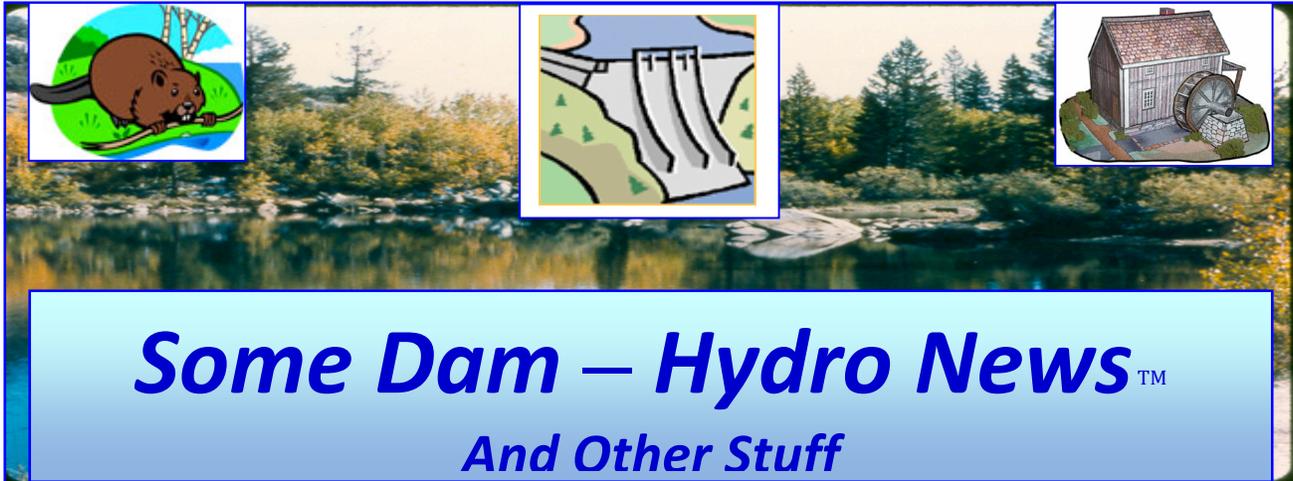


7/5/2019



Some Dam – Hydro News™

And Other Stuff



Quote of Note: *“Happiest are the people who give most happiness to others.” - Denis Diderot, philosopher*

Some Dam - Hydro News → Newsletter Archive for Current and Back Issues and Search:
 (Hold down Ctrl key when clicking on this link) <http://npdp.stanford.edu/> . After clicking on link, scroll down under Partners/Newsletters on left, click one of the links (Current issue or View Back Issues).

“Good wine is a necessity of life.” - -Thomas Jefferson
Ron’s wine pick of the week: 2016 Three Wine Zinfandel "Live Oak Vineyard"
“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson



Dams:

(Before looking at the Newsletter, one of the readers of the Newsletter pointed out an error in the article “An Interesting Look at Dam History”, page 2, 3rd sentence of 1st paragraph, that credited the Corps of Engineers with the construction of Hoover Dam. While the Corps has built many important and beautiful dams, Hoover Dam is not one of them. Hoover dam was built by the Bureau of Reclamation.

(Some history for today. Operating over 90 years.)

This Place in History: Comerford Dam

By: Amanda Thibault, Jun 17, 2019, mychamplainvalley.com

Barnet, Vt.- At 'This Place in History', we're in Barnet with Executive Director of the Vermont



Historical Society Steve Perkins. We're right on the side of I-91, but we're talking about something way off in the distance. "What a gorgeous view today with the sun shining and this big, huge dam behind us! We're talking hydroelectricity and harnessing the Connecticut River to provide power to all of New England. This takes us way back to 1928," began Perkins. "It used to be that mills had to be on rivers to be powered, but now factories are going up all over the country, and they need power. And water power is still one of the best ways to provide hydroelectricity. This section of the Connecticut River was called Fifteen-Mile Falls. The river dropped 320 feet over the length of those falls, continuously. It was identified as an area that would be really good for a huge hydroelectric project."

"The New England Power Company came up with this idea of putting in three different dams throughout this 20 mile line along the Connecticut River to flood into reservoirs to then create hydro power. The Comerford Dam, which is behind us, technically in East Barnet, was the first dam built," said Perkins. "This first dam took them about two years. The next dam was built in about two years, but later in the 1930s. Then, the last dam wasn't built until 1957. But when this dam was built, we took an area of Vermont where very few people lived and at its height, 3200 workers were working on this dam. And so they had almost a little city up here in the woods with everything from movie theaters to swimming holes to a hospital, all built just so that the workers could get this dam completed. And they did."

"It certainly changed the landscape as any hydroelectric project did. The Connecticut River, as they said, was wild and free. It was known for the log drives, the great timber coming down from Quebec along the Connecticut River. That ended with this hydroelectric project. But in the end, people didn't really object to it because they saw the benefit of having that electrical power," explained Perkins.

"It opened in 1930 and I think this is a really cool story. President Herbert Hoover pressed a golden key in the White House which was connected to a dedicated line all the way from Washington D.C. to that dam that started the first turbine. And so that was the ceremony to get that thing running." "It's still running today, still producing a lot of power. The whole system is contributing about 5% of New England's power from hydroelectric, this project and others." "I brought this really cool pamphlet. This was produced by the Grafton Power Company from the New England Power Association in 1928 talking about great this power project could be. It has an artist rendition showing what, at the time, the two dams would look like. And there's a third dam that was built in the 1950s below this artist's impression. I love that it's so bucolic," concluded Perkins.

