

4/24/2020



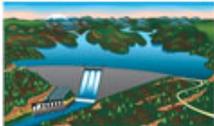
# Some Dam – Hydro News™ And Other Stuff



**Quote of Note:** *"I always voted at my party's call, and I never thought of thinking for myself at all."* - William Gilbert

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**"Good wine is a necessity of life." - Thomas Jefferson**  
**Ron's wine pick of the week: 2016 Alta Mora Italy (Other Regional Reds) "Etna Rosso"**  
**"No nation was ever drunk when wine was cheap." - Thomas Jefferson**



## Dams:

(Less water-more safe.)

### **San Diego to release water from Hodges Reservoir**

**923 million gallons of water will release from the reservoir over the next seven days.**

By City News Service, April 11, 2020, cbs8.com

SAN DIEGO, CA — Because of recent heavy rainfall, the city of San Diego will begin to release about 923 million gallons of water from Hodges Reservoir into San Dieguito River, which may eventually lead to the ocean, city officials said. The water will release began through valves in the dam at about 11 a.m. and will continue for about seven days or until the reservoir elevation is near 295 feet, spokesman Jose Ysea said.



For safety reasons, the California Division of Safety of Dams has determined that the water level at Hodges Reservoir should not exceed 295 feet, which is 20 feet below spillway elevation, Ysea said. This requires periodic water releases from Hodges

Reservoir. "People in the area of the San Dieguito River Park and those in other areas along the river should take precautions," Ysea said.

City officials will continue to monitor weather forecasts, rainfall and the water level at Hodges Reservoir to determine if additional water releases need to be planned for this year, Ysea said. Hodges Reservoir was created with the building of Hodges Dam on San Dieguito Creek in 1918. Operated and maintained by the city's Public Utilities Department, the reservoir currently serves the San Dieguito Water District and Santa Fe Irrigation District as well as the city. The city is finalizing plans for improvements to Hodges Dam, Ysea said. The state has determined it safe with the restricted water level.

(If the 10 pages of comments are an example, there's more work on the Lower Snake River.)

### **Lewiston officials see holes in Corps' study**

#### **Von Tersch: Draft study on Columbia drainage doesn't consider impact of dam breaching on towns like Lewiston**

By Joel Mills, of the Tribune, Apr 8, 2020, Imtribune.com

City of Lewiston officials are concerned that the Army Corps of Engineers failed to address the local impact of dam breaching in its monumental study of salmon and dams in the Columbia River drainage. The city is joining a growing chorus asking for the Corps to extend the public comment period past the Monday deadline on the Columbia River Systems Operation Review Draft



Environmental Impact Statement. And while removal of the four lower Snake River dams isn't the study's preferred alternative to help fish, Lewiston Community Development Department Director Laura Von Tersch said the document is lacking assessment and remediation of the impacts on Lewiston if the dams do go.

"Unfortunately, the Corps views many of these issues as localized and not of their concern, so they haven't identified the true impact and maybe the cost of these impacts," Von Tersch told members of the Lewiston City Council earlier this week. "To just sort of brush your hands and say, 'Well, these are minor impacts, or they're impacts that we don't have a responsibility to mitigate,' that just leaves us in an untenable position. So it's really not a question about whether the dams stay or go. It's about making sure that Lewiston survives the transition." For instance, the city has stormwater discharge points and intake points for the water treatment plant along the rivers that would have to be moved at great expense if the dams are removed, she said. Dam removal would also harm companies that use the rivers, like Clearwater Paper, with its multimillion-dollar impact on the region's economy. The draft study also omits potential impacts that were considered in previous studies, like changes in air quality, Von Tersch said. She reviewed those studies and discovered that the Corps documented that blowing dust from drier conditions could be a problem to land users and recreationists.

Older studies also considered that fish would get stranded and die in pools as slackwater recedes, stinking up the Lewiston-Clarkston Valley, she added. That point caught the attention of Mayor Pro Tem Kathy Schroeder, who hosts tours of cruise boat passengers at her historic Normal Hill home. She recalled smells generated by past drawdowns of the rivers. It's ugly. It's disgusting," Schroeder said. "And if that was a full-time thing here, we would not have any people coming here as visitors for a long time." But City Councillor John Bradbury saw the issue from a completely different point of view. The study recommends fine-tuning existing efforts to help salmon and steelhead by spilling water at the dams, but dismisses dam breaching as too costly. Bradbury said breaching is the only way to revive the economic vitality that tourism and sport fishing can bring to the region. He looked back on his 15 years living in Alaska, which attracted huge economic stimulation from its wild and scenic fisheries.

“Millions and millions and millions of dollars were spent from people traveling from all over the world to catch a salmon,” Bradbury said, asking his fellow councilors to imagine a Lewiston not walled off by levies from its two rivers. “You can’t imagine the hotels that would be filled, or restaurants that would be filled, the sporting goods stores. Imagine what it would be like for the guides.” He agreed with Von Tersch and other members of the council that the Corps should extend the Monday comment deadline, especially in light of the restrictions imposed to slow the spread of the coronavirus. Von Tersch spent several weeks analyzing the 8,000-page draft study and prepared 10 pages of comments to submit to the Corps today. Councilor John Pernsteiner asked her to include a request for support to help market the local fishing industry if dams are breached because it would take four or five years for fish to fully return.

Former Army Corps engineer Gregg Teasdale helped Von Tersch analyze the study. Von Tersch said she asked Teasdale why the Corps paid scant attention to the potential harm done to Lewiston from dam breaching, and he said it was simply because breaching isn’t the preferred alternative. But she said Lewiston should be preparing anyway. “I think it would be pretty risky of us to say, ‘Well, it’s not the preferred alternative, so we don’t need to be worried,’ ” she said. “I think we need to position ourselves so that if this does go forward that our concerns are addressed.”

