1/22/2016

Some Dam – Hydro News™

And Other Stuff

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Quote of Note: *"I have a photographic memory, but I don't have same day service." - - Diane Sawyer*

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"Good wine is a necessity of life." - -Thomas Jefferson
Ron's wine pick of the week: **2012 Robert Mondavi Merlot "Napa Valley"**
"No nation was ever drunk when wine was cheap." - - Thomas Jefferson

Dams:

(In case you wondered. Wow!)

What It Looks Like When a Dam Releases 13,000 Cubic Feet of Water Per Second

By Casey Chan, 1/8/16, gizmodo.com

Water is a powerful mother and our dams do all their might in trying to control it but sometimes they need to pump some of that out. This is them doing that in the video. Or well, that's what the dam is trying to do. The floodwater looks more like it's exploding away. The AP writes, "The U.S. Army Corps of Engineers released flood water at

a rate of 13,000 cubic feet per second at the Tenkiller Lake Dam in Oklahoma after historic levels of flooding have affected the region."

(Oh oh, they want someone to pay the bill. Or was there too much rain?)

Inspectors noted 'serious hazard' at Fort Jackson dam before it failed

Problems found at Semmes Lake dam
Dam break blamed for flooding property nearby
Corps won't release some inspection records, citing terrorist threat

JANUARY 9, 2016, by SAMMY FRETWELL, thestate.com

COLUMBIA, SC - Two years before a flood swamped neighborhoods and commercial areas near Fort Jackson, federal inspectors found substantial problems at the base's Semmes Lake dam, an aging structure that crumbled during the massive October storm. A 2013 inspection noted deficiencies in the dam and rated the 22-foot high structure as a "serious hazard,'' according to records released by the U.S. Army Corps of Engineers. A serious hazard rating is one of the worst grades the Corps can give after inspecting a dam to make sure it is stable and safe, records provided to The State newspaper show. Fort Jackson did not respond to questions last week about whether it attempted to make repairs to the Semmes Lake dam. The fort was awaiting answers from the U.S. Department of Justice, a base official said Saturday.

But one Corps of Engineers dam expert said deficiencies cited in the 2013 inspection may have caused the dam to fail during the storm that rocked Columbia three months ago. I reviewed our report for Semmes and we did a very good job of describing all of the deficiencies that may have led to the failure," according to an Oct. 15 email from Corps dam official Shaun Stanton to other Corps officials. Records released by the Corps provide more details about the possible cause of flooding near the military training base Oct. 4. That day, sheets of rain pelted Columbia for hours, swelling creeks, soaking neighborhoods, flooding streets and causing many people to flee to higher ground. More than a foot of rain fell. Among the areas that flooded were major intersections, businesses and neighborhoods downstream from Fort Jackson. Property owners in King's Grant, a gated neighborhood next to the base, have hired lawyers in an attempt to obtain compensation from the fort. Upset property owners say they suspect the Semmes Lake dam failure caused the rapid rush of water that flooded homes along Wildcat Creek, which runs out of the lake and into their community. The Army could be liable for millions of dollars in damages if it is determined that the Semmes Lake dam failure contributed to flooding off the base – and federal officials know it. "There has already been talk of the public blaming Fort Jackson for the damages, in the millions,'' Stanton's Oct. 15 email said.

At this point, it is unknown specifically what problems the Corps found in its 2013 inspection at the Semmes Lake dam. The Corps of Engineers refused The State newspaper's request to examine inspection reports for the Semmes Lake structure and other dams on the base.

The agency's Vicksburg, Miss., office provided some correspondence in response to a Freedom of Information Act request, but it said releasing dam inspection reports might help terrorists. It cited an exemption in federal law that allows the Corps to withhold documents if the release could endanger anyone's life. Releasing inspection reports "would give anyone seeking to cause harm the ability to deduce the effect of dam failure,'' Corps lawyer Bill Woodard's letter to The State said. "Terrorists or criminals could use that information to determine whether attacking a dam would be worthwhile.'' U.S. Sen. Lindsey Graham, R-S.C., said he wants to know more about dam failures at Fort Jackson – and why the Corps won't release the records. Graham labeled the Corps' refusal to release the records "an inappropriate decision.'' Thousands of homes and businesses are near Fort Jackson in South Carolina's largest city. "I want to hear what the Army says,'' Graham said. " But my bias is to say that there is no national security compromise in talking about a dam. Why did the dam break? The people in South Carolina who live by the base need to be reassured it is not going to happen again. I don't buy what the Army is saying. It makes no sense.''

