious and an eyesore, and many, such as Dees, Bellflowers and Waring, hope the town will involve the Lake Restoration Committee of Bob Bailey, Winton McHenry, Carl Sims, Dwayne Anderson, Mason Steele, Paul Rawls and Rod MacLean in coming up with a dam that this time is more to everyone's liking. "As Commissioner Legge has said," Bellflowers said, "we all are in this together."

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(Anchors a weigh me boy!)

### **First anchors installed in Wanapum Dam repair**

Ephrata, Wash. (AP) - Workers have installed the first of 35 giant anchors intended to stabilize the broken Wanapum Dam. The Grant County Public Utility District said Tuesday the anchors begin at the top of the spillway and run deep into the bedrock below the dam, ensuring the long-term stability of the spillway on the Columbia River near Vantage. The 200-foot-long anchors will be installed throughout the spillway. Work is also underway to use 50 steel bars to repair a portion of the spillway where a crack appeared earlier this year. That work has been likened to driving screws into a block of wood. The cost of the repair work is estimated at \$69 million and will continue into next year, said utility officials who believe that with federal approval they can begin raising the water level in the reservoir behind the dam by the end of the year.

The reservoir was lowered 26 feet after the 65-foot crack in the spillway was discovered in February at the dam. Once the water level is raised, the utility can restore public access to the shoreline, generate more electricity, address public safety concerns and protect culturally sensitive sites that were exposed by the low water level. Until then, the shoreline and access points will remain closed to the public, the utility said. The utility will pay for the repairs with cash reserves and bond sales. It is not expecting any rate



increases for customers beyond the previously planned 2 percent included in the current forecast. **Wanapum Dam continues to generate electricity at a reduced level, the utility said.** Modifications of Wanapum Dam's two fish ladders proved successful during this year's record-breaking adult salmon migration. Over 700,000 salmon and steelhead have already passed the dam on their journey to upstream spawning habitat, the utility said. The drawdown of water also allowed the utility to accelerate plans for improvements to three boat launches on the reservoir. In May, the utility determined the crack stemmed from a math error during construction in the early 1960s. It said more concrete and reinforced steel should have been used in all 13 of the spillway's supporting blocks. Investigators believe the crack may have originated a number of years ago and spread gradually, ultimately allowing enough water into the fracture to push the upper portion of the spillway pier out of place, revealing the problem.

(Small dam failures can be messy too!)

### **Recent dam fail results in reduced water levels**

By Erica Rakowicz/News-Review, September 10, 2014, petoskeynews.com

The O'Neal Lake Dam, located in Emmet County, MI is experiencing reduced water levels because of a recent dam fail. **The dam forms a 150-acre flooding and is located in Bliss Township along Big Sucker Creek.** The land located downstream of the flooding is public land, Wilderness State Park, and the dam itself is owned by the Department of Natural Resources. "The heavy rains may have led to this failure," said DNR Wildlife Supervisor Brian Mastenbrook. **Classified as a low-hazard dam,** the O'Neal Lake Dam is not predicted to affect downstream private residences. "We are currently drawing down the flooding in order to do safety inspections and assess our options," said Mastenbrook.



Approximately 140 feet of earthen berm as well as a spillway make up the dam and a bridge was positioned over the spillway during the winter for snowmobile use and has since been used for pedestrians in the summer months. Private inholdings are also located upstream of the dam. The dam was assessed by Environmental Quality dam safety engineer, Jim Pawloski, who said that water levels are to be reduced in preventative measures for possible damage to the earthen berm and water control structure. "Drawdowns are not always popular, because they'll temporarily put water levels below ideal conditions for some, but it can't be prevented in events like this," said Pawloski. Until problems caused by the washout are addressed, O'Neal Lake will remain with low water levels. Additionally, landowners that border the O'Neal Lake Flooding have already been contacted and Wilderness State Park will remain open to campers, said Mastenbrook.



## Hydro:

### Reclamation Releases the Final Environmental Assessment for Developing Hydropower at Drop 4 of the South Canal

coyotegulch.wordpress.com, 9/5/14

Here's the release from the US Bureau of Reclamation (Terry Stroh/Justyn Hock):

Reclamation announced today that it has released a final environmental assessment and Finding of No Significant Impact for a hydropower project at Drop 4 of the South Canal, part of the Uncompahgre Project in Montrose, Colorado.

