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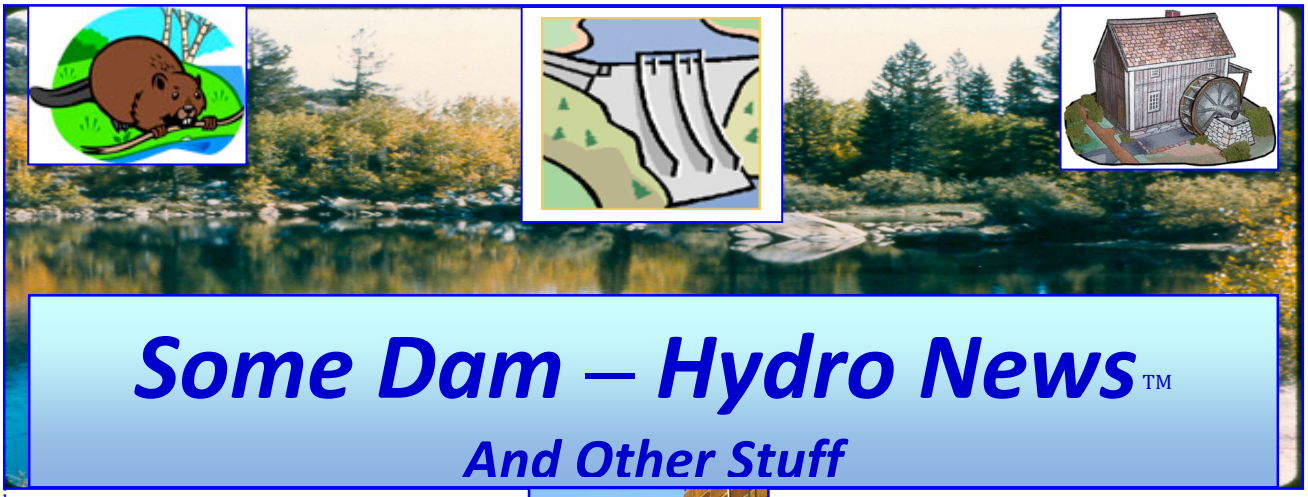

Some Dam – Hydro News™

And Other Stuff

1

Quote of Note: *"Even if you're on the right track, you'll get run over if you just sit there." ~ Will Rogers*

Some Dam - Hydro News → Newsletter Archive for Current and Back Issues and Search:
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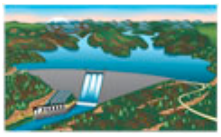
"Good wine is a necessity of life." - -Thomas Jefferson
Ron's wine pick of the week: **2014 St. Francis Winery Zinfandel "Old Vines"**
"No nation was ever drunk when wine was cheap." - - Thomas Jefferson



Dams:

(A shaker could make people nervous! Sounds like he's ticked off about something.)

Letter: Oroville City Council needs to demand dam safety

03/11/18, orovillemr.com

After volcanoes and strong quakes hit the Pacific Rim, a strong quake hit the Oroville area. The epicenter was close to the dam. The piezometers detected an increase in underground water pressure and the new siren system alerted the inhabitants of the town. An official said, "An earthquake has taken out the dam, but nobody should be surprised since people knew about the greening and wet spot warnings. Let's fix the dam and get back to selling water."

Surely I jest. There are no functioning piezometers, in spite of their use as standard safety equipment in all other dams. There are no warning sirens, except to warn Department of Water Resources workers to run for cover. Additionally, it doesn't have to be an earthquake, any high-water event can lead to disaster in our aging dam. The Oroville City Council could be demanding piezometers, a siren system and replacement of the spillway release gates, currently in disrepair.

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They could be demanding drain tubes to guard against high-water events and a second spillway, like Folsom Dam received after their problems. The mayor's lack of leadership is suspicious, as is her relationship with DWR and the water vendors. Scott Thomson's sycophantic support of the mayor is interesting. The city attorney functioning as if his job is to look out for the mayor is noteworthy. Right now I blame these individuals, but the blame won't stay there. The entire council is responsible to raise these concerns and make safety demands on behalf of Oroville. — *Don Fultz, Oroville, CA*

(Finally getting around to the IFT Report.)

DWR submits plans to address Oroville Dam forensic report

By Risa Johnson, 03/14/18, orovillemr.com

Sacramento, CA >> The state Department of Water Resources submitted its plan to the Federal Energy Regulatory Commission on Tuesday to address findings in the independent forensic report. The extensive forensic report, released on Jan. 5, blamed "long-term systematic failure," including faulty design and insufficient maintenance, for the Oroville Dam crisis in February 2017. It also had criticisms of DWR's response to the spillways' failure. To address flaws pointed out by the independent forensic team, one thing the department has done is hire two executive-level engineers — one to report to the directorate and one to report to the chief dam safety engineer, Joel Ledesma, deputy director for the State Water Project, told FERC in a letter. The department has also stepped up its inspections of other State Water Project spillways "including new testing, historical document reviews and engineering verification," Ledesma wrote, adding that State Water Project dams would now be managed to International Standards Organization standards, exceeding what DWR is required by law to do. The State Water Project provides water to 26 million people from Northern to Southern California.

"Together we are confident these efforts are further improving dam safety across the SWP (State Water Project) in California," he said. He noted that the department also altered its construction plans after the forensic team released its initial findings about what may have caused the main and emergency spillways to fail. The Board of Consultants, the independent group looking into the redesign of the spillways, stated in a September report that those factors seemed to be adequately addressed. DWR is also conducting a few studies of its own, including what the department is calling a "comprehensive needs assessment" for Oroville Dam as well as assessments for the other State Water Project dams, Ledesma said.

Possible contingencies at Oroville Dam such as a fully lined emergency spillway and a second gated spillway are being considered as part of the comprehensive needs assessment, department officials have stated in the past. "DWR has also initiated a spillway inspection and condition assessment project for the other SWP dams, including the other FERC licensed dams," Ledesma wrote. "This project includes the following major elements: detailed inspections, non-destructive testing and physical investigations, review of historical documentation from original design to present, analyses, and maintenance or major repairs, as warranted." The department also began an evaluation of the State Water Project's Dam Safety Program in November, he said.

(They say it's too expensive. The number doesn't make sense.)

Temperance Flat Dam Too Expensive

BY GAIL MARSHALL, fresnobee.com, March 02, 2018

Why would taxpayers invest $2.6 billion to increase our water supply .1 percent when there are significantly cheaper methods to increase it by 10 percent? That's what the Bureau of Reclamation (BR) recommends by

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proposing to build the Temperance Flat Dam (TFD), costing $2.6 billion ($121 million annually for operation). The dam's long-term average annual yield would be 61,000-87,000 acre feet; only .01 percent additional supply, compared with the yield of the entire Central Valley Project. Reclamation claims the dam would improve water supply reliability, while providing public benefits – increased salmon in the San Joaquin River. However, Reclamation's operation scenarios could reduce salmon downstream.