In addition to the Semmes Lake dam failure, more than 40 private dams failed in the Columbia area during the storm. Unlike the base, the state Department of Health and Environmental Control has provided inspection records for the dams it regulates. Although the Corps would not release inspection reports, other documents released by the agency, or which are on federal websites, show the Semmes Lake dam has a history of repair needs. Federal records show that the earthen dam needed attention as far back as 1981. In the mid-1990s, inspectors cited erosion and a sinkhole in the dam, a 1995 Department of the Army report says. Some of the 1990s deficiencies later were fixed, according to the report. But the 75-year-old dam continued to need maintenance and, in 2006, was scheduled for repairs, records show. By 2013, inspectors again noted problems, according to two emails from Corps officials in October. The Oct. 15 email from Stanton, a dam inspection program manager with the Corps' Vicksburg, Miss., division, said the 970-foot-long dam ranked as a "serious hazard, which is our second to worst rating.'' In an Oct. 16 email, Corps structures laboratory director William Grogan also noted that the dam was a serious hazard. Stanton, in an interview with The State newspaper last week, said deficiencies cited in the 2013 report were notable. A dam with a serious hazard designation "is a dam that we feel could fail under normal working conditions,'' Stanton told the newspaper. Jones Andrews, a Columbia lawyer representing property owners whose homes were damaged in the flood, called the email referring to the hazardous condition of the dam "extremely concerning'' given the number of people who live around Fort Jackson. The Semmes Lake dam is one of four on Fort Jackson that either failed or sustained damage during the Oct. 4 storm, officials at the fort said a month after the flood. Fort Jackson officials have said the Army is conducting an investigation to determine the exact cause of the failure. They were unsure in November whether the dam, which held back water for a recreational lake, would be rebuilt. Grogan's email noted that Fort Jackson did not seek help from the Vicksburg division of the Corps in trying to determine why the dam had failed. The Vicksburg division inspects Army dams, but in this case, Stanton said another section of the Corps is looking into the cause of the Semmes Lake dam failure. The status of the investigation was unknown last week.

(PMF – Gotcha! This is not in Florida.)

Jacksonville receives permit to modify unsafe dam

By Tony Boom for the Mail Tribune, Jan. 11, 2016, mailtribune.com

JACKSONVILLE, OR — Creation of a larger spillway for the city's reservoir dam on Jackson Creek to prevent its collapse in a catastrophic flood has been given a go-ahead by the U.S. Army Corps of Engineers. Enlarging the existing spillway will be less costly than other proposals considered, such as notching the dam and reconstructing a stream bed in the reservoir. A variety of scenarios were considered, one estimated to cost up to $767,000.

City Manager Jeff Alvis said he hopes the spillway work can be done for about one-third of that figure. "There have been about 15 different designs," said Alvis. "We are breaching it and then putting in the riprap (piled stones or chunks of concrete) so it won't erode the face of the dam."

The dam was constructed in 1910 to serve the water needs of Jacksonville. Use was discontinued in the 1950s, and much of the reservoir has filled with sediment. A 1999 inspection by the state's Dam Safety Division led to its classification as a high-hazard dam. Alvis has directed City Engineer Scott Pingle to prepare a request for proposals to perform the work. He hopes to have the project completed next summer. In-water work can be done only between June 15 and Sept. 15. Up to 873 cubic yards of material can be placed in the creek to create the new spillway. "Most of the material is being imported. It will come from a fresh source. Primarily it's riprap," said Omar Ortiz, project manager with the Corps' Eugene office. Some of the concrete from the demolished old spillway will be used. Sediment in the reservoir will not be removed, said Ortiz. "My understanding is that just wasn't an affordable option for the city," said Ortiz.

While much of the current dam will remain, the project is regarded as a breaching. Project specifics include:

- Demolition and removal of the old concrete spillway, to be replaced with a 10-foot-wide channel capable of passing storms that exceed FEMA's 500-year flood flow figures.
- Placement of removed material and debris from the spillway in designated areas. The material would be compacted and planted with vegetation to provide slope stability.
- Placing a log-boom in the impoundment to catch large logs and other debris that might clog the newly configured spillway.

At its deepest, the new spillway would be approximately 12 feet below the current dam face slope. A scour hole below the new riprap spillway would be filled with concrete from the old spillway. Work won't begin until the water level in the reservoir drops. Under the permit, a sump pump can be placed in the reservoir to help drain the site, said Alvis. Alvis hopes to place all removed materials below the dam in areas designated in the permit. But the permit also allows placement adjacent to the reservoir and in an old quarry site across a road from the dam's west end. The Oregon Department of Environmental Quality, Oregon Department of Fish and Wildlife, National Marine Fisheries Service and Oregon's Division of State Lands have consulted on the project. Planning to correct the situation began in the fall of 2013. The city has $200,000 set aside for the project, with additional money set aside for engineering.

(At least, it's not about the Snake River dams.)

Letter: Remove dams, restore wetlands

January 12, 2016, newsday.com

Hawley Lake Dam, on Montauk Highway between Islip and Babylon towns, would make a great candidate for removal ["In hot water," News, Dec. 29]. The dam lies between the northbound and southbound lanes of Route 231. Long ago, a grist mill was a necessary part of a community. Removing the dam would allow alewives to return and wetland habitats to recover. Deer Lake is another candidate. It was a large wetland. Now it is a large mud hole. These two dams and the lakes behind them would make excellent testing ground for the dozens of other creeks on the South Shore. We need to allow wetlands to regenerate. *Tom Stock, Babylon*

(Flood control at work.)

Engineers release water from Oklahoma dams

Jan. 12, 2016. fox23.com

Flooding has caused officials to release water from Oklahoma dams.
Flood pools are very full for this time of year.
Officials expect to have water to normal levels by the end of January.

Officials are releasing more water from area lakes. Lake Keystone is still 11 feet above normal. Now, floodgates at the Keystone Dam are open, and 18,000 cubic feet of water are being drained per second. After the weekend, that will increase 40,000 cubic feet per second, or about half the flow of Niagara Falls. Officials have waited to open the gates to take pressure off dams at Lake

Eufaula, Tenkiller and Fort Gibson. Flood pools there are higher than at Keystone. Fort Gibson is releasing 60,000 cubic feet per second, 40,000 cubic feet at Eufaula and 13 at Tenkiller. Officials expect to have waters back to normal levels by the end of the month.