The project, proposed by the Uncompahgre Valley Water Users Association, will be located at existing Reclamation facilities on the South Canal. A Lease of Power Privilege will authorize the use of federal facilities and Uncompahgre Project water to construct, operate, and maintain a 4.8 megawatt hydropower facility and 1.27 miles of associated interconnect power lines.

The hydropower plant will operate on irrigation water conveyed in the South Canal, and no new diversions will occur as a result of the hydropower project. Construction activities and operation of the hydropower plant will not affect the delivery of irrigation water.

The final environmental assessment and Finding of No Significant Impact is available on our web site or a copy can be received by contacting Reclamation.



(History – 100 years and counting!)

### Prairie du Sac Hydroelectric Dam celebrates 100 years of power, history in Wisconsin

by: Barry Adams , Associated Press: September 6, 2014 - startribune.com

Prairie Du Sac, Wis. — Denman Kramer never kept a tally of the times he's gone up and down the 24 steps that lead from the parking lot entrance to the main office on the second floor of the dam here.

If there was a log book for such measurements, it would include thousands of entries. But last week, Kramer, 95, who retired in 1980 as the Prairie du Sac Hydroelectric Dam's supervisor, looked spry as he eagerly climbed the steps, a cane in his right hand. "It's a lot of times," Kramer said, when asked about his stairway trips. "It tickles me to think I can still do it." This is where, for more than 40 years, Kramer maintained the dam's eight hydro-turbines and eight generators. He raised and lowered the dam's 41 tainter gates and measured the flow of Wisconsin River water through the dam that, on an average day, totals 5.8 billion gallons. Few people know more about the 100-year-old dam and its history than Kramer. But an ongoing exhibit at the Tripp Heritage Museum in downtown Prairie du Sac and the first public tours of the dam in more than a decade will shed light on the dam's construction, its inner workings and role in the economic and social fabric of the region, the Wisconsin State Journal reported (<http://bit.ly/1r2GEVI>). The dam, owned by Wisconsin Power & Light Co., a subsidiary of Alliant Energy of Madison, can generate enough power each day for up to 30,000 homes. The dam also created Lake Wisconsin, a popular recreation area for boaters, anglers and nature lovers. In addition, the dam made this section of the river one of the best spots in Wisconsin to view bald eagles in the winter. The water remains open below the dam year-round and offers a prime fishing spot for the majestic birds that number in the hundreds. Tourists come by the thousands. "We have pictures in our collection of the river freezing pre-dam. When the dam was created, you have this open water, pretty much from here

on down," said Jack Berndt, manager of the museum that is operated by the Sauk Prairie Area Historical Society. "The creation of Lake Wisconsin, if you go back 100 years, takes the whole farmland piece and it sort of changes that. It created places like Gruber's Grove, Wiegand's Bay and you have the whole tourist and resort kind of lifestyle that sprang up because of the dam." In reality, those amenities were results of the dam, not the reason for the structure. The dam was built to generate electricity at a time when electricity was growing in demand, but many rural homeowners were still off the grid. In fact, the dam struggled financially in its early years and sold much of its power to customers in Milwaukee. According to historical documents, the dam's power wasn't used for local markets until 1916 after its builder, Magnus Swenson, sold the dam and another he had built a few years earlier up river in Kilbourn City, now known as Wisconsin Dells, to John I. Beggs. It was Beggs who expanded the markets for the two dams by extending electricity to Sauk City, Prairie du Sac, Baraboo and Mazomanie.

"Technologically it was a success but economically they had their problems," Kramer said. The dam's construction was an epic undertaking and was hampered by the unpredictability of the river. Work began in January 1911 and during the three-plus years it took to build the \$1 million facility, several setbacks occurred and delayed completion by a year. In the fall of 1911, high water destroyed the temporary train trestle used to haul construction materials to the site, wrecked wood pilings for the spillway foundation and destroyed part of the coffer dam that was built around the partially completed powerhouse. In the spring of 1913, ice jams destroyed the trestle, scores of pilings and a barge carrying a sand pump. The project also required nearly 400 workers. Many came from the region and stayed in a camp with sleeping quarters and a dining hall on the west side of the river. A sparse camp of tents and crude structures rose on the east side of the river and served as the temporary home for Italian, Polish, Russian and Serbian immigrants recruited from Chicago. "It was work with shovel, horses and steam," Berndt said. "When you see some of these pictures, I don't know how the thing was ever built. It's primitive physics, really." It's the more than 300 photographs taken by local jeweler F.S. Eberhart during the dam's construction that really help tell the story. Photography in the early 1900s wasn't simple and quick, but Eberhart's determination has resulted in a detailed account of the project, and some of those black and white photos are part of the museum exhibit. The images show groups of workers posing for photos, of men eating in the dining hall and families dressed in their Sunday best visiting the construction site on weekends. One photograph shows the site before work began while others document the construction of the trestle that carried a small-gauge train used to haul rock from a quarry on the east side of the river to the construction site.