The State evaluated Temperance Flat for Proposition 1 water storage bond money, calculating the public benefit at 10 cents per dollar invested. San Joaquin Valley Infrastructure Authority claimed public benefits at $2.86 per dollar. Other economical and environmentally sustainable solutions could meet our water needs: Better irrigation scheduling, recycling wastewater, repairing system leaks, installing efficient toilets, cleaning up groundwater basins/recharging with stormwater. Implementing these water solutions could yield 4,600,332 acre feet annually, 10 percent of California's total water demand. The dam would cost billions of taxpayer dollars, yielding little, while harming fish and wildlife. *SUSAN CLARK, EL PORTAL, CA*

(Huh! We'll just have to pray for rain.)

California is being faulted for sitting on billions of dollars for water storage

By Mike McPhate, Mar, 8, 2018, medium.californiasun.com

Cattle grazed in the Sites Valley, the location of a proposed reservoir in Colusa County. (Rich Pedroncelli/A.P.)

The Wall Street Journal's editorial board this week named a culprit in California's water woes: environmentalists. The newspaper was reacting to recent news that the California Water Commission, a state agency that allocates money, gave a lukewarm analysis of 11 water storage proposals that would add new dams and reservoirs. The projects are seeking funds from a $2.7 billion pot that California voters approved during the last drought to expand water storage. Four years later, not a dime has been allocated. The commission members, appointed by Gov. Jerry Brown, questioned whether the proposals provided sufficient public benefits as required by law. That response has galled some farmers and Republican lawmakers who favor building new dams. "The real political problem, as always," the Journal wrote, "is that environmentalists oppose dams as an article of faith."

(Are they really ever safe?)

Work suspended after dam collapses at one of Australia's largest gold mines

Just days after an earthquake hit the area, a dam wall has collapsed at the Cadia mine near Orange.

By William McInnes, 10 March 2018 — smh.com.au

An aerial image showing the collapsed section of the tailings dam. Photo: Supplied

Operations at one of Australia's largest gold mines had to be temporarily suspended on Friday after a partial wall collapse at one of the mine's tailings dams. The wall collapse at the Cadia mine comes just a few days after two earthquakes hit the area, located just south of Orange. The wall breach was noticed in the late afternoon on Friday when workers

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noticed a section of the northern dam wall had collapsed into the southern tailings dam.

The tailings dams contain byproducts of mining and can contain materials which are harmful to the environment and human health. The dams are generally constructed using earth-fill and gradually raised over time. The Cadia mine is owned by Newcrest Mining, one of the largest gold mining companies in the world. Newcrest were unable to confirm whether the recent earthquakes had contributed to the dam's wall failure but said it was conducting a thorough investigation.

The company told Fairfax Media that operations at the site had been suspended pending the investigation and that the break had posed no safety threat to workers. But National Secretary of the Australian Workers Union, Daniel Walton said that many of the workers on the site still don't feel safe given the recent earthquakes. "A lot of workers are worried that the mine is not taking this activity seriously enough and they do have concerns about safety," he said. A resident living closer to the mining operation told Fairfax Media that the northern tailings dam wall had breached, sending tailings material into the southern tailings dam. The source said emergency protocols had been put in place and local roads had been closed. Local landholders had been notified along with the relevant authorities. In a statement, Newcrest said that safety was its highest priority as it worked to assess the impact of the wall break.

The Cadia mine is the largest gold mine in Australia.

"The Cadia tailings dams have been regularly inspected, reviewed and monitored; and have been fully certified to industry standards by independent third parties. "As a precaution Newcrest stopped depositing tailings into both dams on 9 March. Operations were subsequently progressively suspended pending further investigation. "We are monitoring the impact carefully, and have observed no environmental damage. We believe there is no threat to personal safety." On Thursday, two earthquakes were recorded in the area, ten seconds apart and just over two kilometres from the mine. The earthquake had a magnitude of 2.7 and was reportedly felt in the area. Just last year, the Cadia mine was evacuated after an earthquake with a magnitude of 4.3 was registered near the site. The site remained closed for several months leading to a 48 per cent drop in profits for mine's owner Newcrest. The Cadia Valley Mine is located 25 kilometres south of Orange in the state's central west. In a statement, the NSW Environmental Protection Agency said it was aware of the collapse and was inspecting the site. They also said they understood that the tailing had been contained.

(Another small dam failure.)

Pond water level low due to collapsed dam

March 10, 2018 by Samuel Shepherd on News, mdislander.com

BAR HARBOR, Maine — A stone dam at the outlet of Hamilton Pond, originally built to reserve water in the pond for use by the fire department, has collapsed, causing a lower-than-usual water level. The dam, placed where the pond meets Stony Brook in the southwest corner of the pond, is on a parcel of land owned by the MDI Biological Laboratory. The lab said that it is aware of the dam's collapse. "The MDI Biological Laboratory is concerned about the reduced water level in Hamilton Pond due to the partial collapse of the dam, and is also aware of the concern among members of the community," lab President Kevin Strange said in an Friday email. "We are

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working to identify a solution." A 1998 book published by the lab, "A Laboratory by the Sea," includes a much older history of the dam by J. Wendall Burger. It tells the story of William Hamilton, a wealthy dairy farmer who owned land in Salisbury Cove and Hulls Cove. Hamilton owned the property around Hamilton Pond. The pond had been known variously as "Beaver Pond" and "Hamilton Lake" before the construction of the dam. "At that time there was a small brook [now called Stony Brook], which ran behind the houses on the old highway," Burger wrote. "Beavers were [sic] common on the dam on the Island. As is their wont, the' built a dam." "This gave Hamilton a good notion, erect a permanent dam for a pond, which would serve the useful purpose of providing the Bar Harbor Fire Department with a source of water," Burger continued. "This utilization later proved wise."

Island fire departments regularly use "dry hydrants" connected to Hamilton Pond water in fighting fires, most recently in Salisbury Cove in December. Burger's writing covers the period from 1898-1951, but does not provide the year of the dam's construction. The timeline suggests the dam was built between 1921 and 1951, well before the MDI Biological Laboratory acquired the property in 1968. "Easements were secured from all property owners, and Hamilton erected a dam at a place where the brook disappears down a jungle of rocks and thicket into an extensive marsh," Burger wrote. "With the collapse of the Hamilton empire, maintenance of the dam fell to MDIBL and the Town."
The pond, near the intersection of Route 3 and Norway Drive, is used for skating by residents and visitors alike.