(Some good comments.)

## Our comments on the Snake River environmental impact statement

By TODD MYERS | Apr 15, 2020, washingtonpolicy.org

Last Monday was the deadline for comment on the Environmental Impact Statement for the Columbia and Snake River dams. We submitted comments emphasizing the value of the four lower Snake River dams for electricity generation, the need to prioritize our spending and focus where they can yield the greatest environmental benefit, and our research on the fact that the impact of the dams on salmon is declining.



Our complete comments are here.

Please accept our comments regarding the Draft EIS regarding the four lower Snake River dams.



1) **Replacing the four lower Snake River dams with wind and solar would be expensive and would increase greenhouse gas emissions.** Every analysis indicates that replacing the electricity lost by destroying the dams would be extremely expensive. The Northwest Energy Coalition, which advocates destruction of the dams, found it would cost an additional \$464 million every year in electricity costs to replace most – but not all – of the electricity with wind and solar. To put

that in context, that is equivalent to nine years of salmon-recovery funding in the Washington state budget. Other estimates put the cost of replacing the lost electricity even higher.

Additionally, because wind and solar are intermittent, they would have to be backed up by a predictable source of generation like natural gas. This would increase total greenhouse gas emissions, potentially significantly. For example, for more than a week starting on October 31, 2019, there was virtually no wind across the BPA system. That gap in electricity was made up by hydro power. Without the energy from the Snake River dams, however, it is more likely those situations would require electricity generated using fossil fuels to make up the gap. Replacing the dams with wind and solar would reduce the resources available to fund salmon recovery elsewhere in the Northwest and would require additional funds to offset the increase in greenhouse gas emissions. Our region would not only find itself with fewer resources to confront existing environmental challenges, it would make existing problems worse.

**2) Electricity from the four lower Snake River dams is needed and will become more important.** Some argue the electricity from the four lower Snake River dams is surplus and is not needed. **The Northwest Power and Conservation Council is clear that this is false.** To the contrary, the Northwest will need additional power generation in the future. On September 24, 2018, a representative of the NWPCCC testified in Olympia, noting that **risk of energy shortages is increasing through at least 2023.** Their conclusion assumes electricity production from the four lower Snake River dams. Without the dams, the NWPCCC told me, “LOLP [Loss of Load Probability] increases significantly.” **The electricity from the dams is needed,** helping balance the grid, reduce greenhouse gases, and meet the growing demand for energy.



**3) Removing the four lower Snake River dams will not save the Southern Resident Killer Whales.** One of the recent justifications for removing the dams is the need to provide more forage for the threatened Puget Sound orca. **The best science says this is false.** In 2017, National Oceanic and Atmospheric Administration Fisheries noted the dams are “very close to achieving, or have already achieved, the juvenile dam passage survival objective of 96 percent for yearling Chinook salmon and steelhead migrants.” Destroying the dams would increase the survival rate by, at best, a few percentage points. NOAA fisheries and other scientists argue salmon may not be helped by destroying the dams. UCLA Professor Peter Kareiva, the former science director for The Nature Conservancy, analyzed the impact of the Snake River dams while at NOAA Fisheries in the early 2000s. He now argues, “it is not certain that dams now cause higher mortality than would arise in a free-flowing river” on the Snake. **It would take many years for dam removal to yield even these small benefits to salmon.** Since the removal of the dams on the Elwha, Chinook populations have not increased according to the most recent data. According to Washington State Department of Fish and Wildlife surveys, 96 percent of fish on the Elwha are still hatchery fish. Even if this changes in the future, the time lag between dam removal and potentially increased populations is significant.

Additionally, NOAA Fisheries and the Washington State Department of Fish and Wildlife prioritized the most important watersheds for Puget Sound orca, ranking the Snake River ninth overall. Destroying the dams, NOAA Fisheries concluded, “would result in only a marginal change in the total salmon available to the killer whales.” Spending resources to destroy the dams could take away funding from projects that would more effectively increase forage in watersheds NOAA and WDFW rank as more important, **including the Puget Sound and Strait of Juan de Fuca.**



**4) Salmon populations on the Snake River are generally increasing.** Some have pointed to the recent declines in the number of salmon in the Snake River as evidence of the impact from the dams. **Many of these same people were making similar claims in 2014 and 2015 when populations were very high.** The recent downturn, however, is consistent with ocean cycles that caused a similar decline between 2003 and 2007.

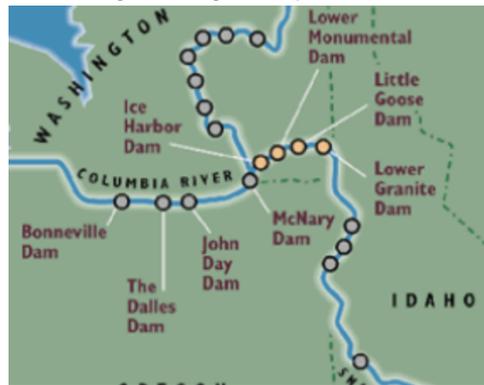
Bill Tweit from the Washington State Department of Fish and Wildlife told the Seattle Times, “Chinook in general have been in the doldrums from the Sacramento to the Yukon, and it is going on for a decade.” This is a regional problem. The evidence can be seen in other watersheds. For example, the trend in fish counts at the Bonneville Dam, before fish pass any of the dams, are virtually identical to those at Lower Granite Dam, which is far upstream of several dams both on the Columbia and Snake. **Despite the recent downturn, the average number of Chinook passing Lower Granite Dam over the last ten years was the highest total of the last five decades.**