And then there are the photos of the pilings. Think of 12,000 pine telephone poles being driven into the bed and banks of the river. Concrete was poured over and around the pilings to secure the foundation on which the dam and powerhouse were built. While the technology inside the power plant has been updated and restored through the years, the wood pilings remain in place. "They're priceless," Berndt said of the photos. "It's the most extensively documented thing (for that time period) that I've ever seen. This is phenomenal. And the cool thing is (Eberhart) labeled them all." Kramer, who turns 96 on Christmas Day, is a living piece of history with a strong connection to the dam. When we talked last week, he was seated in the powerhouse break room that is positioned over the river, has large windows and provides views not across but down river. Two sets of binoculars and a spotting scope were nearby. A 1936 graduate of Baraboo High School, Kramer was hired at the dam in 1940 to take readings and do shift work. Remarkably, some of his fellow employees helped build the dam. After a year, he left to serve in the U.S. Army as an airborne aviation engineer in the South Pacific. When his World War II service was completed in 1946, he spent a year at Bliss Electrical School in Washington, D.C., before he returned to work at the dam. Kramer spent five years in the late 1940s and early 1950s machining replacement parts for the hydro-turbines and was among 40 people who worked at the dam. When he retired in 1980, the dam had 25 employees. Today, five work at the dam, which is now more automated. "The number of employees has diminished over the years, but (the dam is) one of the finest resources we've ever had in the community," Kramer said. The current dam supervisor, Amanda Acton, 32, wasn't born when Kramer retired in 1980. "It's 100 years old, but we take dam safety very seriously," Acton said, of the multiple inspections done throughout the

year by her employees and other agencies. "We have a lot of eyes on the place." *This is an AP Member Exchange shared by the Wisconsin State Journal*

## Hydropower project planned for Tok area

By Jeff Richardson, newsminer.com, 9/7/14

Fairbanks, Alaska — Backers of a proposed new hydropower project near Tok say it could significantly slash electric rates in an area plagued by high energy costs.

Alaska Power & Telephone, the Native Village of Tanacross and Tanacross Inc. signed a memorandum of agreement last month to explore the \$15 million Yerrick Creek Hydropower Project. The 1.5 megawatt project could supply about 40 percent of the electric load in the Tok and upper Tanana region as early as 2017.

The Tok area uses expensive diesel-fired generation to make electricity now, resulting in electric costs of as much as 50 cents per kilowatt. AP&T said the energy generated through hydro power could cost as much as half that rate, providing big savings for residents of Tok, Tanacross, Tetlin and Dot Lake.



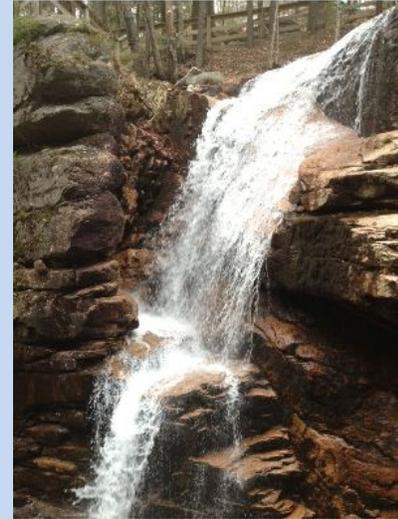
Tanacross Inc., which is a Native corporation that owns the land, owns property in the area, along with the state of Alaska. The Native Village of Tanacross is working to find grant assistance to help finance Yerrick Creek. "It's a really long-term project," said Jason Custer, who handles business development for the utility. "It has a high up-front cost, but after that the cost of operating it drops down to almost nothing." The proposal calls for a "run of river" hydro project, which would divert a portion of Yerrick Creek down a pipe, using that flowing water to power a turbine. Such projects don't require large storage dams and are touted for their "minimal environmental footprint" by AP&T. The water diverted from Yerrick Creek would be returned about 3 miles downstream, Custer said. AP&T operates three other "run of river" hydro projects, with other examples in the Southeast Alaska communities of Skagway, Gustavus and Prince of Wales Island. AP&T estimates the project will replace about 375,000 gallons of diesel fuel that is now used for power generation in the region. Custer said the utility also looked at biomass, solar and wind options during seven years of study, but didn't find an option that made as much financial sense or operated as smoothly as the hydro plant. About \$1 million has been spent on the project so far, through a combination of state, federal and private funding. Custer said there are hopes to raise as much as \$8 million more, either through a state renewable energy grant or capital funds from the Legislature. Custer said the agreement states that the three parties will form a new entity, Upper Tanana Energy, to advance the project. Commercial details will be worked out as it progresses, he said.