[\(Here's a suggestion on what to do about sediment.\)](#)

Paradigm shift for sediment management

18 June 2019, waterpowermagazine.com

Sameh A. Kantoush and Tetsuya Sumi from Kyoto University in Japan assess how sediment management can be improved basin wide

In Japanese reservoirs, sedimentation was originally handled by setting a 100-year capacity as the planned sedimentation storage. A traditional common design concept of a reservoir is to provide a dead storage space for sediment deposition. This concept is poor as delta formation and siltation is prevalent in the active storage from the early stage of the dam construction on. Such dead storage space for sediments is actually a stagnant water storage with less deposition comparing to the active space deposition. It is necessary to account for such loss in active reservoir storage space early in the project design and recognise its impact on the reliability of water and power supply, and flood control. As the length of service life and priority of dam management activity varies between facilities, it is necessary to apply asset management according to these differences.

It is difficult to convince stakeholders to reinvest in recovering the original design or extending the reservoir life and so we should wisely include new values for sediment and dam management.

Dam heightening secures new storage and a sediment bypass tunnel will help to increase the flood control functions by preliminary drawdown and increasing dam safety as the released discharge is increased. Another added value for sediment management is not only for the reservoir itself but also to recover downstream environment. We need to propose upgrading for the current sediment dam management not only to sustain the dam function, but also by adding new values. So how do we add new values? It is wise to include sediment management that combines hydro-sediment-eco systems in the basin scale. This will require viable sediment and flood management programmes, monitoring, and regular maintenance of the system. **Figure 1** presents 900 Japanese reservoirs and classifies the range of techniques that have been implemented. The map shows the dam and sediment management. Among the implemented sediment management techniques, sediment replenishment is the most dominant technique to recover reservoir function and restore the river ecosystem in the Japanese rivers.



Figure 1. Storage reservoirs in Japan with the most common implemented sediment management techniques (Kantoush et al., 2018)

New concept

By adding new value to existing dams, such as flood control and disaster risk reduction, rehabilitation, upgrading and retrofitting activities have to be implemented. There are various proposed methods to manage the dam and sediment are categorized in **Figure 2**. Some of these methods to support dam upgrading and retrofitting include:

- 1. Improving the hydropower functions and generating electricity from non-powered dams;
- 2. Increasing the capacity of the reservoirs by excavating/dredging the deposited sediments;
- 3. Increasing flood discharges by improving discharge facilities and adding new outlet;
- 4. Increasing dam height will add extra effective storage for flood control or other purposes;
- 5. Exchanging reservoir storage functions among groups of dams by linking several single adjacent dams in the basin so that the storage capacity can be effectively used;
- 6. Modifying reservoir operation rules by preliminary drawdown water level in the reservoir and keep it flexible during flood period. Thus, by increasing flow volumes, an additional reservoir storage capacity will be guaranteed;
- 7. Increasing dam safety and ability of the dam body to resist earthquake and other disasters;
- 8. Improving the existing functions for recreation and amenities;

Figure 2. Paradigm shifting diagram for necessity of dam management due to climate changes and adding new values for a sustainable dam development on practice, a periodical monitoring for reservoir sedimentation is conducted before and after every flood event. In case of increased reservoir siltation, an immediate intervention for sediment management to recover the original dam functionality or upgrading the dam facility to ensure reservoir capacity is carried out. When a large-scale sediment removal technique is implemented, it is challenging to obtain storage for the removed sediments, and it is necessary to reduce costs by using sediment material effectively combined with flushing flow.

Regarding the environment, blocking the continuity of sediment by a dam impacts rivers, coastlines and the ocean, so it is necessary to restore sediment downstream from dams. The quantity that must be restored downstream to conserve the environment, and its benefits have not been evaluated. Sediment management techniques are implemented to restore the effective reservoir capacity needed to regulate flood events or water supply and to guarantee live storage. The various structural and nonstructural methods as listed in Figure 2 which can be engaged are: (a) dry excavation, (b) permanent dredging facility, (c) redevelopment of old spillway by replacing gate and valves, (d) recovery environmental functions for river by constructing fish passage and sediment supply, (e) water quality conservation measures.

Japanese dams

Recently, the Japanese Government's Ministry of Land Infrastructure, Transport and Tourism (MLIT), has released the new policy initiative "Vision for upgrading under dam operation" which will enhance comprehensive upgrading of existing dams for sustainable development (Sumi and Kantoush, 2018). Based on limited water storage capacities, effective maintenance and new investment are needed not only to sustain the facility but also to upgrade existing functions from various aspects such as adaptation for future climate change effects by both optimising dam operation and increasing storage capacities, and rehabilitation of river environment. In that regards, reservoir sediment management plays a key role both for dam and reservoir sustainability, and restoration and rehabilitation of the river environment by balancing sediment inflow and outflow across the reservoir while maximising the long-term benefits and minimising the adverse effects below dams. Two out of seven completed dams on the Mimi River system have been upgraded under integrated basin management plans by Miyazaki prefecture in Japan. Figure 3 shows both upgraded Yamasubaru and Saigou dams. The two central spillway gates of Yamasubaru dam were removed by cutting down the spillway crest height about 9.3m, and installing a single large spillway gate. The four spillways of Saigou dam were cut by 4.3m and replaced by two larger gates. The sluiced sediment flux with partially removal of dam spillway is optimal measure and comparable to the one obtained by COF minimized cost.