(Hope they're right.)

Reservoir dam's settling no crisis, experts say

By Dennis Webb, January 13, 2016, gjsentinel.com

The Colorado River District has been given some breathing room for dealing with a problem dam at its Wolford Mountain Reservoir five miles from Kremmling.
A three-person outside team of dam experts has advised the district that the Ritschard Dam is safe despite the settling that has occurred there, no immediate action is required, and the district should be deliberate in determining how to address the problem. "The Consultant Review Board has emphatically emphasized that time is on our side," the district's chief engineer, John Currier, said in a memo to the district board in advance of its meeting next week.
The recommendation comes as good news to the district, which has identified the dam as the most important issue it currently faces. It already has spent about $1.5 million to install sophisticated instruments to measure the dam's settlement. Since its completion in 1995, the rock-fill, clay-core dam has settled near its center by about two feet. While earthen dams settle, in this case the drop was a foot more than expected. The dam crest also has shifted about eight inches downstream.

The three-person team, district staff and consulting engineers are now proposing that the district hold a workshop with the Dam Safety branch of the Colorado Division of Water Resources and Denver Water, which has a leasehold interest in the reservoir, to consider next steps. "We were thinking that some kind of work would begin in 2016 or (20)17, to begin some kind of remediation program, but now we're saying OK, let's dig deeper into the issue based on this third-party finding," district spokesman Jim Pokrandt said. He said the finding means the district has more time to make sure it takes the right next steps regarding the dam. The most expensive repair would involve rebuilding the dam, which several years ago the taxpayer-funded district estimated could cost $30 million. Another approach could involve injecting concrete into the dam to reinforce it.

The original dam and reservoir project cost $42 million, including land acquisition, permitting, construction and other expenses. The reservoir can hold about 66,000 acre feet of water. An acre foot is about 326,000 gallons. The river district the last two years has kept water in the reservoir about 10 feet below capacity as a voluntary, precautionary measure. The dam sits on Muddy Creek, a tributary of the Colorado River. The river district has consulted with the town council of Kremmling, which is downstream of the reservoir on the Colorado River, and Grand County commissioners. It also has held public meetings and kept emergency managers informed of the situation. Bill McCormick, the state's chief of dam safety, agrees that there is no reason for immediate concern regarding the dam. "It is displaying some unusual behavior but (the findings of) all the analysis that's been done to date is that it's not creating unsafe conditions," he said. Still, he said he thinks everyone involved agrees there's a long-term issue pertaining to continued settling, which requires a long-term solution. "The long-term solution isn't clear or obvious just yet but we're continuing to work on it," McCormick said.

Hydro:

(Who was first in door, unless one is a public entity?)

2 companies look to Columbia lock for hydropower project

By - Associated Press - January 8, 2016, washingtontimes.com

COLUMBIA, La. (AP) - Two companies have requested permits from the Federal Energy Regulatory Commission to study installing a hydropower project near the Columbia lock and dam on the Ouachita River. The News-Star reports (tnsne.ws/1SDWLdn) Lock+ Hydro Friends Fund XXIX file for a permit on July 6 and Energy Resources USA Inc. filed for a permit on Sept. 2. Celeste Miller, a FERC spokeswoman, said a permit, if granted, would give one of the companies three years to determine if it wants to apply for a license to build at the site. Miller says this stage is very preliminary and does not allow any construction to take place. A more detailed plan, including potential environment impact, is considered during the later licensing phase.

(Had to do an EA to decide the obvious.)

Hydropower assessment complete No long-term impacts seen from plan to place generators on pipeline outlet

BY CHRIS WOODKA The Pueblo Chieftain Published: January 9, 2016, chieftain.com

A draft environmental assessment statement has been completed for a proposed 7-megawatt hydroelectric plant at Pueblo Dam. The Bureau of Reclamation is accepting comments until Jan. 30 on the project. The project is a joint effort of the Southeastern Colorado Water Conservancy District, Colorado Springs Utilities and the Pueblo Board of Water Works. Two generators designed to operate at both high and low flows would be constructed on the North Outlet Works, which was built as part of the Southern Delivery System. A separate connection for hydropower was included in the design.

(Hydro history.)

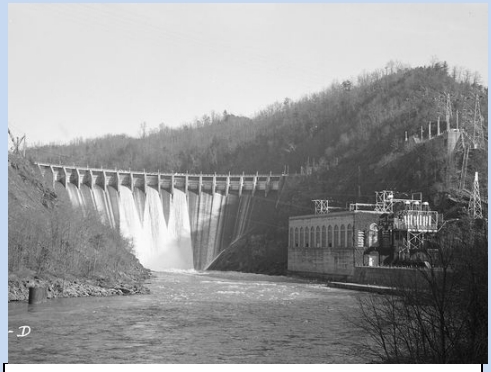
Visiting Our Past: Earliest WNC dams built by Alcoa

Rob Neufeld, January 11, 2016, citizen-times.com

Did you hear? About a dozen engineers are setting up camp near the Beecher Schoolhouse, where the Nantahala spills into the gorge. Alcoa has formed a new company, Nantahala Power and Light, to buy up land and build a dam on Queen's Creek, near the top of the Winding Stairway. They'll put the power house at the camp site; and use the power, the newspaper said, to construct a big dam near Aquone.
—Franklin Press, Oct. 17, 1929. (The Aquone dam is the Nantahala.)