The dam between Stony Brook and Hamilton Pond recently collapsed. Residents who use the pond for recreation fear the collapse could be detrimental to wildlife if not addressed. MDI Biological Lab owns the property around the dam and said they are "concerned about the reduced water level." IMAGE COURTESY OF JOHN DARGIS

Jim Elk, who lives nearby, said he tried to drill holes for ice fishing this winter, but the pond was only a two-and-a-half feet deep. He said that the collapse of the dam was sudden. "The pond is four feet lower," Elk said. "[The dam] has been eroded away. Something catastrophic must have happened over the fall or this winter." Elk said that he hopes the issue is addressed before the low water level begins to affect wildlife. Burger's writing says that the pond's "main animal occupants seem to be catfish and large voracious leeches."
Resident John Dargis, who frequently walks his dogs along Stony Brook, said that he has noticed the dam falling apart for the last decade. "It must've had something to do with the heavy rain we had," Dargis said. "It seemed to wash out."

(I want my dam.)

Dam Advocates "Pound the Table" at the CA Water Commission

March 13, 2018, by Doug Obegi, nrdc.org

In recent weeks, there have been howls of protest aimed at the California Water Commission from the proponents of big new dams like Temperance Flat and Sites Reservoir, because the Commission rigorously reviewed the applications for Prop 1 funding to ensure that they really are eligible for public funds and that public funds are only spent on public benefits. Staff from the Water Commission, the California Department of Fish and Wildlife, and the State Water Resources Control Board reviewed all of the applications and determined that these two storage projects provided no, or very low, public benefits that would be eligible for funding. That triggered a political backlash from the backers of big dams looking for a taxpayer handout. Some commentators even went so far to claim there was a "deal" that Proposition 1 would fund Temperance Flat and Sites Reservoir.
In fact, the bond does quite the opposite, as the leaders of the State Senate and Assembly wrote to the Commission recently:

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1. Proposition 1 did not fund any specific storage projects, instead requiring surface and groundwater storage projects to compete for funding;
2. Proposition 1 required that farms and cities pay for the water supply benefits from new storage, and that monies from the bond could only be spent on specific public benefits including ecosystem improvements and water quality improvements; and
3. Proposition 1 required that any storage projects result in net ecosystem improvements in the Bay-Delta watershed to be eligible for funding for Proposition 1.

At least as these storage projects were proposed to the Water Commission, neither Temperance Flat nor Sites Reservoir is eligible for funding from Proposition 1 because neither project provides net ecosystem benefits (meaning that the ecological benefits of the project outweigh the adverse ecological impacts). Proposition 1 also prohibited using these bond funds for an expansion of Shasta Dam, since that project would violate State law, destroy Native American sacred sites, and harm native fish and wildlife.

Last month, NRDC (Natural Resources Defense Council) and our colleagues sent two letters to the California Water Commission, summarizing and attaching prior written comments of state and federal agencies regarding Temperance Flat and Sites Reservoir. In these letters, the California Department of Fish and Wildlife, State Water Resources Control Board, and other agencies identified significant adverse impacts on fish and wildlife from each of these projects. These letters demonstrate that these two dams will not result in net ecosystem improvements, providing additional evidence supporting staff's initial determinations, and they further demonstrate that the Commission should determine that Temperance Flat and Sites Reservoir are not eligible for funding from Proposition 1. These letters also show that state and federal agencies raised these concerns with the project proponents over the past several years, yet these two projects failed to modify their applications to address the adverse impacts to fish and wildlife that the agencies had documented years ago. There's no reason why these applicants should be surprised by the Commission's initial determinations, and no reason why the Commission should determine these projects are eligible for funding. For instance, in 2016 the California Department of Fish and Wildlife recommended specific Sacramento River bypass flows and minimum Delta outflows in order for Sites Reservoir to "contribute to ecosystem benefits" and avoid causing significant adverse impacts to salmon. However, the Sites JPA refused to even consider these recommendations in their draft environmental impact report or their application to the Commission.

The reality is that California has added substantial water storage in recent decades, but the form of that storage has changed. NRDC doesn't oppose all surface storage projects, but we oppose storage projects that worsen already dire conditions for fish and wildlife in the Bay-Delta watershed. Instead, California needs to continue to invest in 21st century water solutions like groundwater storage and water recycling that reduce reliance on the Delta. Surface and groundwater storage projects south of the Delta provide a promising approach to enable greater diversions in very wet years and lower diversions in drier years; in both 2011 and 2017, the lack of storage capacity south of the Delta meant that hundreds of thousands of acre feet of water was lost (this problem would remain even if WaterFix was constructed, since it's the lack of storage, not conveyance, that generally limits diversions in wet years). In an October 2014 blog, Annie Notthoff of NRDC wrote that, "A vote for Prop 1 is not a vote for big dams, but it is a vote for major investments in regional water supplies and watershed restoration to help sustain the economy and environment." While some claim that Proposition 1 was a secret deal to fund Temperance Flat and other environmentally harmful storage projects (perhaps written in invisible ink that only they can see?), the reality is that Temperance Flat and Sites Reservoir fail to provide public benefits, and thus aren't eligible for public dollars from Proposition 1. While we expect that the backers of big dams will continue to bring political pressure to bear on the Commission, they can't change the law (only the voters can do so), nor can they change the fact that these projects fail to provide net ecosystem improvements. The political pressure being brought to bear on the California Water Commission reminds me of an old trial lawyer adage:

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"When the facts are on your side, pound the facts. When the law is on your side, pound the law. When neither the facts nor the law is on your side, pound the table."

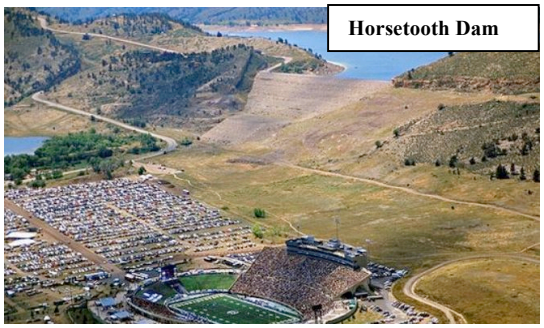
While backers of Sites and Temperance Flat continue to pound the table, the Commission is bound by the facts and the law. And NRDC will be watching to make sure the Commission continues to do so.

Hydro:

(Crazy idea.)