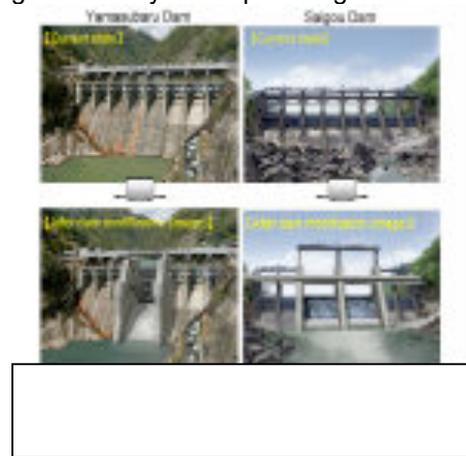


Figure 3. Case studies for dam retrofitting works on Yamasubaru and Saigou Dams (Sumi et al., 2015)

Sediment bypass tunnels

Among several methodologies, sediment bypassing can be considered to be as one of the permanent remedial measures. Sediment Bypass Tunnel (SBT), however, have many advantages such that they can be constructed even at existing dams and prevents a loss of stored reservoir water caused by lowering of the reservoir water level. They are also considered to have a relatively small impact on the environment downstream because inflow discharge can be passed through tunnels naturally during flood time. Figure 4 shows the outline of the Koshibu dam and its SBT facilities. The Koshibu Dam, a 105m high arch concrete dam, was built in 1969 for flood control, irrigation and power generation.

This article highlights the need for a paradigm shift in dam water and sediment management on a river basin scale, and shows how important it is to design effective sediment management strategies. The latter maintain reservoir functions of existing dams, and contribute to environmental sustainability.



Figure 4. Sediment Bypass Tunnel of Koshibu dam completed on 2016 including outlines and facilities (Ishida et al., 2019)

Numerous dams are malfunctioning with tens of thousands of sediment deposition volumes in deep, middle, and upstream tail-water parts of the reservoir. Figure 5 illustrates the various sediment management methods suitable for each part of the reservoir as excavating, dredging, bypassing, flushing, and sluicing. These methods often compete, and one of the most common

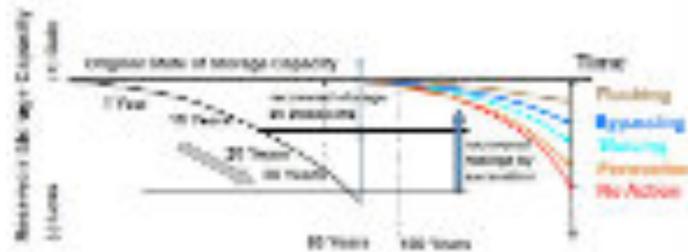


Figure 5. Scenarios for sediment management options to recover dam functions and extend dam life (Kantoush and Sumi, 2017)

trade-offs involves choosing between no action or recovering dam function, and extending dam life. At the beginning various options for sediment management are available. Without action, in 100 years the excavation cost will be extremely high and at times unfeasible. Comparatively, installation of sediment bypass tunnels would yield significantly less sediment deposition rates. Combining both measures

alternatively, would recover reservoir functionality and extend the dam's life. Implementation of these strategies is deemed prudent for recovery after 10, 20, 30, 50, 100 years and is crucial for project recovery. Sediment management necessitates performing economic feasibility studies for the recovery method under consideration. The costs and benefits of asset management in coordination with changes in dam operation and downstream should be out in perspective during decision making. To this end, a new concept and methodology should be conceived prior to designing an intergenerational, sustainable, self-supporting rehabilitation system for river basins with reservoirs. Measuring the benefits and costs of an improvement in water quality is often difficult.

Global warming

In Japan, most of snowfall-snowmelt driven river basins will be affected by global warming since winter snow will be drastically changed to winter rainfall which will runoff earlier without being stored in upstream mountain catchments. These effects will increase the risk of water shortage for agricultural and portable uses in the next summer seasons. In order to reduce those risks, reservoir operation should be adapted on the changing flow regimes and/or increase storage capacity enough to compensate decreasing water resources provided by snowfall-snowmelt processes. For efficient comprehensive sediment management in the river basin, it is necessary to find a balance between flow and sediment release. This is dictated by numerous constraints including hydrology, water quality, river morphology and ecosystem, etc. Impacts of dams on the downstream river conditions can be evaluated by a combination of sediments and flow regime. In order to add new value for dam and reservoir by solving sediment related issues, clear and strong initiatives are needed to change the management concept drastically. Further work is needed to guide the future management of ageing dams around the world and support the huge investment decisions that will have to be made. Important directions include reservoir longevity issues and the necessity of upgrading and retrofitting ageing dams. This should extend to include a thorough assessment of climate change impacts on ageing and determination of ecosystem response to ongoing loss of reservoir functionality. In that regards, further research is needed to know how climate change will have impacts on rainfall-runoff and sediment production-transport intensity. These effects are critical for future reservoir storage reliability. Additionally, changing flow regime itself also has big impacts on seasonal water storage scenarios.

(Some of the other benefits of dams. Did you ever recreate on a coal pile, at a wind turbine, or on a solar panel.)

Stonewall Jackson Dam provides many outdoor recreations

By Jessica Kirkpatrick, Staff Writer, 6/19/19, wvnews.com

Many people don't typically realize the hidden gem here in Lewis County, WV that is Stonewall Jackson Dam. With plenty of fishing space, a scenic overlook pier, a mile-long hiking trail and

even a visitors center, the area provides many recreational activities for both residents and tourists. The Stonewall Jackson Dam was built following the Flood Control Act of 1982. The construction was complete in 1986, and it was in operation shortly after that. According to Jeff Toler, resource manager for Stonewall Jackson Lake, the dam has four main purposes mandated by Congress — water augmentation, water supply, recreation and, of course, the biggest reason, flood control.