In 1910, Alcoa (the Aluminum Company of America) began buying sites along the Little Tennessee River because, going by the numbers, it found the area hard to beat. “Engineers measured the high plunges of its waters, the quantity of rainfall in the valley, and the cost of labor,” Alberta and Carson Brewer note in “Valley So Wild.” The figures translated “into terms that meant cheap electricity.”

The first dam Alcoa built was the Cheoah, completed in 1919. At the time, it featured the world’s highest overflow dam, greatest voltage and longest transmission line. Aluminum was a miracle product, first manufactured in 1888, originally used in cooking utensils and then, as with the Wright Brothers, airplanes. Extraction from alumina through smelting involved an electrolytic process that required massive amounts of electricity. In 1928, the Santeelah Dam was completed on the Cheoah River in Graham County and work began on the Calderwood Dam, where the Little Tennessee divides Graham from Blount County, Tennessee. Alcoa would end up building 15 dams in the Southern mountains. After 1932, it worked with and through the Tennessee Valley Authority.



The Cheoah Dam, built by Alcoa in 1919, photographed by the Tennessee Valley Authority in 1939.(Photo: Courtesy photo)

Hydroelectric

“Yeah, it’s our turn for the big job,” we can imagine Macon County residents saying when they read the news item about Queen’s Creek, just 12 days before the stock market crash.
Dams mean work, one might add. Loss of farmland, too, another might say. And a big lake for summer residents. Lowered taxes. Electricity. “When Alcoa created the Nantahala Power and Light Company in 1929,” a 2003 National Register of Historic Places application states, “fewer than 2,000 people had electric service in the region.” Hydro was appreciated without a suffix.
Mattie Howard Yearout remembers when cold water from the mountain above her home place, at the future Calderwood Dam site, was piped down into three troughs — one for a springhouse, another for washing clothes and a third for water for the stock. The horses “were so spoiled with cold mountain water,” Yearout told the Brewers for their book, “that on a trip to Maryville they refused to drink except at one branch that was cold enough.”

Party time

Across the Nantahala Mountains, in Franklin, on Oct. 17, 1929, Clarence Brown, a former traveling salesman who’d made money in the automobile storage business, announced his purchase of the town’s one big hotel, the Scott Griffin. “The fact that a railroad from Knoxville through Franklin to the coast at Charleston is now assured,” Brown explains, had an influence on his determination. “The building of power dams in this vicinity was also a factor.” Plus, he states, “the new improvements on the local (nine-hole) golf course and the completion of the half-million-dollar golf course at Highlands will also stimulate tourist trade.” “When I came to Franklin in 1927," Lois Jones reminisces about the Scott Griffin Hotel, “they had dances once a week, and they were big affairs. But pretty soon the Depression hit. ... Nobody had any money. ... Without a milk cow and garden, you didn’t eat very well.” “A family we heard about,” Jones told Warren Moore for Moore’s book, “Mountain Voices,” “took the boards off the outside of the house and burned them. They were cold. They had a lot of children. ... It had been a lovely house.”
Yearout recalls life before electricity and cash. People worked together on their farms, and Christmas was the light in the darkness.

First, there was hog-killing. Year out’s task was washing and cleaning the entrails for its use in making soap. “Hog-killing was an exciting event. It was the start not only of the ham-curing and sausage-stuffing but of the Christmas preparation. First step was selecting a large bladder from one of the hogs,” kneading it to stretch it out, and blowing it up and putting seeds inside. “On Christmas Eve there was great fun setting the bladder near the hearth where the home-knit

stockings were hung. The first child up burst the bladder with a big bang, the signal for all to pour from under the heavy layers of quilts." Clarence Brown and his wife attended a party on Oct. 13, 1929, a farewell affair for Scott Griffin Hotel's outgoing manager, E.E. Lock. "At the dinner Sunday," the Franklin Press reported, "the table was beautifully decorated with fall flowers. ... During the course of the meal, Mr. and Mrs. C.S. Brown were introduced to the people of Franklin." The Browns were in a celebratory mood. Their son, Clarence Jr., graduating from Augusta (Ga.) High School, would soon be joining them in their business and their embrace of their new home. "I'm buying all my supplies from local stores," Mr. Brown said.
The time bomb of the economy was ticking. On Oct. 24, the state Department of Agriculture reported on its survey of area soils to aid farming and industry. Two days earlier, the leaders of the Gastonia mill strike had been convicted of second-degree murder for the death of the police chief.

The newspaper that came out on Oct. 31, two days after Black Tuesday, had as its lead headlines: The county got money to help with Highway 28 construction, and Franklin beat Webster 62-0 on the gridiron. A week later, it was reported, a doctor's office and dispensary had been built at the Beechertown camp, and track was being laid for a railroad. Nonetheless, the Nantahala Dam would be delayed by the Depression. It wasn't until 1935 that President Roosevelt inaugurated the Rural Electrification Authority, funding state agencies. By 1940, the percentage of N.C. farmers with electricity rose from 4 to 24, James L. Hunt writes in William Powell's "Encyclopedia of North Carolina." The Nantahala Dam was completed in 1942. *Rob Neufeld writes the weekly "Visiting Our Past" column for the Citizen-Times. He is the author of books on history and literature and manages the WNC book and heritage website, The Read on WNC. Follow him on Twitter @WNC_chronicler.*

(Any dam is a possible hydro site.)