**5) Impacts from the dam, including water temperature, are declining.** In 2019, 55 scientists, lawyers, and activists **signed a letter claiming the four lower Snake River dams were increasing**

water temperatures, harming spawning salmon. Their letter was based on a 2003 EPA model that claimed, “the four lower Snake Dams could affect temperatures up to a potential maximum of 6.8° C/12.2° F.” When I asked one of the authors if they had compared the model results with real-world temperature data, they told me, “the studies quoted in the letter were conducted by the EPA, not the 55 scientists who support and signed the letter, or by any of the spokespersons. The letter simply cites the modeling and conclusions of the EPA.” An examination of the actual river temperature data since 2007 show discrepancies between the model and river conditions. The data reveal three important facts.

First, the maximum temperature variance between river temperatures at Lower Granite, which is the farthest upstream, and Ice Harbor, the farthest downstream, was significantly lower than the model projected. The largest variance – for a single day or over a week – at any time between 2007 and 2019, was about 20 percent lower than the model projected. Second, that variance is steadily declining over time. Between 2007 and 2019, the largest variance between Lower Granite upstream and Ice Harbor downstream fell from about 4 degrees C down to 2 degrees C. The downward trend is consistent.

Finally, the timing of the largest temperature variance has shifted from September to August. In 2008, the peak temperature variance at Ice Harbor Dam, indicating the largest impact of the dams on river temperatures, was September 1, during the period of the highest Chinook returns of the year. By 2018, however, the variance had shifted to August, one month before the highest Chinook returns. Even if dams are responsible for some warming, the impact of that warming is moving away from the critical period for Chinook. The steady decline in temperature variance and the obvious shift in the timing of the temperature impact indicates this is not accidental. The management of the dams by the Corps is reducing the impact the dams have on river temperatures. The authors of the letter were provided the opportunity to review my data but declined. Rather than explain the differences between their model and the data, they have simply reiterated the model findings.



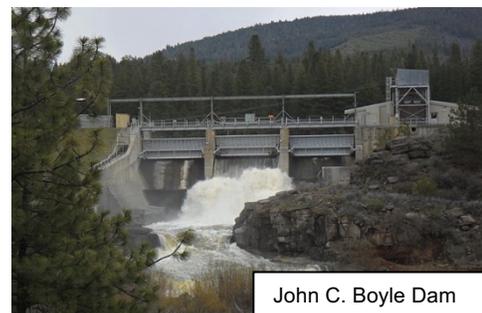
Destroying the four lower Snake River dams has extremely high costs. It would require funding that could be used more effectively elsewhere for salmon recovery. It would increase greenhouse gas emissions, even if the electricity was replaced by wind and solar. It would have high opportunity costs, making it more difficult to take other actions that are good for our economy and environment. For these reasons, we should weigh carefully the tradeoffs and the unintended consequences of destroying the four lower Snake River dams.

(The other dam removal story.)

### Salmon advocates see hope in plan to remove 4 Klamath dams

By Eric Tegethoff, Oregon News Service, April 15, 2020, ktvz.com

KLAMATH FALLS, Ore. (KTVZ) -- Advocates for salmon hope the timeline holds for dam removal on the Klamath River, saying it's a race against time to make sure some salmon species don't go extinct. It's the largest removal project in U.S. history and will demolish four dams in southern Oregon and northern California. In the Klamath Basin, coho salmon populations have fallen as much as 95% and the spring chinook run has dropped by 98%. Frankie Myers, vice chairman of the region's Yurok Tribe, says the tribe is looking at a potential harvest of two-thirds of a salmon



per member. "It really does have a deep psychological effect on our members who are so tied to salmon culture and fishing culture and being on the river," he states. The removal is supported by dam owner PacifiCorp because of the crumbling conditions of the dams.

But farmers in southern Oregon worry it could set a dangerous precedent for the two dams that aren't slated for removal and are important for irrigation. Demolition could begin as soon as 2022. The project still needs approval from the Federal Energy Regulatory Commission. Glen Spain is Northwest regional director of the Pacific Coast Federation of Fishermen's Associations, the largest organization of commercial fishing families on the West Coast. He says diminished salmon populations in the Klamath Basin affect fisheries along 700 miles of coastline. He says the region has to save these runs. "They support dozens of coastal fisheries and communities," he points out. "They also are a major part of the way of life of the tribes that live in the river, and they can't go anywhere else." Matthew Sloat, science director of the Wild Salmon Center, says fish face additional pressure from a warming climate. He notes that not long ago, the Klamath River was the third most productive salmon system on the West Coast. "It has the potential to regain a large part of that productive potential if we're smart about how we manage the system and diligent about recovering the habitat in the fish populations there," he states.

(You gotta stay off of the dam.)

## MOTHER, CHILD RESCUED AFTER FALLING AT BLUE RIVER DAM

The 7-year-old child who fell is being transported via helicopter for medical treatment.

By Jolene Daib, kezi.com, Apr 15, 2020

BLUE RIVER, Ore. -- A mother and child required a technical rescue by Lane County Search and Rescue on Wednesday afternoon. Sgt. Carrie Carver said LCSO Search and Rescue responded to a mother and 7-year-old child who were down what they described as a 40-foot cliff at the Blue River Dam. The 7-year-old child who fell is being transported via helicopter for medical treatment. The mother is being transported to the hospital in an ambulance. Scanner traffic indicated that the 7-year-old child fell down a steep embankment and when the child's mother tried to rescue the child, she also fell down the embankment.