Opinion: Fort Collins' Aaron Million touts Hughes Stadium's hydropower potential

By Kevin Duggan, coloradoan.com, Feb. 23, 2018


Horsetooth Dam

Opinion: Aaron P. Million is a man with a lot of big ideas, including a way to repurpose Hughes Stadium. The Fort Collins, CO entrepreneur has proposed converting the venerable stadium into a pump storage hydroelectric plant. Water would come down to the plant from Horsetooth Reservoir, which is directly to the west and 222 feet above the stadium, and run through a turbine to generate electricity. It would operate during times of high demand for energy when the price is high. The power would flow to an electrical substation at Overland Trail and Drake Road for distribution to the grid. Water would be pumped back to Horsetooth at night, when electrical rates are low, and the process would start all over. It would be a closed system with little impact on neighbors because pipelines and pumps would be underground. The plant would generate revenue for Colorado State University as well as electricity, Million said, and open up all sorts of opportunities for developing the acreage around the stadium. Million said it could be turned into something awesome, like an Olympic training facility. CSU could pitch international businessman Elon Musk of SpaceX, Tesla and Solar City fame on participating in and branding the facility.

But here's the catch. CSU's board of governors has already approved the demolition of Hughes to make way for some type of redevelopment. Prep work for demolition has already begun, said Mike Hooker, director of public affairs and communications at CSU. Dismantling of structures within the stadium and staging of large equipment for the demolition is expected to begin in mid-March. Large-scale demolition work will start in April. Million, for his part, persists. Generating and tapping into hydroelectric power would help the university meet its pledge to be powered by 100 percent renewable energy by 2030, Million said. "And from the standpoint of the community, this could be the highest and best use of that asset," he said.

CSU has multiyear plans in place to achieve its sustainability and renewable goals, Hooker stated in an email to the Coloradoan. "Our campus engineering and energy experts are familiar with this concept and they say there are enough questions about whether this proposal would work, and how renewable it would be, that it is not part of our plans," Hooker stated. The project could be physically done, said Neil Grigg, professor of civil and environmental engineering at CSU. But whether it would be feasible economically or politically is another matter. And there's the question of whether it would be the best use for the site. A lot of additional research would be needed to answer questions about the project, including whether Hughes is structurally sound enough to serve as a massive water tank, he said.

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As CSU weighs its options for the Hughes site, Million has plenty to keep himself busy. He's a doctoral degree candidate in natural resource policy at CSU. He also has a team working on another big idea: Piping water from Flaming Gorge Reservoir in Wyoming to the Front Range. That controversial project, which has been in the works off and on for several years, also would generate hydroelectric power. The timing doesn't look good for Million, who said he wishes CSU would slow down a bit to give his proposal serious consideration. "I think the university ought to just hold and do some further due diligence," he said. "Because if it's feasible and they lose this opportunity, it would be a shame."

(Hydro, the comeback kid.)

Forgotten hydropower plots a comeback in Trump era

By Josh Siegel | Mar 6, 2018, washingtonexaminer.com

Advocates of hydropower, America's largest and oldest, but often forgotten, renewable energy source, are carving a major place for themselves in the Trump administration, eyeing the upcoming debate over infrastructure as a way to push for changes that would speed the approvals of water-powered projects. "Too often in the infrastructure debate, we focus on civic works, which is important, but we want to highlight where there is this opportunity on the power generation side as well, and that starts with hydropower," Jeff Leahey, deputy executive director of the National Hydropower Association, told the Washington Examiner. "Any plan that doesn't address modernizing the licensing process for hydropower development misses an opportunity to create clean energy jobs and transform our nation's energy infrastructure." As concerns over climate change and falling costs have advanced the cause of solar and wind energy, development of hydropower, which also contributes zero carbon emissions, had stalled until recently.

Hydropower, electricity generated using the energy of moving water, usually from dams, represents about 6 to 7 percent of all U.S. electricity production. But hydropower generation fell for four consecutive years before increasing in 2016, according to the Department of Energy, and less capacity has been added each decade since the 1970s, even as America's dams age. With little interest in building big new dams, hydro supporters have prioritized existing plants owned by the federal government. Advocates say a lengthy permitting process has crippled progress. Only 3 percent — about 2,200 — of the nation's 80,000 dams are equipped to produce electricity, an expensive endeavor involving installing turbines and other equipment. Nearly half of America's hydropower capacity is owned by the federal government through the U.S. Army Corps of Engineers, the Bureau of Reclamation, and the Tennessee Valley Authority. More than 400 nonfederal projects, meanwhile, are due for relicensing by 2030. About half of U.S. hydropower plants are more than 50 years old, although they can live 100 years or more with the refurbishment of turbines and other equipment.

Yet, the National Hydropower Association says industry members are closing facilities rather than spending time and money renewing their permits, particularly small hydropower projects. The group says it takes about 10 years to license a hydropower project, a process involving numerous participants, including the Federal Energy Regulatory Commission, federal and state agencies, nongovernmental organizations, and tribal entities. "Without addressing these regulatory challenges, hydropower will continue to struggle to compete versus other energy options, particularly wind, solar, and natural gas, that can be permitted in half the time," said John Devine, a past president of National Hydropower Association, in testimony Feb. 27 before a House Energy and Commerce subcommittee. The wind industry's main trade group last year said it exceeded the generating capacity of hydropower for the first time, more than tripling its production since 2008. And solar is coming on fast as the fastest-growing power generating resource. For wind and solar, the average permitting time is two to four years, the Department of Energy says.

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President Trump's infrastructure proposal focuses heavily on streamlining the permitting process. It does not contain a specific reference to hydropower, but supporters say speeding approvals for energy projects naturally fits Trump's energy dominance agenda. Desmarie Waterhouse, head of federal affairs for the American Public Power Association, wants to see a number of hydropower licensing reform bills that were proposed in the last Congress rolled into a comprehensive infrastructure bill. "Our members like hydropower," said Waterhouse, whose association represents 2,000 public utilities that provide energy to 49 million people across 49 states. "It's an important renewable energy source for our members. It just gets very difficult. It's so much money to get through this process, and drags out for so long. They are just so frustrated with the process." Hydropower enjoys bipartisan backing, with prominent boosters in the Northwest, where most hydro generation exists, headlined by Sens. Lisa Murkowski of Alaska and Maria Cantwell of Washington, the top Republican and Democrat on the Senate Energy and Natural Resources Committee, respectively. Yet, environmentalists have rallied against hydropower in recent years, arguing that damming rivers may destroy or disrupt wildlife and other natural resources. In addition to environmental concerns, critics say dams strain the communities around them, with big plants potentially harming tourism and property values. And dams, opponents note, have faced cuts to power production in recent years, especially in California, which suffered a major drought. If there is less water stored in a dam's reservoir, there is less capacity to produce power.