“We operate the dam based off of what’s happening downstream,” Toler said. “Prior to the Stonewall Jackson Dam being constructed, flooding downstream areas along the West Fork River were far more frequent and damaging.”

Aside from the dam’s main purpose of flood control, the area also offers plenty of recreational activity for people to enjoy. “The lake is very heavily used, and people really enjoy recreational activities on it,” Toler said. “It’s great for angler fishermen. We stay in the top 100 with the bass masters rating. We’re the only lake in West Virginia in the top 100 for bass fishing, so that is pretty significant.”

In addition to the 2,640 acres that Stonewall Jackson Lake covers, it also features more than 13,000 acres of land that they use for wildlife management. “That area is for hunters and hikers, or just a way for people to enjoy the outdoors,” Toler added. All of the recreational facilities at the lake are operated through the state of West Virginia.



“I want the public to know what we have to offer,” Toler said. “We have a mile long hiking trail adjacent to the dam. It has interpretive side exhibits, so it’s basically a self-guided tour. There have been benches added recently along the trail. “We also have a really nice scenic overlook behind the dam. We have a completely rehabbed fishing pier that was just completed this past year. The maintenance team has also added three picnic tables in the downstream area, and we have plans for two more. Other small additions are the park benches we’ve been adding along the river.” According to Scott Hannah, park ranger and Natural Resources specialist for Stonewall Jackson Lake, one of his favorite parts of the dam is the visitors center. New things are continuously being added and upgraded in the center.

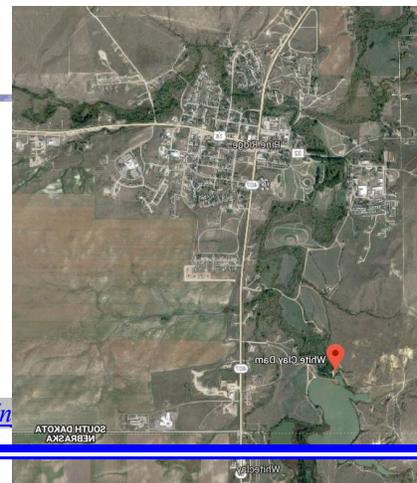
Our visitors center has had some very significant upgrades that are just wonderful for children,” Hannah said. “One of our biggest initiatives we like to focus on is water safety, so we’ve added hands-on, STEM-type games. So kids are actually learning about water safety while they’re playing a fun game.” In addition to the many children’s games, the visitors center also offers a wide variety of information and displays for both children and adults. There are live animals, such as locally found fish and turtles on display in aquariums, a working model of Stonewall Jackson Dam, a 3D map of Stonewall Jackson Lake that shows all trails and access points and a special corner featuring taxidermy of most native animals. The Stonewall Jackson Dam and visitors center is open from 7:30 a.m. until 3:30 p.m. each day. According to Toler, although it’s mandatory the gates be closed at that time each day, visitors are still welcome to enjoy the location at other hours throughout the day.

[\(Watch out!\)](#)

Officials say White Clay Dam may become unstable, threaten downstream population

June 20, 2019, NewsCenter1 Staff, newscenter1.tv

PINE RIDGE, S.D. — According to a message from the BIA Safety of Dams Program, the White Clay Dam is now being



monitored as it may potentially become unstable. Residents that are at risk are being notified to standby and prepare for evacuations if necessary. They say the situation is a Response Level 2, meaning a rapidly developing situation in which conditions are more serious than a Response Level 1.

The situation was noticed during a routine inspection of the outlet works. Sediment was found in the outlet lines where, under normal circumstances, there should be none. The public has been asked to stay away from the spillway or pump house areas.

(They just don't stop beating the same drum. If you keep saying the same thing over and over, people will begin to believe it.)

Letter: Help salmon, remove dams

By Joe Paliani, Ocean Park, June 20, 2019, columbian.com



Salmon and steelhead spawning runs in the Columbia River Basin at one time constituted the largest anadromous fishery migration on the planet. "Now there are four hydroelectric dams on the Snake River, and the salmon and other fish runs are just a husk of what they once were," says Brian Brooks, Executive Director of Idaho Wildlife Federation. According to the American Fishery Society, 106 runs of Pacific Northwest salmon in the Columbia River Basin have gone extinct, mainly because of the dams. (National Wildlife

Magazine, July 1, 2019). These dams are now up for re-licensing by The Federal Energy Regulatory Commission. Before the dams were constructed by the U.S. Army Corps of Engineers in the 1930s to 1940s, millions of chinook, sockeye, coho, chum, and pink salmon (some species that grew to 70-100 pounds each) spawned in these rivers. Imagine the millions of fish that used to be that are now extinct. When's the last time you hooked a 100-pound salmon? Never? And you never will. Let's get rid of the dams on the Columbia and Snake rivers before the last of the salmon runs dies. Please, call your representatives and ask them to help the salmon.

(Never ending by anti-dam folks. Don't think these dams licensed. Aren't they Federal dams?)

Letters: Why the salmon and steelhead cannot return

Jun 22, 2019, tdn.com



National Wildlife Magazine (June-July, 2019) reports that the Snake River and the Columbia River Basin for thousands of years "constituted the largest anadromous fishery migration on the Planet." Fish traveled 900 miles inland to spawn in Idaho's Salmon and Snake Rivers. "Now there are four hydroelectric dams on the Snake River, and the salmon and other fish runs are just a husk of what they once were." says Brian Brooks, Executive Director of Idaho Wildlife Federation. "According to the American Fishery Society, 106 runs of Pacific Northwest salmon in the Columbia River Basin have gone extinct., mainly because of the dams."