(Always wear a helmet.)

## Chief says helmet saved child's life in fall from Oregon dam

By News Staff, April 16th 2020, nbc16.com

LANE COUNTY, Ore. -- A mother and child were hospitalized after being injured while biking at the Blue River Dam Wednesday afternoon. The Lane County Sheriff's Office said the mother and two children were biking when a seven-year-old boy went over a 40-50 foot cliff. Chief Christiana Plews from Upper McKenzie Rural Fire Protection District says the helmet the child was wearing saved the child's life. The mother was taken to a hospital via ambulance while Life Flight flew the boy to the hospital.



(That's a lotta dam that should be inspected often.)

## ICL urges study of Thompson Creek Mine dam

Group fears collapse in big earthquake

By Greg Moore, Apr16, 2020, mtexpress.com

Following a recent strong earthquake in the mountains northwest of Stanley, the Idaho Conservation League is asking federal and state land-management agencies to reassess the potential for collapse of a 676-foot-tall tailings pond dam at the Thompson Creek Mine, which is just north of the Salmon River near the small town of Clayton. Thompson Creek enters the

Salmon River about 13 miles downstream from Sunbeam. According to the BLM, the sand dam is engineered to withstand an earthquake of about magnitude 6.5—just the power of the March 31 quake—as close as 10 kilometers away. Though the epicenter of that earthquake was about 32 miles west of the mine site, the facility sits near the center of the Central Idaho Seismic Zone, a seismically active area that includes the site of the 6.9-magnitude Mount Borah earthquake in 1983.



A BLM analysis determined that the probability of a quake exceeding magnitude 6.5 is 0.02 percent in any given year. “Even if the likelihood of a catastrophic failure may be relatively low, the human and environmental costs of a collapse would be extremely high,” the ICL stated in a letter dated April 8. “If the sand dam were to liquefy and breach during a large-scale seismic event, it could release tens of millions of tons of toxic sediment into Bruno Creek, Squaw Creek and the Salmon River (6 miles away), putting human life at risk.” The ICL contended that tailings could smother the creeks and the critical habitat they provide for endangered salmon, steelhead and bull trout. The Thompson Creek Mine is one of the largest molybdenum mines in the world, spanning 3,000 acres on mostly private land, though it includes some BLM and national forest land. Mine production began in November 1983, and since then, in addition to the ore produced, over 100 million tons of processed mine waste has been generated at the site. The sand-sized waste materials after the ore is extracted are called tailings. Tailings are piped in a slurry from the mill to the tailings impoundment.

According to the ICL, while Thompson Creek is not currently actively mining on site, the mill continues to process ore from other mines. The mining company did not return a call from the Idaho Mountain Express seeking information on its current operations by press deadline. An Interagency Task Force has been created to coordinate plan reviews and oversight of the mine. The ICL’s letter was sent to the BLM’s Idaho Falls District, the Salmon-Challis National Forest, the Idaho Department of Lands and the Idaho Department of Water Resources. The organization suggested that the agencies, in concert with mine owner, Centerra Gold, a company headquartered in Toronto, inspect the dam to assess damage from the earthquake as well review its stability, and make those results public in a report. It also advocated review of an existing emergency action plan for the facility and updating it if needed. In an April 8 response to the ICL, Mick Thomas, administrator of the Idaho Department of Lands’ Minerals, Public Trust, Oil & Gas Division, said the Interagency Task Force was “taking steps to coordinate a response to your letter while complying with current health protocols.” Thomas said the Task Force members would schedule a telephonic meeting in the near future and would share the outcome of that meeting as soon as possible. “Safety continues to be the primary focus of the Interagency Task Force and we appreciate the points you discussed,” Thomas said.

(ASCE report card – click on dams to see what grade dams get in your state.)  
<https://www.infrastructurereportcard.org/infrastructure-super-map/>



(Is it safe or not?)

### **Is PG&E Concealing Dam Safety Liabilities? Holding PG&E Responsible for Safety of its Eel River Dams**

By Scott Greacen, Conservation Director, April 13, 2020, eelriver.org

#### **Scott dam Dear California Leaders,**

For the past several years, Friends of the Eel River and other key stakeholders in the Eel and Russian River basins have been working to secure an equitable agreement on the future of Pacific Gas and Electric’s (PG&E) two dams on the upper Eel River under the “two-basin solution” framework Representative Huffman has articulated. While we have made great progress

toward this goal, we have often been frustrated by PG&E's lack of transparency and failure to cooperate with our efforts. Recent communications between PG&E and the Federal Energy Regulatory Commission (FERC) raise questions whether PG&E has failed to disclose information which would reveal the vulnerability of its Eel River dams and the company's associated liabilities.



We bring these questions before you as California's elected leaders for two related reasons. First, it is important the state of California insist PG&E's responsibilities around its aging dams not be absolved by any bankruptcy deal. If FERC orders removal of the Eel River dams, PG&E should bear all associated costs. Second, as stakeholders from the Eel and Russian River watersheds work to define a new public entity to take ownership of the dams with public financing, it's essential PG&E fully disclose its potential liabilities before any agreement is made. Three particularly egregious examples of PG&E's apparent efforts to obscure its liabilities are summarized in the attached memo. They include PG&E's attempt to minimize the vulnerability of Scott Dam to maximum potential flood; PG&E's failure to submit a required seismic stability analysis for Scott Dam after the company's consultant apparently refused to concur with its findings; and the utility's failure to address the unstable ancient landslide above Scott Dam's southern abutment.