State-owned Susquehanna River dam at Williamsport eyed as electricity generator

By John Beauge | Special to PennLive, January 11, 2016, pennlive.com

WILLIAMSPORT, PA — A privately-held hydropower development company that has projects in more than a dozen states believes its patented technology will make it feasible to generate electricity at the state-owned Susquehanna River dam at Williamsport. Lock + TM Hydro Friends Fund XII, part of Hydro Green Energy based in Westmont, Ill., has filed preliminary permit application with the Federal Energy Regulatory Commission to study the feasibility of its Hepburn Street Dam project. If such a permit is issued, it would give Hydro priority to file an application for a license to operate the facility. Hydroelectric projects have been considered at the dam in the past by other companies but Michael P. Maley, president and CEO of Hydro Green, said he is optimistic his company's technology will make it feasible this time.

Hydro Green has developed technology to generate power at about half the cost of other hydropower systems, he explained. It is competitive with plants using Marcellus Shale natural gas, he said. The company holds development rights in the United States to 300 megawatts of hydropower capacity at existing dams Last July, it received a 50-year license from the commission for its 5.25-megawatt low environmental impact hydroelectric project at the Braddock Locks and Dam on the Monongahela River near Pittsburgh. The Williamsport project would impact only 150 feet at the northern or Williamsport side of the 1,015-foot dam that is formally known as the Anthony J. Cimini Dam in memory of a late state representative. The project would

include a 25-foot deep large frame module containing 10 900-megawatt hydropower turbines. It would be installed either in the levee on the Williamsport side of the river or in the upper pool of the dam, the permit application states. Maley stressed the project would not affect the river's ecosystem or affect the fish ladder on the south side. A screening system would be installed to prevent fish species from interacting with the hydropower operation, he said. Engineering, legal and other expenses related to the feasibility study are estimated to cost $525,000, the FERC document states. The current timetable shows construction in 2018. When operational, the facility will generate an estimated 51,000 megawatts of electricity annually that will be sold to a utility or an industrial customer, he said. A PPL substation is a short distance from the dam in Williamsport. The advantage of hydropower over other renewable sources of energy such as solar or wind is there is always water in the river, Maley said. The state Department of Conservation and Natural Resources that owns and maintains the dam has received the FERC permit application notification but nothing else, spokesman Terry Brady said. Williamsport Mayor Gabriel J. Campana said he was unaware of the project. The public has 60 days in which to submit permit application comments to FERC at http//www.ferc.gov/docs-filing/efiling.asp or in written form to the commission at 888 First St. NE, Washington, D.C. 20426.

(No other renewable can last this long.)

Cabot Centennial Calendar

By Pam Mastriano | January 13, 2016, masslive.com

Cabot Centennial calendar Northfield - The Cabot Hydroelectric Station's 100th anniversary is in 2016. In Feb. 1916, the station began generating electricity, supplying power to the Montague area and communities throughout the Connecticut River Valley. At the time of its construction, Cabot Station was the largest hydroelectric station east of Niagara Falls.

The Cabot Centennial calendar, created to celebrate this milestone, features historical photographs dating from 1912 through 1917 during the construction of the new concrete dam, hydroelectric station and power canal expansion in Turners Falls. Each month also includes a historical highlight from 1916 that collectively provide a glimpse into the year Cabot station began generating electricity. These complimentary 2016 calendars can be picked up at the Northfield Mountain Recreation and Environmental Center, 99 Millers Falls Road, the Great Falls Discovery Center (2 Avenue A, Turners Falls) or the Carnegie Library (201 Avenue A, Turners Falls.) Events during the upcoming year include the Cabot Retrospective exhibit at the Great Falls Discovery Center in April and May and Cabot Station Open House Tours on June 11 and 12. For more information, call the Northfield Mountain recreation and Environmental Center at (800) 859-2960.

(Congress messed it up when they enacted ECPA, now they claim they're fixing it.)

Stop Wasting America's Hydropower Potential

By LISA MURKOWSKI and JAY FAISONJAN. 1, 14, 2016, nytimes.com

PRESIDENT OBAMA has described climate change as one of the biggest challenges facing our country and has said he is open to new ideas to address it. He can start by supporting legislation to increase the nation's hydropower capacity, one of our vital renewable energy resources.

Hydropower harnesses the force of flowing water to generate electricity. It already produces about 6 percent of the nation's electricity and nearly half of its renewable energy, more than wind and solar combined. This is enough electricity to power 30 million homes and, according to the Department of Energy, avoids some 200 million metric tons of carbon dioxide emissions each year. That amounts to taking about 40 million cars off the road for one year.

But we could be doing much more to harness the huge potential of hydropower, even without building new dams. For instance, only 3 percent of the nation's 80,000 dams now produce electricity. Electrifying just the 100 top impoundments — primarily locks and dams on the Ohio, Mississippi, Alabama and Arkansas Rivers that are operated by the Army Corps of Engineers — would generate enough electricity for nearly three million more homes and create thousands of jobs. And upgrading and modernizing the turbines at existing hydropower dams could yield a similar amount of additional electricity-generating capacity.