## FERC authorizes mine drainage microhydro

9/8/2014, by Todd Grisct | PretiFlaherty, jdsupra.com

The Federal Energy Regulatory Commission has issued a hydropower license to a project whose turbines generate electricity from acid mine drainage. The micro-hydropower license issued to the Antrim Treatment Trust illustrates this unusual approach to the twin challenges of mine remediation and renewable energy. The power of falling water, in the White Mountain National Forest in New Hampshire.

In the 1980s, Antrim Mining, Inc. operated a surface bituminous coal mine in Pennsylvania. When water draining through the mine and into streams and rivers was found to exceed pollution limits, the Commonwealth of Pennsylvania charged the company with violations of mining and reclamation law. The charges led to a series of settlements through which Antrim agreed to improved water treatment facilities, including an off-the-grid hydroelectric facility. This micro-hydro plant would be powered by treated effluent flowing downhill out of lagoons. Antrim created the Antrim Treatment Trust to manage treatment of the mine water in 1991, then went out of business.



In an attempt to reduce the cost of treating the site's severe acid mine drainage, the Babb Creek Watershed Association identified micro-hydropower as an option for the site. In 2008, the association received an Energy Harvest Grant from the Pennsylvania Department of Environmental Protection. This \$428,710 award was designed to support the installation of two hydroelectric turbines on the treatment plant's discharge, which was completed in 2012. While the Federal Power Act requires most hydropower projects to secure a license from the Federal Energy Regulatory Commission, some off-grid hydropower projects that do not use the waters of the United States do not require licensure. In 2010, the Antrim Treatment Trust filed a Declaration of Intent for a 40-kilowatt grid-connected project, but quickly revised its project to be off-grid after the Commission issued an order finding that a license was required for the grid-connected project. Once the project was off-grid, the Commission ruled that no license was required.

The Antrim treatment plant seems to have then operated one turbine, but left the second turbine non-operational. A 2012 article in the Williamsport Sun-Gazette suggested that with both turbines running and selling power into the electricity grid, the treatment plant could cut \$12,000 in annual power costs and make \$10,000 per year in new revenue. But this could require a FERC license, because the project would become connected to the utility grid. The Trust appears to have decided that these economics were worth pursuing, because in 2013 it filed an application for a project license for a 40-kilowatt project. In the application, Antrim Trust proposed to bring a second identical turbine (currently in place but non-operational) online by installing additional indoor wiring with appurtenances within the existing powerhouse and treatment plant, and operate both turbines as a grid-connected project using the treated and/or untreated water.

As licensed, the Commission estimates the annual cost to develop and maintain the proposed 40-kW project is \$9,356 or \$37.42/megawatt-hour (MWh). The project will generate an estimated average of 250 MWh of energy annually. Based on Commission staff's view of the alternative cost of power (\$56.93/MWh), the total value of the project's power is \$14,233 in 2013 dollars. To determine whether the proposed project is currently economically beneficial, staff subtracts the project's cost from the value of the project's power. Therefore, in the first year of operation, the project is expected to cost \$4,877 or \$19.51/MWh less than the likely alternative cost of power - demonstrating economic benefit. Micro-hydropower projects can make economic sense in some mine drainage situations and other places where water treatment is required and a suitable vertical drop or pressure is available. In Antrim's case, the project's success can partially be explained by the existence and purpose of the Trust, as well as the DEP grant to support project construction. If treated and untreated mine drainage can be used to generate hydroelectricity, what other unusual sources of power will arise?

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(When it comes to hydro because it's cheap, the line gets long.)