These dams are now up for re-licensing by the Federal Energy Regulatory Commission (FERC). Before the dams were constructed by the U.S. Army Corps of Engineers in the 1930s and '40s, millions of Chinook, sockeye, coho, chum, and pink salmon spawned in these rivers. Recent fish counts on the Snake River showed that only five native sockeye salmon returned upriver to spawn during 2017. The next year only three native sockeye salmon returned. Isn't time to admit that the dams are cause of the death of the salmon runs? Yet those who support the dams continuance distract the public from the truth, blaming warming blobs (a recent phenomenon) and cormorants, and terns and other fabled demons as the cause of the fisheries ruin. Stop spending \$3 million a year to kill cormorants (at a cost of \$1,000 per bird) and just place the blame on the dams, where it belongs. Wouldn't it make more sense to use the U.S. Army Corps of Engineers to

take down the dams that they built in the 1930? Let's try to protect the few fish runs left by demolishing the dams. Please, call your representatives and ask them to help the salmon.
Joe Paliani, Ocean Park, WA.

(They got a whole lot of water in the Midwest and in some places in the West.)

Colorado dam spills for the first time in 4 years

Strontia Springs Reservoir has reached capacity and is now spilling into Waterton Canyon.

By Cory Reppenhagen, June 21, 2019, 9news.com

LITTLETON, Colo. — Strontia Springs Reservoir has reached capacity and is now spilling into Waterton Canyon for the first time in four years.

The reservoir is located in Waterton Canyon in Littleton. It's part of the South Platte River Collection System. That means 80 percent of Denver's drinking water passes through this small lake. The reservoir, which holds 7,863

acre-feet of water, is the smallest of Denver Water's 10 major reservoirs. While the water that goes over the spillway into the South Platte River continues downstream to Chatfield Reservoir, other water is diverted into a 3.4-mile tunnel under the mountains to the Foothills Water Treatment Plant.



Construction of Strontia Springs was completed by Denver Water in 1983. The dam stands 243 feet above the South Platte River. It is one of seven Denver Water facilities with generators in its system which produces 70-million emission-free kilowatt hours of power every year. Denver Water estimates that saves an estimated \$4 million a year by avoiding the need to purchase that power elsewhere. Upstream from Strontia, is Antero and Eleven-Mile Reservoirs, as of Wednesday both were full, and the other collection point in this South Platte line, Cheeseman Reservoir is 90 percent full. Denver Water expects all 10 of its major reservoirs to fill completely this summer. The storage capacity is currently at 91 percent full overall.

(The dams weathered the storm.)

Officials: Lack of dam failures prevented worse floods

By David Levinsky, Jun 21, 2019, burlingtoncountytimes.com

An inspection of 18 dams along the Rancocas Creek, NJ Thursday revealed none had failed and that there were no unsafe conditions at any of them, despite the near record high waters from the storms.

The dams held. If there was a silver lining to be found from the week's torrential rains and major flood it was that there were no devastating dam failures on the Rancocas Creek to exacerbate the problems. An inspection of 18 dams along the Rancocas Creek Thursday revealed none had failed and that there were no unsafe conditions at any of them, despite the near record high waters from the storms. "All of them are performing as expected," said John Boyle, director of the Division of Dam Safety and Flood Safety within the state Department of Environmental Protection.



More than 6 inches of rain fell in parts of Burlington County over a few hours Wednesday night during a severe thunderstorm and the precipitation and runoff caused major flooding along the north branch and moderate flooding along the south branch, according to the National Weather

Service. The flooding was reminiscent of the August 2011 deluge after Hurricane Irene and following storms in July 2004, which caused catastrophic flooding in Southampton, Medford Lakes, Medford and Lumberton due to a series of dam failures along the creek. A total of 21 dams failed during the 2004 storm and another 30 were damaged, according to the DEP. The breaches caused a “chain reaction” as millions of gallons of water from lakes and streams was released downstream causing subsequent dam breaches. Following the storm, regulators conceded that none of the failed dams from 2004 were in total compliance with safety standards related to worst-case rainfall scenarios. Afterward, several dams were either rebuilt or repaired according to stricter standards, including several in Medford Lakes, Medford and Southampton. The upgrades were likely critical during this week’s storm, Boyle said.

While there were reports of some dams being “overtopped” by floodwaters, the absence of complete dam failures likely spared downstream communities from even more catastrophic flooding, he said. “It was critical we got these dams fixed after the ’04 storm,” Boyle said. Lumberton Administrator Brandon Umba agreed, saying the flooding in town was from the rain and runoff rather than a dam breaches or releases. “The good thing was, the dams held up and there was no lowering of the dams,” he said.

(Looks like an old little guy.)

Ossipee Dam threatens failure; Haw River paddle accesses closed

By Times-News, Jun 22, 2019, thetimesnews.com

The Ossipee Dam in Altamahaw, NC is leaking and may be in danger of failing, the county said Saturday, June 22, prompting the closure of paddle accesses downstream on the Haw River. The dam is classified as a low hazard. Should the dam fail or rupture, the impact to property should be minimal, Alamance County said Saturday. Due to the threat, the Altamahaw Paddle Access, Shallow Ford Natural Area Paddle Access, Great Bend Park Paddle Access, and the Glencoe Paddle Access are closed until further notice. Glen Raven Mills owns the dam. A caller reported a leak at the base of the dam Saturday morning, prompting an inspection. The county notified the state, and the State Department of Transportation, Department of Environmental Quality Dam Safety Division, and the State Emergency Management Office had been in contact with the Alamance County Emergency Management Office and Glen Raven Mills throughout the day. Glen Raven, county emergency management and the Altamahaw-Ossipee Fire Department will monitor the dam and report any changes to the state, the county said.