Despite the benefits of this technology, American hydropower development has stalled because of government red tape and environmental opposition. Less capacity has been added each decade since the 1970s, even as our infrastructure ages. Half of our plants use turbines or other major equipment designed and installed more than 50 years ago. At the heart of the problem is a broken federal permitting process that has created an unnavigable gantlet for hydropower projects. While mandatory environmental reviews must be stringent to protect waterways and wildlife, federal bureaucrats insist on duplicative, sequential processes that exacerbate regulatory uncertainty, delay approvals and drive up consumer costs.

Compounding the roadblocks are environmental groups that claim to adhere to sound science but hold remarkably outdated views of hydropower and its benefits. Rather than acknowledge technological advances and the environmental safeguards in our laws, these groups have filed lawsuits to dismantle dams or stop their construction. Add it all up, and it can now take well over a decade to relicense an existing hydropower dam. For the California customers of Pacific Gas and Electric, relicensing costs have run as high as $50 million a dam — all for the privilege of continuing to operate an existing renewable energy project. One-third of the nation's hydropower dams will require license renewals by 2030. We need to make this process more efficient by reducing bureaucratic and administrative delays that end up increasing electricity rates and slowing hydropower's expansion.

Fortunately, Congress has stepped in to get hydropower development back on track. Legislation in both chambers, including a measure in the Senate that was approved by a bipartisan vote in committee, would direct agencies to expedite the permitting of new projects and the relicensing of existing ones, and would advance the use of hydropower nationwide. But while Congress has chosen to lead on this important issue, President Obama has threatened to veto the House bill, claiming it would undermine environmental safeguards. The challenge is finding a way to bring state and federal agencies to the table with the applicants at the beginning of the process so they can identify potential problems and coordinate environmental reviews. The legislation would not change the authority of federal agencies to impose environmental conditions. There is much more that we can do. Upgrading existing dams is just one of the approaches that holds big promise. Coordinating hydropower projects on a region wide basis might allow for permitting on a more timely basis and provide better opportunities for environmental mitigation. There is also tremendous potential for electricity generation using new marine hydrokinetic technologies that convert the energy of waves, tides and river and ocean currents into electricity. And it is important to recognize the huge, untapped potential for hydropower in Alaska. With hydropower, Congress

has given the president an opportunity to address climate change and "bridge the divide" between parties. If he is serious about expanding the use of clean, renewable energy, he should at last give hydropower the attention it deserves in his final year. *Lisa Murkowski, a Republican from Alaska, is chairwoman of the Senate Committee on Energy and Natural Resources. Jay Faison is the founder and chief executive of the ClearPath Foundation, which is focused on conservative solutions for a clean energy future.*

New hydroelectric facility on Ohio River begins operation

Beacon Journal staff report, January 14, 2016 - ohio.com

A new hydroelectric facility on the Ohio River has begun commercial operation. Columbus-based American Municipal Power Inc. announced that Unit No. 1 at the Willow Island hydroelectric plant began commercial operations last week. It is supplying electricity to Ohio and four other states and 79 participating AMP member communities, including Cuyahoga Falls, Wadsworth, Orrville, Seville, Brewster and Beach City.

Work continues on Unit No. 2 and should be completed by March 31. The $300 million facility, when completed, will be capable of producing 35 megawatts of power. One megawatt is enough power for 600 to 1,000 houses. The new plant is located at the Willow Island Locks and Dam at St. Marys, W.Va. The Willow Island facility and three other hydroelectric projects being developed at existing dams on the Ohio River will produce 300 megawatts of power for AMP. Those other projects are expected to begin production in March. The hydro projects will allow member AMP communities to diversify their electric supplies and not worry about carbon emissions from burning coal, officials said. AMP provides power to 132 member communities in Ohio and eight other states.

Environment:

(There's always one more study.)

HSU studies to examine how Eel River dams impact salmon

By Will Houston, Eureka Times-Standard, 01/08/16 | times-standard.com

The Scott Dam of Pacific Gas and Electric Co.'s Potter Valley Project is set to go under review for relicensing in 2022 by the Federal Energy Regulator Commission. Justine Frederiksen — Ukiah Daily Journal

Amid an ongoing drought, a struggling salmon migration and a narrowly avoided water storage catastrophe at the Potter Valley Project, two studies by the Humboldt State University River Institute are seeking to determine whether dam releases to the Eel River could be managed more adequately for fish. While the Potter Valley Project's Scott Dam is set to undergo a federal relicensing process in 2022, HSU Environmental Science & Management

professor and project lead Alison O'Dowd said the goal of the research is not to advocate for dam removal. Instead, she said the research seeks to determine what flows would be needed to restore dwindling salmon populations on the river and whether dam removal would provide any further benefits. "Historically, we can see salmon get ignored," O'Dowd said. "... We're trying to have a voice for the fish."