### **Cheaper Hoover Dam power up for grabs**

By Henry Brean Las Vegas Review-Journal, [reviewjournal.com](http://reviewjournal.com)

For the first time in decades, Southern Nevada businesses and public agencies are getting a chance to buy cheap hydropower from Hoover Dam. The rare opportunity could mean tens of thousands of dollars in savings for a handful of lucky, local entities, some of them taxpayer supported. More than 21,000 kilowatts of electricity is up for grabs in Nevada, enough to supply 4,200 homes, though it won't be used that way.

The Clark County School District, UNLV, the Las Vegas Paiute Tribe and the cities of Las Vegas, Henderson and North Las Vegas are among those that have already won preliminary approval to share in almost 10,000 kilowatts of electricity available under long-term contracts recently offered by the federal Western Area Power Administration. Another round of power contracts totaling 11,500 kilowatts will open up in 2017, and the Colorado River Commission of Nevada is holding a series of public meetings this week that will help shape how that energy is doled out. Ronald Reagan was in the White House the last time these contracts were available. "Needless to say, it has been awhile," said Jayne Harkins, executive director for the state agency responsible for managing Nevada's water and power resources from the Colorado River. "This is not a common occurrence." Hoover Dam hydropower tends to be cheaper — sometimes substantially so — than electricity bought on the open market. In 2011, Hoover Dam power was roughly three-quarters the cost of market power. In 2008, when prices were fluctuating wildly, power from the dam was only about a third of the market price.

Earlier this year the Western Area Power Administration made almost 70,000 kilowatts of energy available first to American Indian tribes and then to qualifying applicants in Nevada, California and Arizona under 50-year contracts set to start in 2017. Of that, one tribe and nine government entities in Nevada were preliminarily selected last month to share almost 10,000 kilowatts. The big winners were the Clark County School District and the Las Vegas Valley Water District with 3,000 kilowatts each. The federal power marketing agency is expected to issue its final allocation list after reviewing all of the input it receives during a public comment period that closes on Sept. 19. The city of Henderson is in line to receive 865 kilowatts of dam power through the power administration. That's enough electricity to supply at least half of the city's major facilities, including recreation centers, police and fire stations and City Hall, according to city spokesman Bud Cranor. He said power from the dam costs about 2 cents per kilowatt/hour versus the roughly 8 cents that NV Energy charges. "Very, very conservative estimates" peg the city's savings at about \$130,000 a year, or \$6.5 million over the length of the 50-year contract, Cranor said. Henderson plans to apply for even more hydropower when the Colorado River Commission offers up the 11,500 kilowatts made available to the state starting in 2017. First, though, the commission must establish the criteria it will use to decide how to distribute that power in a way that provides "the greatest possible benefit to the state." Harkins said the proposed criteria now out for public review favors applicants who would use the energy for education, to support local or state government, or provide economic development in the form of large-scale manufacturing, commercial business or help for depressed areas.

The commission has scheduled three public meetings to gather input on the criteria:

- 9 a.m. to 11 a.m. today at the Bob Ruud Community Center in Pahrump;
- 2 p.m. to 4 p.m. today at the Nevada Department of Transportation's building B training room at 123 E. Washington Ave., Las Vegas;
- 1 p.m. to 3 p.m. at the Moapa Valley Community Center in Overton.

Harkins said the commission's goal is to establish the selection criteria and start taking applications for power over the next year or so. Officials hope to have the new power contracts in place by Oct. 1, 2016, a full year before the agreements are scheduled to take effect.

Of course, all of this assumes Hoover Dam will still be generating electricity in 50 years. More than a decade of drought on the over-appropriated Colorado River has reduced Lake Mead to its lowest level since 1937 and diminished generating capacity at the dam. Improvements are underway that will allow five of the dam's 17 turbines to run more smoothly as the reservoir continues to drop, but power generation will stop altogether should the surface of the lake fall another 130 feet. Rose Davis, spokeswoman for the U.S. Bureau of Reclamation in Boulder City, said three turbines have been retrofitted so far, and the remaining two are expected to be finished by 2016. Like most things at Hoover Dam, the work is being paid for by power customers who buy

electricity from the facility. "What we're doing is improving their efficiency at lower lake levels," Davis said of the ongoing work. "You still need water to run the turbines." Nevada gets a total of 377,000 kilowatts from the Hoover Dam, about 5 percent of the state's peak demand. That power is allocated by the Colorado River Commission to current customers such as NV Energy, the Southern Nevada Water Authority, the city of Boulder City, the industrial plants at the old Basic Magnesium complex on Lake Mead Parkway in Henderson, and small power districts and co-ops in rural Clark, Lincoln and Nye counties. Harkins said the commission has been pushing hard to get other local entities to join that group of contract customers so Nevada gets as much dam power as possible. Otherwise, she said, "it would just go to Arizona and California."