Hydropower suffered a major defeat recently when regulators blocked the Northern Pass power line, which would import cheap hydroelectric power from Quebec to New England, a region that suffers from some of the most expensive energy prices in the country. New Hampshire's Site Evaluation Committee rejected the project in February. Eversource Energy, which proposed the 192-mile transmission line and claims it can power as many as 1.1 million homes, has said it will appeal the ruling. Leaders in Massachusetts hope to rely on Northern Pass, and hydropower more broadly, to meet its aggressive clean energy goals. In 2016, Gov. Charlie Baker, a Republican, signed bipartisan energy legislation authorizing the largest procurement of clean energy generation in Massachusetts' history. Matthew Beaton, the state's energy and environmental affairs secretary, has called hydropower development "critical" in achieving its target.

"The Baker administration is committed to diversifying the commonwealth's energy portfolio through a balanced approach, including the expansion of clean energy, and believes large-scale renewable resources like hydropower can play a critical role in our energy mix by delivering reliable, clean baseload generation to meet Massachusetts' energy demands and greenhouse gas reduction targets," Beaton told the Washington Examiner. But hydropower supporters say Massachusetts is unique in valuing hydropower as a renewable energy source. Leahey of the National Hydropower Association says states with renewable portfolio standards, about half the nation, often don't count hydropower as fulfilling clean energy goals, and rely on wind and solar instead. In addition, Leahey and others say, Congress has historically not provided hydropower the same production tax breaks that help wind and solar.

Hydropower is cheap to produce, mainly because once a dam has been built and the equipment installed, the water is free. However, it is more expensive and takes longer to develop. "When you factor the site preparation cost, restoration, design, construction, and environmental reviews, and compare that to the production cost through the life of the project, it's difficult for hydropower to get on par with wind, solar, and natural gas," said Brennan Smith, water power program manager at the Oak Ridge National Laboratory, a research outfit sponsored by the Energy Department. Angling to compete in the clean energy mix, supporters of hydropower emphasize its unique attributes. Unlike other renewables, hydropower is able to quickly ramp up as demand increases to keep the grid reliable. In this way, supporters consider it a "baseload" resource that reduces the use of high-emissions coal and natural gas, and eases the integration of variable wind and solar. Hydropower also has energy storage capabilities. The 42 hydropower-pumped storage plants in the U.S. make up 97 percent of the country's energy storage, a fast-

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moving innovation meant to supplement the power grid as it relies more on intermittent renewables. Pumped storage projects can hold in reserve excess water generated during times of low electricity and use the energy later when demand rises. “I would encourage anyone who is focused on where generation will come from to allow for all of these technologies to be available and assess where hydropower has a role to play,” Smith said. “As the power system evolves and we get solar and wind coming online, you want flexibility going forward in reconfiguring the grid, and hydro has a big role there.”

(Will there be enough water?)

Questions about dams posed by West’s shrinking snowpack

March 8, 2018, by Allen Best, mountaintownnews.net

Lake Mead has become a benchmark for worsening water woes of the West. It was something else in 1936, when completion of Hoover Dam was a happy story of triumph, a display of ingenuity and determination for a nation still mired in the Great Depression. At last, the unpredictable Colorado River was tamed! It’s flood waters were finally harnessed to provide electricity but also water for expanding farms and especially for growing cities, Los Angeles first but in time others, too.

It was a time of dam-building in the West, creating reservoirs large and small. Later on the Colorado River, in Glen Canyon, came another dam, creating a water bucket, Powell, almost as big as Mead. To the north, on the Columbia there was Grand Coulee, and in the foothills of the Sierra Nevada and the Colorado Rockies still other dams and reservoirs, canals, tunnels and pipelines, collectively the hydraulic infrastructure that was the ultimate expression of Manifest Destiny. The dam-building did not subside until the 1970s when, to the dismay of Westerners by then accustomed to a seemingly inexhaustible federal budget for ever more hydraulic manipulation, President Jimmy Carter’s approved what was commonly call a “hit list” of unjustifiable new dams. By then, virtually every significant river in the West had been plugged or otherwise tapped in ways that eliminated any naturalness to the flows. But the hum an-built infrastructure was premised on the mountain snowpack itself, the major source of water in the West, melting in a somewhat predictable sequence during spring and summer.

Now this vision is being challenged by warming temperatures and changed hydrology. A new study finds declines at more than 90 percent of snow monitoring sites with long records across the western United States. A third of those declines are significant. The declines, they say, have occurred across all months, states and climates. However, the largest declines have occurred in spring, in the Pacific states, and in places with mild winter climates. Lake Mead is cited in the report as a reference point. The average April 1 snow-water equivalent since the mid-20th century has declined roughly 15 to 30 percent. Authors of the study say this decline is comparable in the capacity of Lake Mead, the largest man-made reservoir in the West.
“It is a bigger decline than we had expected,” said Philip Mote, lead author of the study and director of the Oregon Climate Change Research Institute at Oregon State University. “In many lower-elevation sites, what used to fall as snow is now rain. Upper elevations have not been affected nearly as much, but most states don’t have that much area at 7,000-plus feet.”
Mote and his colleagues attribute the snowpack decline to warmer temperatures, not a lack of precipitation. But the consequences are still significant. Earlier spring-like weather means less precipitation will linger in the mountain in the form of snow. That, in turn, results in lower volumes of water in rivers and declined reservoir levels during late summer and early fall. “The solution isn’t in infrastructure. New reservoirs could not be built fast enough to offset the loss of snow storage —and we don’t have a lot of capacity left for that kind of storage,” says Mote in a press release from Oregon State. “It comes down to managing what we have in the best possible ways.”

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The study, published last week in NPJ Climate and Atmospheric Science, builds on work that Mote and others reported in 2005 showing that the warming climate was influencing the snowpack and runoff. Other studies have also painted a picture of a warming climate causing, at least in places, a drying effect. In February 2017, two researchers reported that precipitation in the seven-state Colorado River Basin during 2000-2004 averaged 6.1 percent less than in the 20th century, but flows had declined 19.3 percent. The study authors, Brad Udall of Colorado State University and Jonathan Overpeck, now of the University of Michigan, pointed to rising temperatures in the 21st century of 1.6 degrees Fahrenheit as a substantial cause of the reduced flows. They predicted further declining water flows in the Colorado River Basin of 35 percent or more during this century. Udall, a senior climate and water research scientists at CSU's Colorado Water Institute, says the new study dramatically reinforces what was already broadly understanding. "I don't think this fundamentally changes anything. Anybody who has been paying attention already knows this. But it's always good to get prodded with a sharp stick in the side to make sure you're not falling asleep," he said.