It is at best difficult for citizens to determine the facts of these situations. PG&E has chosen to broadly designate virtually every piece of information relevant to dam safety as Critical Energy Infrastructure Information (CEII). CEII material is exempt from public disclosure requirements. Thus, it is impossible to secure independent professional peer review of PG&E's analyses and conclusions. Given the lack of transparency in both PG&E's reporting and FERC's oversight, additional important safety issues – which may give rise to substantial potential liability for PG&E – may never have been publicly disclosed. Of course, these questions about the safety of



PG&E's Potter Valley Project dams come in the context of broad and extremely serious concerns about PG&E's systematic failures to provide for public safety. PG&E's inadequate pipeline maintenance led to the destruction of a San Bruno neighborhood, felony convictions for the company, and a public inquiry into its safety culture by the California Public Utilities Commission. The utility's failure to maintain its transmission lines caused a series of devastating wildfires and PG&E's second bankruptcy filing in twenty years. These are just the best-known stories from a series of similar shortfalls, in which PG&E has always put profits ahead of safety. PG&E's pattern of behavior is so pervasive it can fairly be understood to reflect both corporate culture and company policy.

In this context, it is reasonable to require PG&E to produce the information under its control that would confirm – or refute – our concerns about dam safety and related issues at the Potter Valley Project. It would not, however, seem reasonable to ask public bodies to invest substantial public funds in a reconfiguration of the Potter Valley Project without a full and complete accounting of the project's liabilities. We respectfully request you join us in taking all measures necessary to insure that PG&E fully reveal all of the information in its possession relevant to the safety and reliability of the PVP dams. Thank you for your kind attention to this complex matter.



## **Hydro:**

(Excerpt - Interesting book-set in post-Depression rural Tennessee focusing on a brace of characters working and living in the shadow of construction of a hydroelectric dam.)

### **Rewarded perseverance**

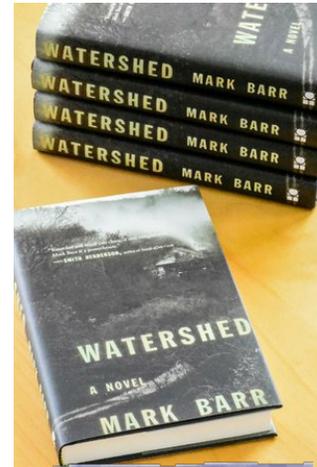
**First-time novelist Mark Barr struggled for years before he got Watershed published. And he won an award for it.**

By Werner Trieschmann | April 12, 2020, arkansasonline.com

-----"It's all been worth it," Barr says. "There was no guarantee I would get to this point. I think my story is ultimately one of **rewarded perseverance**, so I hope it encourages aspiring writers to keep going."

Full story here:

<https://www.arkansasonline.com/news/2020/apr/12/rewarded-perseverance-20200412/>



(They want it all back. The next battleground, Give them a ticket to Russia so they appreciate this country.)

### **'The life-giving Skagit has been purposely dewatered by the city of Seattle, and why?'**

By Ari Shirazi | March 25th, 2020, realchangenews.org

Dear Mayor Jenny Durkan and City Councilmembers:

I am writing to share my feelings with you and ask questions regarding the three hydroelectric dams owned and operated by the city of Seattle on our scared Skagit River.

The Skagit River (if you don't already know) is named after my people, who have lived, fished, hunted and practiced our traditional way of life here in the central Washington river valley since time immemorial. Although I am young, I have been very blessed to learn from my father, a tribal elder, about the rich history of our people but also, woefully, about the harm Seattle has put on our people. I carry knowledge of what the city has done here and an understanding of what has been imposed on the Upper Skagit people and our salmon. I want you to know this brings me great pain and sorrow every day.



A century ago, Seattle officials came to our sacred river without our people's permission and began building the first of these three dams. This action by the city immediately brought unprecedented devastation and destruction to the then-pristine Skagit. It harmed my people, the salmon and our very culture. Conversely, the building of these dams brought extraordinary wealth, growth and long-lasting prosperity to the city of Seattle. The destruction of the Skagit sent cheap power through miles of transmission lines south to the city, spurring economic growth and the building of infrastructure, which was the foundation of Seattle becoming one of the greatest cities in the American West. Today, your staff can continue to claim that the Skagit dams have little or no impact to the tribe and salmon. This is the type of attitude we have come to expect from other environmentally harmful industries, like the Dakota Pipeline proponent; coincidentally, this city adamantly opposed that project. I applauded the city of Seattle and some of its councilmembers for supporting the Standing Rock Sioux Tribe against the attack on their culture and precious natural resources. The facts of what is happening on the Skagit that have been

continually ignored in Seattle are irrefutable by most — except by those employed in the interest of money-making machines of destruction.

The building of these dams disturbed the resting places of our ancestors, destroyed or damaged important cultural sites and desecrated the Upper Skagit sacred village of Dawáylib and renamed it Newhalem. The dams diminished our salmon runs by cutting off salmon passage and by excluding miles and miles of former habitat, and have actually impacted the entire Skagit watershed. One hundred years later, the dams continue to kill fish each and every day, as the dams operate constantly. If these examples aren't enough to convince you the city has marred the very life of my people, I don't expect you to understand the hurt I experience knowing the life-giving Skagit has been purposely dewatered by the city of Seattle, and why? I am asking you, the leaders of this city that has inflicted a century of continual harm on my people and all the creatures relying on a healthy and productive Skagit, to do the right thing and help us. This city has a long history of supporting the rights of the Native American tribes of Washington, and now is the time to walk the talk and protect our rights — which your city is violating. What would the city's namesake have to say if he were here today and knew what the city has done in the past and continues to do to my people?