(Guess they’re finished at least until the next storm.)

If you haven’t seen Oroville Dam repair work in a while, here’s the latest

BY DAVID CARACCIO, June 24, 2019, sacbee.com

Click here for video:

<https://www.sacbee.com/news/state/california/article231908288.html>

Crews placed the structural concrete cap on the emergency spillway at Oroville Dam from January to May 2019. It’s been over two years since a hole opened up in the spillway, forcing the evacuation of nearly 180,000 people in California. = Crews have finished placement of the structural concrete cap on the emergency spillway at Oroville Dam, according to the California Department of Water Resources. The cap



can be seen in a DWR video released June 10, 2019. The work took place from January to May 2019. It's been over two years since a hole opened up in the spillway, forcing the evacuation of nearly 180,000 people in California



Hydro:

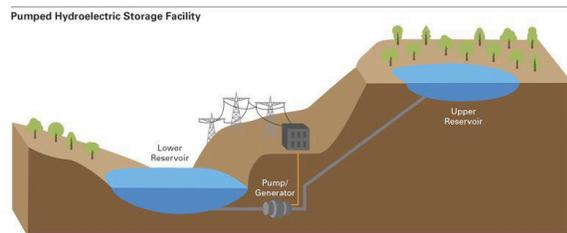
(Let's hope this works. Pumped Storage is a good companion for renewables like wind and solar. Never heard it called hydroelectric storage. The environmentalists will be all over this one.)

Tazewell County now the only site being considered for \$2 billion hydroelectric pump station project

Project would create 2,000 jobs during construction phase, millions in new tax revenue

By CHARLES BOOTHE, Bluefield Daily Telegraph, Jun 18, 2019, bdonline.com

BLUEFIELD, Va. — Tazewell County is now the only potential site being studied for a \$2 billion Dominion Energy hydroelectric pump storage facility. Jeremy Slayton, communications specialist with Dominion, and Spencer Adkins, director of generation projects, said Tuesday morning the other site that was under consideration in Wise County has been eliminated for the project. Slayton said the Wise County site, which would have used the abandoned Bullitt Mine, "is not suitable" for a large-scale project that Dominion is considering.



Pumped Hydroelectric Storage Facility

"We are going to perform more extensive surveys ... on the site in Tazewell County," he said. That site is on the south side of East River Mountain just west of Bluefield and has already seen geotechnical surveys and environmental studies during the past almost two years. But Adkins said that with the focus now only on Tazewell County, more work is needed to make "absolutely" sure the site is suitable for the project, and those studies will most likely go into 2020 before a final decision can be made.



A potential water source for the Tazewell County facility was also eliminated (an abandoned mine at Amonate) and they are now looking at

Wolf Creek for the 6.5 billion gallons of water needed. "It's not a slam dunk yet," he said, adding that it's a matter of performing all the due diligence necessary.



If the project is given the green light, it will bring more than 2,000 jobs during the construction phase, which lasts five to seven years.

A pump storage facility is akin to a "giant battery," with two large reservoirs, one near the top of East River Mountain and one near the bottom. Both reservoirs will be filled with water and power is generated when water is released from the upper reservoir to the lower one, cascading through tunnels more than 1,000 feet down the mountain, providing the power to rotate turbines. Dominion can have access to the energy that is generated within "minutes" and use it wherever needed on its grid. The project would take about 10 years to complete and bring a huge economic boost to the area to the tune of about \$320 million for Southwest Virginia as well as tax revenue.

(This guy is as wrong as he contends the PUD is. The methane claim comes from 2 projects in S. America where they didn't clear the reservoirs. We do! The reason large hydro is not considered a renewable is political. The wind and solar advocates lobbied for that outcome because hydro is cheaper and they didn't want the competition for their wind and solar projects that are subsidized with tax dollars. As for his other claims, we've learned how to mitigate most impacts.)

Letter: Hydropower is not the key to state's clean-energy plans

Jun 19, 2019, chinookobserver.com



As is common in this day of "say it and they may just believe it," statements supporting political positions need to be viewed with skepticism and fact-checked. So is the case for the letter submitted by the PUD No. 2 Commissioners published in the June 12 edition of the Chinook Observer. The political position PUD No. 2 is subtly advocating is the move to require hydropower to be considered a renewable energy source in Washington State, which it currently is not. To support this position they make a number of statements that

are misleading and some that are simply not true.

The commissioners state that "hydropower is a zero-emission resource." This is not true. It's well-documented that many of the large lakes (reservoirs) created by dams produce exceptionally large amounts of methane, a greenhouse gas, and this is now believed to be a major contributor to global warming. (See BioScience, Volume 66, Issue 11, 1 November 2016, Pages 949–964). Further, the editorial states that hydropower is "nimble, it ramps up and downs in minutes, or even seconds to keep the electric grid in balance." While it may be true that electrical generation rates can be adjusted quickly at some dams, operators are very reluctant to do that. Starting and stopping hydropower turbines is wearing on the equipment and shortens their lifespans, but most importantly, a turbine that's not spinning is not making any money for the dam operator, which they don't like for obvious reasons. Because of historic energy generation contracts that favor hydropower producers, Washington's growing wind-power farms are regularly required to spill wind and reduce energy production when the energy they generate is more than is needed to meet the demand.