Similar to other studies, the new report finds the snowpack in coastal states—California, Oregon and Washington—is most vulnerable to rising temperatures. They receive more precipitation because of the influence of the Pacific Ocean. Also, more of the snow falls at temperatures near freezing. Because the Cascade Mountains, which transect the region, are not as steep as the Rocky Mountains, they have more area that is affected by changes in temperatures "When you raise the snow level 300 feet, it covers a much broader swath than it would in the inland states," Mote said. Some sites did have increased snowpack. California had the most, but lingering drought during the past decade erased most of the gains. Snowpack declines still dominated. Most other Western states had only one or two sites with increased snowpack. Mote sees the warming temperatures requiring a fundamental change in water delivery thinking. "The amount of the water in the snowpack of the Western United States is roughly equivalent to all of the stored water in the largest reservoirs of those states," he said. "We've pretty much spent a century building up those water supplies at the same time the natural supply of snowpack is dwindling. "On smaller reservoirs, the water supply can be replenished after one bad year. But a reservoir like Lake Mead takes four years of normal flows to fill. It still hasn't recovered from the drought of the early 2000s."

Some have even called for the dismantling of some of this water infrastructure, particularly Glen Canyon. The thinking is that both big buckets on the Colorado River will no longer be needed because of the warming, drying climate. Mead can hold 27 million acre-feet of water and Powell 24 million acre-feet, or more than four times the annual flows of the Colorado River. However, the two reservoirs, brimming with water at the turn of the century, have barely been half for the last 15 years.

The new study makes no mention of this argument but does warn that water managers in the West face an "immense challenge" posed by the magnitude of changes caused by continued warming relative to the built storage. "Patterns of water use that became established (even entrenched) during the climate of the past cannot be changed without intense political effort owing to large cultural, economic, and infrastructure investments in the status quo ante" the report concludes. '"Solutions cannot consist solely of future infrastructure: new reservoirs cannot be built fast enough to offset the loss of snow storage, so solutions will have to lie primarily in the linked arenas of water policy (including reservoir operating policies) and demand management." Udall makes the same point. He sees new reservoirs offering little help. "It's like opening up a new bank account when your salary goes down and thinking it will help," he says. "I just don't know where the new infrastructure can help much when you're seeing declining snowpack."

(Pumped storage has the same woes as conventional hydro.)

Questions, concerns arise over proposed hydroelectric plant

Initial reservoir fill would be billions of gallons

By Jason Wheeler, March 11, 2018, dcourier.com

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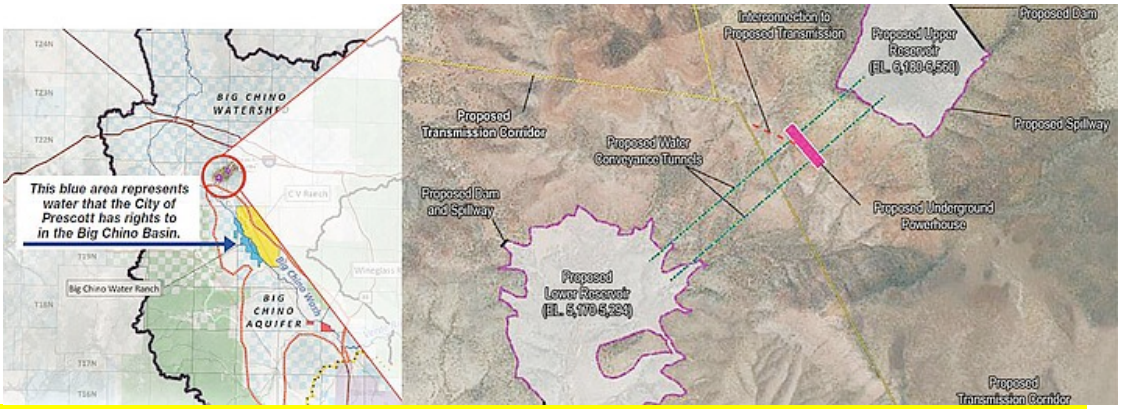

Numerous questions and concerns were raised at a Citizens Water Advocacy Group (CWAG) meeting Saturday, March 10, one of which was from Garin Reay, who said he lives no more than 20 miles from the proposed Big Chino Pumped Storage Project, Arizona. Reay said he wanted to know whether or not the electricity the proposed hydroelectric plant would be used in other states. With him that close to the proposed site and his well 200 feet down getting water from the area, he is personally and practically involved in the project, he said. "I may be convinced if the power was going to stay in Arizona," Reay said. "If it's going to give cheaper power to California and Nevada and they're going to take my groundwater from it, count me out." The electricity could potentially stay in Arizona, but it depends on who the partners are for the project and who decides to buy the electricity, said Project Engineer and Director Brian Studenka of ITC Grid Development. It's a sizeable enough project that it could potentially go into other states and conversations are currently being held in terms of commercial arrangements and determining who potential partners may be, Studenka said.

A previous story in The Daily Courier noted that in February, ITC Holdings, a subsidiary of Fortis Company, appeared in Prescott at a meeting regarding the proposed project. If completed, it would generate and store 20,000 megawatts per hour of electricity for 10 hours a day during periods of low demand and store energy for pumping 12 to 14 hours per day during peak demand. Another story by The Daily Courier reported that in February, the Prescott City Council unanimously approved a resolution allowing the city to become involved in the Federal Energy Regulatory Commission's hearing on ITC Holdings' application over the city's land and water rights in the Big Chino Basin. The resolution notes the town has an interest in making sure the project's development does not negatively impact the city's holdings.

Initial fill of the reservoir would take about 28,000 acre-feet of water from the Big Chino aquifer. That comes out to a little more than 9 billion gallons of water. Further, engineers anticipate loss of about 1,200 acre-feet of water per year from evaporation and leakage. At Saturday's meeting, Studenka said the project's estimated overall efficiency would be about 82 percent with two out of 10 generated electrons being used to operate the facility to pump water. It's a rough number ITC holdings is comfortable with giving and the details would depend on the final design, he said. Mike Mladejovsky, who owns property in Paulden suggested ITC holdings start with an already existing reservoir such as Lake Mead or Lake Powell and pumping that uphill instead of bringing groundwater to the surface which results in losing a lot of it to evaporation. "You don't increase the surface area of the evaporative loss and you don't have the issues with using the very valuable groundwater for this project," Mladejovsky said. The reason they don't do that is because it's very challenging to use existing reservoirs for a project such as the Big Chino Pumped Storage Project, Studenka said. A similar project hasn't been built to this scale in 20 to 30 years, he said. There are quite a few existing pumped storage facilities in the United States though, Studenka said.