Although much irreparable harm has already been done, I am convinced it's not too late to save the Skagit. The recent Elwha dam removal proves that there is a chance if you take action now. Take action by removing these mechanisms of destruction and allowing salmon back into their historical spawning areas. I also request that no representative of Seattle ever refer to the dammed river as your "battery" ever again. Over the course of their lifetimes, the Seattle dams have brought your city wealth and prosperity by taking so much from Skagit, while disproportionately and shamefully returning so little. I very much hope you take this request seriously and consider all options for saving the sacred Skagit River. I ask this for my people. I ask this for the salmon. I ask this for the orca. I ask this for the Skagit. Respectfully, Hout-Suli-A Janelle Schulyer

(Where's the small hydro in CA?)

## **SMALL\_HYDROELECTRIC\_POTENTIAL\_AT\_EXISTING\_HYDRAULIC\_STRUCTURES\_IN\_CALIFORNIA**

BY CALIFORNIA\_DEPT\_OF\_WATER\_RESOURCES..PDF, d0wnl0ad.net

[https://d0wnl0ad.net/v6/preview/?pid=6&offer\\_id=343&ref\\_id=62869b2c4f7ae96fe46f9163H4soNHyf\\_e6cef1e4\\_c28f910b&sub1=e6cef1e4&keyword=Small\\_Hydroelectric\\_Potential\\_At\\_Existing\\_Hydraulic\\_Structures\\_In\\_California\\_-\\_California\\_Dept\\_Of\\_Water\\_Resources..pdf](https://d0wnl0ad.net/v6/preview/?pid=6&offer_id=343&ref_id=62869b2c4f7ae96fe46f9163H4soNHyf_e6cef1e4_c28f910b&sub1=e6cef1e4&keyword=Small_Hydroelectric_Potential_At_Existing_Hydraulic_Structures_In_California_-_California_Dept_Of_Water_Resources..pdf)



### ***Water:***

(Paleo Flood)

## **It Happened Here: Missoula Floods shaped Eastern Washington's landscape**

BY DONALD W. MEYERS, Yakima Herald-Republic, Apr 13, 2020, yakimaherald.com

The foundations of the Yakima Valley's agricultural industry go back to the last ice age. While volcanic activity along the Cascade range enriched the soil, a series of floods coming from Montana contributed to the silty soil that has been conducive to many of the Valley's crops. It also

helped the region become a serious wine producer. The physical evidence of these massive ice age floods is still visible, although many people hardly notice as they pass by. About 20,000 years ago, Glacial Lake Missoula covered western Montana. The lake — more like a sea — formed when part of the Cordilleran Ice Sheet blocked the Clark Fork River in Idaho, causing the water to back up. This lake covered 3,000 square miles up to 2,000 feet deep. And it was all held back by a wall of ice. There are a couple of theories as to how the ice dam failed. One is that as the water level rose behind it, the dam started floating, allowing water to escape underneath it. The other says that the pressure against the dam forced water through cracks in the ice, causing the dam to collapse.



At that point, a wall of water tore through the opening, carrying debris and soil with it as it went. This wall of water gouged the landscape as it tore through at 80 mph. Palouse Canyon, near Palouse Falls, was one of those channels the water carved, as was Grand Coulee and the channeled scablands of Eastern Washington. But this irresistible force would hit an immovable object at Wallula Gap on the Columbia River. Stephen Reidel, an adjunct geology professor at Washington State University's Tri-Cities campus, compares it to a drain in a bathtub, slowing the flow of this massive wall of water to a relative trickle. As a result, the water backed up, creating Lake Lewis, which covered an area from Walla Walla to Ephrata. The water got as far as Yakima and Naches, rising to about 1,200 feet above sea level. It took about a week for the lake to form, Reidel said, and it then took a week for it to drain through the gap into the Columbia, where the water would eventually make its way to the Pacific, but not after forming other temporary lakes and altering the landscape along the way. As it sat in Lake Lewis, the silt the water picked up in its cross-country dash would settle out, sometimes even leaving fossils behind



This process would be repeated multiple times in a 2,500-year period, as the ice dam would again create Lake Missoula and burst. It's believed that the final run was 13,000 years ago. Those silty deposits became known as the Touchet Formation, and in time would become fertile farmland, especially when combined with volcanic ash from Mount St. Helens and other volcanoes along the Cascade Ridge. Walter Clore, the WSU horticulturist

and father of Washington's wine industry, would advise farmers to start their grape vineyards on the Touchet Formation left by the Missoula floods, as it was the best soil for the grapes, Reidel said. Today, many vineyards are on either the original deposits, or where the wind carried the soil into loesses on Horse Heaven Hills and Rattlesnake Mountain. Terrace Heights is also a place where that sediment came to rest, Reidel said.

The most visible sign of Lake Lewis in the Yakima Valley is along Interstate 82 in Zillah, where cliff sides show the multiple layers of sediment that were laid down each time the lake refilled. If you look closely in some spots, you can see a fine white line of volcanic ash, which gave geologists a clue as to when the floods occurred.

(Wow, that's a bunch of water, but a lot of hydropower!)

## Lake levels, river currents rise as Tennessee Valley receives a month's worth of rain in 18 hours

By Dave Flessner, April 13th, 2020 | [timesfreepress.com](http://timesfreepress.com).