The most significant false statement though is that hydropower is "renewable." This implies that hydropower generation can be produced without impacting the environment. Hydropower is in fact not considered a renewable energy source in Washington because of the major environmental impacts it has, in particular the massive damage it causes to rivers. Dams across the state turn large extents of free-flowing rivers into warm lakes. These lakes not only produce methane, they support large populations of invasive, predatory fish that eat salmon and other native species. Further, the impacts of this are devastating to the entire river downstream of the dam. And finally, dams block the migration of salmon and steelhead. While many dams now have fish ladders to help adult salmon migrating upstream and downstream passage systems to help juveniles migrating to the sea, dams still kill large numbers of salmon as they attempt to pass them in both directions. There are also river systems like the Cowlitz River here in southwest Washington that have multiple dams that still don't provide any fish passage and will never be

able to due to the height of the dams. There are well over 100 miles of productive fish habitat above the Cowlitz River dams that are inaccessible to salmon other than the few fish that are trapped below the dams and hauled past them.

Whether we need dams in Washington to meet our energy needs is a legitimate and challenging question and one that is currently being debated. Stating that dams supply clean, renewable energy that can be used to meet Washington's goal of using 100% clean energy by 2045 is misleading and does not accurately represent the facts of the issue. It will serve the people of Washington far better if factual information is provided as they consider this important question. Allen Lebovitz, Naselle, WA.

(Counterpoint!)

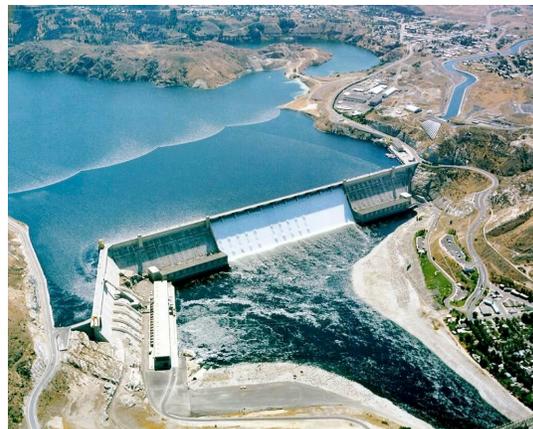
Op-ed: The Environmental Value of Hydropower

RUSS SKOLROOD, ARIE CALLAGHAN AND DAVE TIMMONS JUNE 19, 2019, washingtonstatewire.com,

President Russ Skolrood, Vice President Arie Callaghan, and Secretary Dave Timmons are the elected Board of Commissioners for the Grays Harbor Public Utility District #1. They wrote the following op-ed on hydropower in Washington.

It has become in vogue to frame the dams on the Columbia and Snake Rivers as impediments to Washington's environment. That's only true if you throw out years of environmental studies, a few dozen facts, and over 80 years of history. For starters, the operators of the dams on the two rivers oversee a resource that is working to successfully co-exist with their environment, not destroy it. Billions of dollars have been spent by utility customers on salmon restoration and fish passages around dams. As a result, juvenile fish survival rates past the federal dams top 95%, and returns for chinook, steelhead and sockeye on the Snake River have seen record numbers over the last decade. At a time when millions of dollars are spent on new, renewable sources of energy, 90% of the Northwest's renewable energy already flows from the Columbia-Snake River system; hardly the environmental disaster story some would have you believe.

For students of history, the federally-controlled dams that make up the network on the Columbia and Snake River helped to ensure that the air breathed in by generations would be amongst the cleanest in the nation. Imagine a Washington skyline dotted by the chimneys needed for coal fired power plants. Imagine the clouds of smoke being belched into the sky and the respiratory ailments that millions would have been subjected to if coal plants were the preferred method of power generation. Imagine the rattle of trains and the clouds of dust from shipping ton after ton of coal into Washington. It's not a pretty picture, especially for a state that prides itself on its



outdoor appeal. However, for students of recent history, consider this: would the governor have been able to sign a 100% Clean Energy bill WITHOUT a statewide power portfolio that included 60% clean hydropower? Studies like those carried out by Energy and Environmental Economics, Inc. (E3) in the last two years indicate that reliably providing 100% clean energy WITHOUT the inclusion of hydro would cost the Northwest region billions of dollars. It's a safe bet that many lawmakers would have questioned going along with such a costly proposal. In the end, they did not have to since the authors, sponsors, and supporters of SSB 5116 recognized the value of hydro and made it a key point in some of the most meaningful environmental legislation passed by the Washington State Legislature. However, hot off the success of that legislation and the nod that was given to hydroelectric power, came the inclusion of \$750,000 in state funding to study the impacts of removing four dams on the Snake River. As fast as the state embraced hydropower, they were looking for ways to curtail it.

It's easy to get bogged down in the argument that state money should not be spent on a federal issue or that the orcas meant to benefit from the removal of the dams are hundreds of miles away. The best argument that can be made for the preservation of those dams is the overall value that they provide to Washington state. Economically, recreationally, agriculturally, navigationally AND environmentally speaking, the dams on the Snake River are a vital resource. They are part of a network that seeks to strike a balance between environmental awareness and economic benefit, and it is a huge error to ignore that fact. The value of hydropower in Washington is etched into our state as deeply as the rivers that make it possible. When you examine the history of hydropower in the Pacific Northwest, you find a resource that touches every corner of the region. Power, navigation, recreation, agriculture and trade all had their futures in the Northwest shaped for the better by the dams that span the rivers from Bonneville to Lower Granite and Grand Coulee. However, so did another factor: Washington's environment.