When asked about the plan to offset any damage to the Verde River during the initial fill, Studenka said they were not ready to give what the plan to offset the fill is. "It's not going to be

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one magic bullet to figure this out, it's going to be a multiple approach to try to offset that fill and that's our intent," he said. "That's our goal with this." Anita Goss, former president of the Verde River Citizens Alliance, said she noticed there wasn't anything in the project's areas of study about the Verde River. Doing so would probably add in millions to the study area and as such, her recommendation would be dropping the project or looking at other options for having energy generated from the area, Goss said. "The Verde River is one of the few rivers that we have and we will do everything to protect it. There is not a possibility that you can take 28,000 acre-feet from the ground water aquifer and not impact the Verde River. You will not have that as an option," she said. "There are lots of communities, the Big Chino may look like it's way out away from everybody but … it is the beginning of the Verde River and if you take 28,000 acre-feet for fill, forget it. You're looking at an Environmental Impact Statement, you're looking at years and years and believe me, all of the communities will protest because you're taking away their livelihood, their lifeblood from the enjoyment of that river from all of the other benefits, all of the irrigators, everything else." For more information about ITC, visit www.itc-holdings.com. For more information about the Big Chino Pumped Storage project, visit www.bigchinovalleypumpedstorage.com or email bcvstorageproject@itctransco.com.

(Yeah!)

Use more renewable energy

March 13, 2018, kentucky.com

Kentucky has traditionally enjoyed cheap electricity. Power once came from coal, but that coal is gone, and now our utility bills are going through the roof. We have no choice but to make new power sources. Solar, wind and hydroelectricity could make significant contributions to Lexington, bringing rates down and keeping money in the pockets of the people. There is no single solution to the problem of electricity generation; what's needed is a variety of micro-solutions. The solar project on I-64 is a good start, but more is needed. We should capture hydroelectric energy from Town Branch and use it to power downtown. We should capture hydroelectric energy from Lock 3 on the Kentucky River and power our water system. We should partner with the University of Kentucky to implement these and other innovative power systems. As large corporations move into on-site electricity production, removing their biggest customers from the power system, the utility corporations will look to us to shore up their profits. Our rates are on a one-way trip to the sky, and if we don't get our utility company under control or supplement it with new sources, we're in trouble. Lexington will thrive if we control our electricity. *GEOFF SEBESTA, LEXINGTON, KY*

(And, that's the way it's going to be.)

D.C. Circuit Defers to FERC's Qualitative Approach for Establishing Term for Hydroelectric Project Licenses

By Meghan Mandel & Jasmine Hites, March 13, 2018, troutmansandersenergyreport.com

On March 6, 2018, the U.S. Court of Appeals for the District of Columbia Circuit ("D.C. Circuit") denied Duke Energy Carolinas, LLC's ("Duke Energy") petition for review of FERC's grant of a forty-year license for the Catawba-Wateree Project ("Project"). FERC had found that, despite Duke Energy's requested fifty-year term for the license renewal, the measures required by FERC in issuing the license were only "moderate," and thus warranted the forty-year term. Duke Energy argued that FERC acted arbitrarily and capriciously by not granting the fifty-year license. The D.C. Circuit deferred to FERC's analysis in granting a forty-year license.

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Duke Energy's original license had been for a fifty-year term. Prior to the expiration of that license, Duke Energy filed an application for a new license with another fifty-year term. During the application process, Duke Energy entered into a relicensing agreement with seventy entities, which required Duke Energy to satisfy certain measures and conditions to relicense the Project. The Commission determined, upon staff recommendations, that the new license required a "moderate" amount of new construction and new environmental mitigation and improvement measures. Under the Commission's then-applicable standard analysis for determining the length of new license terms for projects at non-federal dams, the Commission would grant a licensee a fifty-year license term only if the new license required "extensive" measures. Here, the Commission found that because the new license would not require substantial new facilities, significant capacity or compliance with stringent environmental measures (i.e., only moderate measures were involved), a forty-year license term, instead of a fifty-year term, was warranted. Duke Energy petitioned FERC for rehearing of its license application. Duke Energy argued that FERC failed to address all of the license measures and their costs, totaling $111 million in implementing re-licensing measures, in FERC's determination of new license terms. Duke Energy provided FERC precedent indicating that the Commission previously considered project costs when it granted other parties a fifty-year license. As a result, Duke Energy claimed that the Project was similarly-situated and therefore warranted similar treatment. The Commission denied rehearing, and Duke Energy sought an appeal in the D.C. Circuit. On appeal, Duke Energy contended that FERC's grant of a forty-year license, rather than a fifty-year license in light of precedent, was arbitrary and capricious.

The D.C. Circuit denied Duke Energy's petition for review and instead deferred to the Commission's "substantive agency expertise" in re-licensing hydroelectric projects. The D.C. Circuit accepted FERC's rationale that while the Commission has used cost as a part of its re-licensing analysis, FERC's precedent does not treat cost as dispositive. The D.C. Circuit agreed with the Commission that hydroelectric project licensing is fact intensive and that the Commission's analysis of "moderate" versus "extensive" measures is the type of resolution that warrants agency deference by the court. Finally, the D.C. Circuit responded to Duke Energy's argument that FERC failed to explain why it had not relied on precedent by concluding that reliance on long-standing policies does not require an agency's explanation. As a result, the D.C. Circuit denied Duke Energy's petition for review. *A copy of the D.C. Circuit's decision is available here*:
https://www.cadc.uscourts.gov/internet/opinions.nsf/06A392B6FC5BF8EB852582480055F43A/$file/16-1296.pdf

Water:

(Gotta get rid of that extra water.)

Dam floodgates to open to drain excess Lake Ontario water

By The Associated Press, March 12, 2018, northcountrypublicradio.org

MASSENA, N.Y. (AP) Floodgates are being opened at a New York Power Authority dam in Massena to spill excess water from Lake Ontario into the Saint Lawrence River. The gates at are scheduled to open at 7 a.m. Monday. The power authority says there will be rapidly changing river flows downstream. Outflows from Lake Ontario are established

Long Sault Dam

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weekly by the International Lake Ontario and St. Lawrence River Board. The decision to open the floodgates Monday is in response to higher than normal water levels and ice conditions on Lake Ontario.
The spilling may continue through March 23. Heavy spring rains last year filled Lake Ontario to a record high level, resulting in extensive shoreline flooding. Officials said opening dam floodgates would have worsened floods that were also occurring downstream.

Environment:

(What getting rid of the Battle Creek dams are claimed to do.)