Potter Valley Project

While other factors are affecting the strength of Eel River flows, the two studies limit their focus on how the Pacific Gas and Electric Co.'s Potter Valley Project affects the hydrology and habitat for migrating salmonids such as threatened Chinook and coho salmon. Friends of the Eel River Executive Director Scott Greacen said state and federal agencies only provide enough resources to keep the fish populations on "life support." "Having better information about how streamflows in the Eel River are linked to the ecological function of the river, especially to food webs that support fisheries, is a central part of figuring out how to best restore ecological recovery for our salmon and steelhead," Greacen said. Anti-dam organizations Friends of the Eel River and CalTrout are funding the two studies, but O'Dowd said the research has been and will remain objective.

Citing information from the National Marine Fisheries Service, an HSU news release states that an estimated 500,000 salmonids existed in the Eel River watershed before 1900. "Today, there are fewer than 15,000 salmonids — a 97 percent drop in population that environmentalists have partially attributed to the Potter Valley Project owned by PG&E," according to an HSU news release. PG&E senior fisheries biologist Paul Kubicek wrote in an email to the Times-Standard that several other factors have played a significant role in this decline — including logging, agriculture, marijuana cultivation, natural events and introduction of invasive species. Under the project's federally implemented operations plan, PG&E conducts annual monitoring studies to determine whether any changes should be made in the project's operations to benefit downstream fish, Kubicek said. "PG&E is open to making changes in operations based on the findings of these studies," he wrote.

PG&E's Potter Valley Project was constructed in the early 1900s in the upper reaches of the 3,600-square-mile Eel River Basin near the headwaters of the Russian River in Mendocino County. The project's main components include two dams, a diversion tunnel connecting the Eel River to the Russian River and a hydroelectric powerhouse. The Cape Horn dam was constructed on the Eel River in 1908 to create the Van Arsdale reservoir, which worked to carry water south through the mile-long diversion tunnel to provide water and generate hydroelectric power for Potter Valley residents. About 12 miles upriver of Cape Horn Dam is the Scott Dam, which was constructed in 1922 to form the Lake Pillsbury reservoir. Lake Pillsbury was created to supply a continuous flow of water to the project's power generators during the late spring and summer months when the Eel River flows typically begin to decrease. While minimum environmental flow requirements were eventually established to support federally protected species of salmon on the river, the dams created new challenges for the anadromous fish that affected all aspects their freshwater life such as migration, spawning, and juvenile development. A fish ladder was added to the Cape Horn Dam to allow fish to pass into the Van Arsdale reservoir, however no such passageway exists for Scott Dam and thus several tributaries once used for spawning were lost. One of the HSU River Institute's studies will have graduate students use geographic information system (GIS) technology and field research to determine whether any suitable habitat exists upstream up of Scott Dam and what migrational barriers these fish could encounter. O'Dowd said this study just recently began and will take about a year to complete. "The product is going to be a map showing where fish could get to if the dam wasn't there or if there was fish passage," O'Dowd said. While recognizing the dam blocks fish passage, Kubicek wrote that water is released from Scott Dam into the upper Eel River during the late summer and early fall "when historic river flows were much reduced and nearly non-existent in some years."

Balancing flows

As the statewide drought entered into its fifth year in October, National Marine Fisheries Service fishery biologist Joshua Fuller in Santa Rosa said the water storage situation at the Potter Valley Project was becoming dire. "Trying to manage that storage has been challenging obviously, with

the conflicting interests of meeting the diversion demand and remedial requirements for environmental flows," Fuller said. Near the start of the December, Lake Pillsbury's volume was nearing 10,000 acre-feet — about 13 percent of its 75,000 acre-feet capacity. If the reservoir reached below this level, Fuller said there was a high likelihood that the banks of the reservoir could begin eroding with the resulting sediment deposition blocking the Scott Dam's needle valve. "If the needle valve got clogged, we could be in a situation where no water was being released to the Eel or the Russian River," Fuller said. "You could have complete infrastructure failure." Anticipating this earlier in the year, a drought working group made up of government agencies, tribes and environmental organizations was formed to address the immediate storage issues. PG&E's request to vary from its normal flow schedule by releasing more water into the main stem Eel River and diverting less to the Russian River was eventually granted by the Federal Energy Regulatory Commission.

"We made some quick adjustments to the diversion and some of the environmental flows in October with the idea of banking enough water in (Lake) Pillsbury that we could release some water when Chinook really needed it," Fuller said. Around the start of December, the group utilized this stored water in the form of pulse flows and timed the release with recent rainfall to signal Chinook salmon to migrate farther upriver to their spawning grounds. As a result, more than 100 Chinook salmon have made it to the Van Arsdale reservoir, which acts as a good spawning area. Fuller said that this number is lower than average, but he did not believe that any salmon would make it that far this year. "The verdict is still out," he said. On Dec. 22, Fuller said the drought working group agreed to shifting back to the original flow schedule due to the recent rains refilling Lake Pillsbury. As of Thursday, Fuller said Lake Pillsbury had filled to 54,500 acre-feet.

Managing supplies

A federal biological opinion from 2002 allows resource agencies like the National Marine Fisheries Service and the state Department of Fish and Wildlife to release up to 2,500 acre-feet of Lake Pillsbury water each water year at their discretion. Before the biological opinion, Kubicek said 17 block water releases were made between 1985 and 1996, with two having occurred since 2004 to help migrating salmon and juvenile steelhead habitat. Greacen said his organization has continually complained about this lack of use in recent years, especially considering the near-historic low levels on the Eel River these past few years. "It just sat there in theory every year," Greacen said. This block water has also been used to promote juvenile salmon that had grown comfortable in the Van Arsdale reservoir's cool waters to begin moving downstream to the ocean. O'Dowd said the project's diversion tunnel significantly impacts the flows on the river during the late spring and early summer as juvenile Chinook salmon begin making their way back to the ocean and as early arriving adults begin travelling upriver to their spawning grounds.
"It's diverting more than half of the water of the main stem flow at drier times of the year," O'Dowd said of the project.