Nearly an entire month's worth of rain fell on the Tennessee Valley Sunday and early Monday, raising already rain-swollen rivers and reservoirs across TVA's 7-state region. After the wettest first three months of any year in the 131 years that such records have been kept, another 3 to 5 inches of rain drenched the Valley on Sunday as storms and tornadoes ripped through the South. Normally, the Tennessee Valley region averages about 4 to 5 inches of rain for all of April. "Most of the heaviest rain across the Valley occurred within an 18-hour period, which is very unusual to get this much rain that quickly," said James, Everett, senior manager at the TVA River Forecast Center in Knoxville. So far this year, 27.75 inches of rain has fallen across the Tennessee Valley, or 12 inches more than normal. While most of the flooding in the region was localized Sunday and Monday, the rain did raise lake levels in major TVA reservoirs such as Chickamauga and Watts Bar lakes about 1.5 feet above normal summertime pool levels, which TVA doesn't normally try to reach each spring until June 1. TVA is using its network of 49 dams to help hold back as much water as possible during the heavy rains to avoid flooding in Chattanooga and other drainage routes for the Tennessee River and its tributaries.



Chickamauga Dam

"We don't expect there to be any flooding in Chattanooga, but there will be some downstream," Everett said, noting that some low-lying areas around Huntsville, Alabama and Savannah, Tennessee are being flooded because of all of the rain runoff coming down the Tennessee River. Everett cautioned boaters not to get too close to TVA dams where water is spilling or sluicing through the dams to help lower upstream reservoirs. "This is the time of year when people start thinking about getting outside and going on the river," he said. "But anywhere near the dams, there is going to have very strong current in the river and we would discourage anyone from being on the river with these flood levels."

(It seems this is the week that you get too much water everywhere.)

### Heavy rainfall expected to impact Smith Mountain Project water levels according to AEP

By: WFXRtv.com, Digital Desk, Apr 13, 2020

ROANOKE, Va. (WFXR) — Appalachian Power warns residents and visitors near Smith Mountain Lake to be cautious of high water levels due to the heavy rainfall in the Roanoke River watershed. AEP operates the Smith Mountain Project hydroelectric facility, and the company says the lake will exceed its full pond elevation of 795 feet. The project's lower reservoir, Leesville Lake, is below its full pond level of 613 feet. Flow levels above and below the project are high. To prevent additional flooding downstream, Appalachian expects the reservoir to exceed its full pond elevation by 1.5 to 2 feet within the next 24 hours. AEP says this is rare, but an increase of only inches could make walking docks unsafe and cause unsecured boats and floating docks to float away.



(Water, water everywhere.)

### Avista Managing Spokane River Levels Based on Snowpack, Rainfall

By STEVE JACKSON • Apr 14, 2020, spokanepublicradio.org

Avista has been adjusting its dam operations on the Spokane River to accommodate the seasonal flow this spring. It's one part optimizing power generation, and one part fine tuning the water level. Avista operates several dams along the Spokane River from Post Falls downstream to the Little Falls Dam, adjacent to the Spokane Indian Reservation. It began the drawdown of Long Lake in February and March, so property owners could do work along the shore. And if you happen to drive past the Little Falls Dam right now, you might be surprised how it looks more like August than April.



Little Falls Dam

This time of year the dams are adjusted according to how much runoff is coming from melting mountain snowpack, as well as rainfall. Although mountain snowpack is above average in many places, 110% of normal in the Spokane/Coeur d'Alene Basin, rainfall amounts have been down in recent weeks. "What's been happening this last week with this warm weather is we've had more flow into Coeur d'Alene Lake and more flow down the Spokane River," said Patrick Maher, a hydro operations engineer at Avista. "We've also been filling up Lake Spokane. We're running water through the turbines around the dam at either Little Falls or Long Lake." Maher expects Long Lake will be filled by early next week. As the river flow increases with water from snowmelt, you can expect to see plenty of water coming over the top of Little Falls Dam and through its spillways.



### Environment:

(They have long tentacles.)

## **Puyallup River one of most endangered in nation, environmental group says**

BY JOSEPHINE PETERSON, APRIL 17, 2020, .thenewstribune.com/news

A conservation group has named the Puyallup River one of the country's most endangered rivers. An environmental nonprofit, American Rivers, placed the Puyallup River at No. 4 in its endangered river list. The group said a dam on the river is hurting fish. "It is time for the Electron Hydropower Project to implement measures that have meaningful, on-the-ground results for endangered chinook salmon, steelhead and bull trout," the conservation group said in a report issued April 14.



The Electron Hydropower Dam blocks the river in the foothills of Mount Rainier. It was built in 1903 to provide power for nearby homes. The project produces enough energy for more than 20,000 homes, according to the dam owner, Electron Hydro. Chris Spens, director of environmental affairs for the dam, said there are many projects in place to try and get as many fish to Puget Sound as possible. "We are as committed to work with the Puyallup Tribe to produce and protect fish as we are with renewable energy," Spens said. The dam was built before new legislation that protects endangered species and doesn't include fish passage, preventing salmon from heading downstream, eventually out into Puget Sound. Electron Hydro has taken measures to help fish cross. There are "fish steps" to help fish pass the dam, Spens said. The steps are hollow cells that allow fish to jump from one to another until they reach the other side of the dam. The conservation group says heavy rainfall fills each step with sediment and debris, making it difficult for fish to use.