## Water:

(Now, here's a crazy idea! Too much Vodka will make you do strange things!)

### **Why Wait for Rain? Balloon Harvests Water from Clouds**

Sep 11, 2014 02:40 PM ET / by Glenn McDonald, news.discovery.com

As fresh water disappears from the ground, a group of Russian inventors is looking up, to the clouds, that is. A new crowdfunded project called Cloud Power aims to extract water from clouds and pipe it to earth, where it could be used to generate hydroelectric power and provide fresh drinking water for people in isolated areas. The system, currently in prototype phase, can collect about five liters of water per hour — but developers hope to ramp up that number with a larger scale project. How Cirrus Clouds Form — And Why It Matter.



The system collects the water by way of an Air HES, or air hydroelectric station. A specially outfitted weather balloon is floated into the sky, with a mesh water collection sheet suspended vertically below. As the mesh sheet passes through clouds, moisture is trapped in the fibers, and the water is collected in a conduit line. The bottom of the conduit line is attached to a turbine that generates energy from water pressure coming through the tube. The fresh water is then collected in a separate reservoir, where it can be used for drinking or irrigation. For now, the team is using smaller balloons to collect from low-level clouds at around 4,000 feet. To get to midlevel clouds in the troposphere, the system will require a larger balloon — or aerostat — which will rise to an altitude of about 7,000 feet. Goldilocks-Like Clouds Melted Greenland Glaciers. On the project's Indiegogo page, the team acknowledges that the idea is not new: In fact, famed scientist Nikola Tesla proposed a similar system all the way back in 1915. But technological improvements in lighter-than-air craft and water collection materials have made the concept more economically feasible. Donors to the Cloud Power campaign won't get anything in return as of now — delivering from Russia is "risky and expensive," according to the website — but the team hopes to eventually develop small-scale "Sky Fountain" personal water collectors that work with kites. The team also intends to freely share the technical specs on the Air HES project so that anyone can assemble their own water harvesting system.



## Environment:

(Not much a dam, but too much for fish!)

### **Whychus Creek dam removal clears way for fish return to Deschutes River system**

By The Associated Press, September 10, 2014, oregonlive.com

Sisters, Ore. — Workers are tearing out the last of half a dozen concrete dams on a Central Oregon stream and its tributaries, erasing yet another barrier to the return of imperiled fish to the Deschutes River system. The work is underway on Whychus Creek near Sisters, on the east flank of the Cascade Range, the Bulletin newspaper reported. The Whychus is part of the drainage of the Deschutes, Central Oregon's major river. Salmon and steelhead began returning to the Whychus after a fish tower was installed in the big reservoir along the Deschutes known as Lake Billy



Chinook. The \$2 million project on the Whychus includes knocking down a 6-foot dam, with the expectation that will lead to restoration of a flood plain and 13 miles of fish habitat. Because the ranch is switching to a more efficient water delivery system, stream flows are expected to increase.

The dam has provided irrigation water for about three decades to the Pine Meadow Ranch, running through a mile-long canal to its 200 irrigated acres. It is the latest of the structures that has fed irrigation water to the ranch since the late 19th century. The ranch has already switched to a pump-fed pivot irrigation system, which pulls water from the creek downstream of the dam. The new system eliminates the cost of annually maintaining the canal, said Dorro Sokol, president of the ranch. "We feel actually very lucky to have this work out this way," she said.

The work began Monday and is expected to last two weeks. It took about five years to work through alternatives for the project, said Mathias Perle, project manager for the Upper Deschutes Watershed Council, a Bend-based restoration group. The Deschutes River Conservancy of Bend, a nonprofit focused on restoring flows to the Deschutes and its tributaries, and the U.S. Forest Service also took part in the talks. Among the entities contributing to the project were the Oregon Watershed Enhancement Board, Pelton-Round Butte Mitigation Fund, The Nature Conservancy, Reser Family Foundation, Patagonia and the National Fish and Wildlife Foundation. Perle said negotiations are underway over one more river obstruction upstream on the Whychus, where an old-growth log diverts water. There, Perle said, there are about 30 water rights holders, compared with just one at the Pine Meadow Ranch.



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