California salmon will have places to chill with dam removal

By ELLEN KNICKMEYER - 3/8/18, dailyjournal.net

SAN FRANCISCO, CA — A $100 million project removing dams and helping fish route around others is returning a badly endangered salmon to spring-fed waters in northernmost California, giving cold-loving native fish a life-saving place to chill as scientists say climate change, drought and human diversions warm the waters. State and federal officials, in a years-long project with dam-owner Pacific Gas & Electric Co., plan to release 200,000 young, endangered winter-run Chinook salmon over the next two months into the north fork of Battle Creek, where melted snow percolating through volcanic rock provides ideal habitat for native salmon and steelhead that thrive in cold mountain water. Dam-building for electrical generation and water storage from the 1930s blocked winter-run Chinook from upstream waterways, cutting their numbers from nearly a million to a few thousand barely getting by in warm downstream stretches of the Sacramento River, the state Department of Fish and Wildlife says. The National Oceanic and Atmospheric Administration ranks winter-run Chinook as one of eight marine species most at risk of extinction.

Because of Battle Creek's spring-fed cold water, and the difficulty of keeping the Sacramento River cool enough for the winter-run Chinook, state and federal agencies made a priority of making Battle Creek accessible to winter-run Chinook again. "Battle Creek has long been recognized as an ideal resource for cold water from snow melt," said Doug Killam, a senior environmental scientist with the state wildlife agency. "It's kind of a jewel of the system."
The ongoing restoration project has removed one dam blocking access to the fish and will remove four more dams. A similar agreement, now awaiting approval or denial by the Federal Energy Regulatory Commission, would remove a series of dams blocking access to salmon farther north, in the Klamath River watershed.

Other parts of this project included building better fish ladders and fish screens to give migrating salmon an easier time navigating around remaining obstacles. It's crucial to the survival of winter-run salmon to restore populations beyond the one hanging on in the Sacramento River, where a disaster like a chemical spill or another drought could wipe out the species, wildlife officials said. In 2014 and 2015, nearly entire generations of the winter-run Chinook died in the too-warm Sacramento, as humans competed with the fish for water releases from behind Shasta Dam during a five-year drought. Trying to keep cold-loving salmon by eeking out cold water from behind dams is becoming more complicated still as the climate changes, said Howard Brown of NOAA fisheries. Man-made climate change is reducing the snow runoff that Californians — both animal and human — historically have depended upon for much of their water supply, scientists say. Easing the winter-run Chinook's dependence on a single waterway, the Sacramento, is a good start, a fishing industry trade group said in a statement. "Salmon fishermen used to have good fishing right outside the Golden Gate in February years ago before winter run salmon were

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decimated," said John McManus, head of the Golden Gate Salmon Association. "Maybe someday we'll see this again."

(The Corps is getting heat.)

Environmental groups sue U.S. Army Corps over Willamette dams, say salmon and steelhead at risk of extinction

By Zach Urness, Statesman Journal, March 13, 2018, statesmanjournal.com

The project is meant to improve conditions for endangered fish. MOLLY J. SMITH / Statesman Journal

Three environmental groups followed through on a threat to sue the federal government Tuesday over the decline in wild salmon and steelhead in the Upper Willamette watershed. The groups say the U.S. Army Corps of Engineers and National Marine Fisheries Service have failed to take required steps to improve conditions for the threatened fish.

The lawsuit targets the Willamette watershed's system of dams and its negative impact on fish habitat.

"Federal dam operators in the Willamette River basin must act now to protect our native fish," said Mark Sherwood, executive director of the Native Fish Society.

The lawsuit comes at an important moment, particularly for winter steelhead, which state biologists fear could go extinct in rivers including the Molalla, Santiam, McKenzie and Middle Fork. Winter steelhead returned about 16,000 fish each year to the Upper Willamette Basin in the 1970s, according to numbers at Willamette Falls Fish Count. That number dropped to 800 fish in 2017 and 850 this year. The lawsuit is derived from a legal agreement, called the Biological Opinion, issued in 2008, that essentially requires the Corps to modify dams to improve fish habitat. The three environmental groups — WildEarth Guardians, Native Fish Society and Northwest Environmental Defense Center — say the Corps has failed in that undertaking.

"Nearly 10 years ago, NMFS determined that the Corps' operation of the Willamette dams was likely to jeopardize Chinook and steelhead unless significant changes were made," said Mark Riskedahl, executive director of the Northwest Environmental Defense Center. "NMFS told the Corps that fish passage was a high priority, yet the Corps has dragged its feet in meeting this requirement and others set by NMFS." Corps officials rejected that assertion and pointed to $194 million spent to improve habitat in the Upper Willamette. In January, the Corps rolled out a massive $100 to $250 million plan at Detroit Dam intended to improve conditions for fish in the Santiam River. Corps spokesman Tom Conning said last November that the agency is committed to actions beneficial to fish, but they have to balance it with what's "technically feasible and cost-effective." "While (there is) focus on the needs of the fish, we continue to balance flood risk management with hydropower generation, irrigation, water quality, fish and wildlife, and recreation," he said. More: Detroit Lake project could foul Salem drinking water, lead to water shortages, city says *Zach Urness has been an outdoors writer, photographer and videographer in Oregon for 10 years. He is the author of the book "Hiking Southern Oregon" and can be reached at zurness@StatesmanJournal.com*.

Other Stuff:

(Happy days here!)

Want a Smile on Your Face? Live in This US City

Fremont, Calif., has been dubbed America's happiest city

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu

By Jenn Gidman, Newser Staff, Mar 12, 2018, newser.com

(NEWSER) – To live your best, happiest life, pack up and head to either California … or the Dakotas. That's WalletHub's take, based on the cities it found are happiest, with the Golden State claiming four cities in its top 10 and North and South Dakota taking a total of three. The site looked at more than 180 cities across three main metrics—emotional and physical well-being, jobs and income, and community and environment. The top 10 cities, along with their happiness ratings (100 indicating "maximum happiness"):

1. Fremont, Calif.; 79.9 (No. 1 in the "Community and Environment")
2. Bismarck, ND; 78.4 (No. 1 in the "Income and Employment")
3. San Jose, Calif.; 76.4 (No. 1 in the "Emotional and Physical Well-Being")
4. Pearl City, Hawaii; 75.2
5. Plano, Texas; 73.6
6. Fargo, ND; 73.5
7. Sioux Falls, SD; 72
8. Irvine, Calif.; 71.2
9. Huntington Beach, Calif.; 70.7
10. Grand Prairie, Texas; 70.5

See where your city falls on this list: https://wallethub.com/edu/happiest-places-to-live/32619/ (The happiest states in the nation: http://www.newser.com/story/248471/5-most-least-happy-us-states.html).

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