American Rivers estimated that 40 percent of young chinook are killed trying to cross the dam. In 2014, Electron Hydro worked with the Puyallup Tribe and Pierce County to create a salmon recovery project. The project would prevent fish from entering the flume and return them to the river downstream, Electron Hydro said. The project is anticipated to be completed by 2022. The dam also partnered with the Puyallup Tribe to create a pond upstream of the dam for Chinook Salmon. The tribe placed over 300,000 chinook fingerlings in the pond in early April, Spens said. There are a handful of controversial river dams that flow into Puget Sound, including the Pilchuck Dam on the Pilchuck River, the Nelson Dam on the Naches River, the Chambers Creek Dam near Steilacoom and the Enloe Dam on the Similkameen River.

A state study in 2018 by the Orca Task Force on saving endangered orcas showed these dams can prevent chinook salmon — a staple in the orcas' diet — from reaching the Sound. "To feed (southern resident) orcas, we need bold action on salmon recovery now. Improving fish passage at the Electron Hydro Dam is crucial for salmon survival in the Puyallup River and in the Puget Sound," Laura Blackmore, the executive director of the Puget Sound Partnership, said in the American Rivers report. The Puget Sound Partnership is a state agency working to recover the Sound's ecosystem. American Rivers sued Electron Hydro LLC and the Tollhouse Energy Company over the dam in 2016. The group argued the dam is not in compliance with the Endangered Species Act, a law the dam predates. The case is pending. Electron is expected to submit a Habitat Conservation Plan to federal agencies to prove how it will avoid harming chinook, steelhead and bull trout due to project operations, Spens said.



### ***Other Stuff:***

(If you travel to Charleston SC, you'll see this mystery building.)

#### **MYSTERY PHOTO: Classic white building**

Statehouse Report, 04/10/2020, statehousereport.com

Here's a classic white building somewhere in South Carolina. Tell us where and what its significance might be. Send your best guess to [feedback@statehousereport.com](mailto:feedback@statehousereport.com). And don't forget to include your name and the town in which you live.



#### **Our previous Mystery Photo Our April 3 image,**



"Old bridge," is a photo of the 1898 hydroelectric plant at Gervais Street in Columbia on the Columbia Canal, as recognized by several alert readers: George Graf of Palmyra, Va.; Jay Altman of Columbia; Dale Rhodes of Richmond, Va.; Frank Bouknight of Summerville; Henry Eldridge of Tega Cay; Jacie Godfrey of Florence; David Lupo of Mount Pleasant; and Vic Carpenter of Lugoff, who remembers rafting past it years ago. Lupo shared, "The canal branches off of the Broad

River and rejoins it after the Broad had merged with the Saluda to form the Congaree River. The Wikipedia article on the canal notes that the original canal was built in the 1820s to allow boats to avoid the rapids near the river junction. It was redesigned in the 1880s and rebuilt in its current location as a power source with a hydro-electric plant. The Columbia Canal is listed on the National Register of Historic Places."

Graf added, "I read last year that the Columbia Canal — the main source of drinking water for a massive swath of the city, including the University of South Carolina, the downtown core, numerous hospitals and Fort Jackson — has not been repaired. The 60-foot wide breach in the

western levee of the canal, along the Congaree River near the State Museum, is still there. Just north of the breach, a thick rock dam — one that governmental officials scrambled to put together in the days following the flood — still stands firm, holding in the river water that is later purified at the city's Canal Treatment Plant and piped out to the city's water customers. **The canal ... remains functional, but battered.**

(This is a surprise.)

## Americans used less energy in 2019

By Anne M Stark, Lawrence Livermore National Laboratory, APRIL 9, 2020, [techxplore.com](http://techxplore.com)

**Turning those lights off when you leave has a benefit.**

In 2019, Americans used less energy than in 2018, according to the most recent energy flow charts released by Lawrence Livermore National Laboratory (LLNL). **Each year, LLNL releases flow charts that illustrate the nation's consumption and use of energy.** Americans used 100.2 quads (quadrillion BTU) of energy, which is 1 quad less than last year. **The highest recorded energy use in American history was in 2018,** when 101.2 quads were consumed. A BTU, or British thermal unit, is a unit of measurement for energy; 3,412 BTUs is equivalent to 1 kilowatt-hour, which is the amount of energy it takes to light an efficient LED lightbulb for a week.



For the second year in a row, **the largest increases in energy supply came from natural gas, wind and solar energy,** with jumps of 4 percent, 10 percent and 8 percent, respectively. Solar energy supply exceeded 1 quad for the first time ever as more users turned to renewables. **Wind and solar combined now produce more electricity than hydroelectric power, which dominated renewable energy for decades.** "Solar and wind continue to show year-on-year growth, which is an impressive change for the energy system," said A.J. Simon, associate program leader for Water Security and Technologies at LLNL. **"Other energy resources, such as hydropower, nuclear energy and geothermal have trended flat over the past decade, despite visible annual fluctuations."**

Supply from natural gas increased by 1.1 quadrillion BTU, from 31 in 2018 to 32.1 in 2019, **a 4 percent increase.** **Coal use was down another 1.9 quads (14 percent),** mostly in the electric generation sector, due mainly to the uptick in natural gas. "This reflects a significant change to electricity generation, where **gas continues to displace coal,**" Simon said. The shift from coal to gas also has contributed to a drop in rejected energy, because natural gas power plants are more efficient than the coal-fired units they replace. All energy use and conversion results in some losses, shown on the charts as rejected energy. Last year saw 1 quad less in rejected energy than in 2018. This energy most often takes the form of waste heat, such as the warm exhaust from automobiles and furnaces. **The efficiency of the nation's cars, lightbulbs and factories determines how much waste heat is produced and how much fuel and electricity can be put to productive use.** Energy use in the residential, commercial industrial and transportation sectors didn't move much from 2018 levels.



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