As to how the river flowed before the dams were constructed is what O'Dowd and fellow HSU Environmental Science & Management Department professor William Trush have been working to figure out over the last year-and-a-half. Using rainfall records, historic flow recordings and a fair bit of math, the professors are aiming to create a model of how an undammed Eel River would flow under different conditions. O'Dowd hopes this model can be used to better inform agencies what flows would be needed to sustain healthy salmon populations and activities. "We're trying to put more science behind that management," she said. Since 2006, Fuller said the National Marine Fisheries Service and other Potter Valley Project resource agencies have been using the flows laid out in the biological opinion of the Federal Energy Regulatory Commission (FERC).
"I think as the science progresses and our knowledge of the fisheries improves, I think it's always a good idea to reevaluate certain situations where we can improve things," Fuller said. "That's not to say the biological opinion's flow schedule is not adequate."

The Scott Dam is set be reviewed for relicensing by FERC in 2022. Greacen said his organization's purpose is to see all of the dams removed. "Are we actually going to be rational

about the costs and consequences of our irrigation practices and our energy production?" Greacen asked. "... We are up against the built-in assumption that irrigation is necessary; that Potter Valley can only prosper with water taken from the upper Eel; that hydropower is also more necessary than the other alternatives." For Kubicek, the project provides several benefits — including the generation of "clean electricity," fisheries protection and water for agriculture. "At the same time, we believe in being responsible stewards of the environment," Kubicek wrote, "which is why we work closely with local agencies and stakeholders to implement numerous actions to protect and promote the production of salmon and steelhead in the watershed."

(Adaptive management = trial & error.)

Interior Proposes Adaptive Management Framework for Glen Canyon Dam

Office of the Secretary

Proposed roadmap to provide certainty, predictability for water and power users, protects environmental and cultural resources

January 8, 2016, doi.gov

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PAGE, Ariz. – The U.S. Department of the Interior today released a proposed framework for adaptively managing Glen Canyon Dam over the next 20 years with the goal of creating certainty and predictability for power and water users while protecting environmental and cultural resources in Grand Canyon National Park and the Colorado River ecosystem. The draft environmental impact statement (EIS) is available to the public for review and comment for 90 days. "This document is the result of incredible collaboration and cooperation; bringing together diverse stakeholders of the Colorado River to provide certainty, clarity and predictability around the management and operation of Glen Canyon Dam, so that we can better protect the national treasure of Grand Canyon National Park while continuing to provide water and power to millions across the southwestern United States," said Deputy Secretary of the Interior Michael L. Connor. "Today's release of a draft proposal for the long-term experimental and management plan of Glen Canyon Dam is based on the latest available science, but public participation is paramount to this process so we encourage all interested parties to join us in this effort to adaptively manage these resources over the next two decades."

The National Park Service and the Bureau of Reclamation led examination of seven possible alternatives in the draft EIS, including a preferred alternative that would provide assurances for water and power users while mitigating adverse impacts on Grand Canyon National Park. Research and proposed experimental actions under the plan will preserve and improve the resources in Glen Canyon and Grand Canyon while continuing to ensure that water and power needs are met. "This is a major step toward enhancing our stewardship of the waters of the Colorado River," said Bureau of Reclamation Commissioner Estevan López. "Now is the time for the public to make their voices heard. Public participation is an integral part of this planning process and the successful management of the dam for the future." The high-flow experimental releases of water from the dam considered in the draft EIS are designed to mimic the natural flooding of the Colorado River through the Glen and Grand canyons that occurred before the construction of Glen Canyon Dam. Sand stored in the river channel is picked up by high-volume water releases from the dam and re-deposited in downstream reaches as sandbars and beaches. These sand features and associated backwater habitats can provide key fish and wildlife habitat, potentially reduce erosion of archaeological sites, restore and enhance riparian vegetation, increase beaches, and enhance wilderness values along the Colorado River in Glen Canyon National Recreation Area and Grand Canyon National Park.

The preferred alternative identified in the draft EIS continues the high-flow experiments carried out in recent years to help restore the natural ecosystem, but enables continued adaptations and establishes criteria to trigger future releases, which will create certainty and predictability for water users and other stakeholders along the Colorado River. "Public participation is key to fulfilling our

stewardship responsibilities as envisioned under the Grand Canyon Protection Act," said National Park Service Director Jonathan B. Jarvis. "The long-term planning process has given us and our stakeholders the opportunity to use the past 20 years of scientific information to guide decisions for the next 20 years." Reclamation and the National Park Service began developing the draft EIS for this framework in 2011. The draft EIS and all its alternatives will be the subject of extensive public hearings and discussion before the comment period closes on April 7, 2016, laying the groundwork for preparation of a final EIS. To submit a comment, visit http://parkplanning.nps.gov/LTEMPEIS. For more information about the draft EIS, visit http://ltempeis.anl.gov.

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