(Replacing what Mother Nature destroyed.)

Retired Corps workers inspect Spencer Dam

By ANDREA LARSON, norfolkdailynews.com, Jun 21, 2019

SPENCER, Nebr. — When the dam about 5 miles southeast of here was breached by floodwaters and ice chunks in March, a chain of difficulties was set off in the area. That included a lack of water resources for the town of Spencer and a closed-off section of Highway 281 and other county roads. On Thursday, a big step was taken to begin the infrastructure recovery efforts regarding the dam itself. Edward Sloan, program delivery manager for the Federal Emergency Management Agency (FEMA), visited the site of the dam, along with a volunteer team of retired members of the U.S. Army Corps of Engineers. Sloan said his team would be inspecting the dam in relation to environmental, mechanical, electrical, structural, civil and hydraulics aspects. The inspections are part of Phase II of a four-phase process to secure public assistance and help to determine which requests will be a priority. Following a recovery scope meeting earlier this week, a 60-day regulatory time frame began for damages to be identified and sent to the Consolidated Resource Center. FEMA's public assistance program has been authorized for 76 counties and five tribal areas that sustained major damage in the March flooding and storms. "That's how funding is approved. My team all does a piece of the inspection and writes up reports that go to the grants manager program. Nebraska (Public) Power has to come up with a cost for replacement of the dam, if we decide to replace it," Sloan said. AT THE dam's turbine station, inspectors noted a large hole in a brick wall that was punched out by ice when floodwaters breached. A water line several feet up on the turbines was marked, showing just how high the waters hit when they came crashing through.



Inspectors and workers with NPPD walked all throughout the station, noting the makes and models of destroyed equipment. "Nebraska Power is evaluating whether or not to upgrade the whole facility or replace it. If we do that, we'll need new turbines. That would also mean we must replace the dam, the concrete gates, all electrical. The turbines, the dam, none of that meets current standards, and it would all have to be replaced for (FEMA) to fund it," Sloan said. That's because the dam was built in 1927, and while it did last 92 years, it is not up to code, he said.



Another difficulty in determining possible infrastructure repairs is that the Niobrara River cut a new path when the floodwaters hit. The concrete portion of the dam is now about 3,000 feet from the bank on the south side of the river. A new, temporary bridge east of the dam is being constructed to get Highway 281 open to the south.

"In the next 60 days, we will determine what the process will be moving forward," Sloan said, "whether they're going to rebuild the dam or return the river to natural river flow and remove the facilities here."

(Needs a better story. A piece of advice, don't assume they're asleep at the switch.)

FERC Stands Firm on Michigan Dam Closure

By Amanda Durish Cook, June 23, 2019, rtinsider.com

FERC denied a request to reconsider its decision to revoke the license for a small Michigan hydroelectric project over significant safety concerns.



Water:

(Too much water, ya gotta put it somewhere and get rid of it.)

Fight climate change, not the IJC

By MADELINE CLARK, 6/15/19, oswegocountynewsnow.com

To the editor,



I am from Fulton, right in the heart of Oswego County, NY. My parents met in a dormitory at SUNY Oswego, I grew up on Rudy's Fish Fry and in the summer, my family would spend days at Fair Haven. I moved away from the area about a year ago, but my heart is still very much there. Oswego County is my home and it always will be. It breaks my heart to see the landmarks of my childhood slipping into Lake Ontario.

These material parts of my memories that are disappearing before my eyes. It is painful to watch, and even more painful from afar. Some are calling this frequent inundation of coastal Lake Ontario "the new normal." People are losing their homes, businesses and material memories as well. Much of the public has blamed the International Joint Commission (IJC) for this flooding and I understand. When something traumatic happens, we want to blame something.

For those not familiar with the IJC, it is a committee of scientists and engineers from Canada and the U.S. who try to manage bordering watersheds in ways that benefit both countries. The commission does not actually control the water levels. Their goal is to figure out how to properly distribute the millions of gallons of water which flow through the St. Lawrence and Great Lakes every year (i.e. how much water can be released from dams on the St. Lawrence, while not flooding all of Montreal at the same time). Watersheds are complicated systems and large amounts of spring rain such as this year's have presented many challenges. In 2014, the IJC was faced with more frequent and heavy precipitation. In response, 'Plan 2014' was drafted, changing the amount of water released and held during times of flooding or drought at the Moses Saunders power dam. The new fluctuating flood regimes model the natural flow of water in the St. Lawrence and Lake Ontario watersheds before there were any dams. This effectively increases the range of yearly water flow from the dam.

This plan was developed to manage runoff from historic precipitation events while protecting imperiled ecosystems and our communities. In short, the IJC is not a malicious organization trying to destroy my childhood home, it is



trying to cope with a biblical amount of precipitation. The previous plan developed in 1958 was outdated and was not able to handle these new extreme floods. It was also slowly damaging sport fish spawning habitat and letting invasive species creep in. If you are familiar with these areas of New York and Canada, you probably understand why this is bad. A good chunk of our economy here is based on tourism and sport fishing. If our ecosystem were to collapse, our communities would follow suit. This plan was the immediate solution. Either we cope with the flooding and rebuild, or we lose our ecosystem entirely. There is no winning.



Environment:

(It doesn't sound like many, but they like it.)

More spring Chinook returning to Deschutes Basin

46 upper basin spring Chinook have returned, compared to five that returned last year

By KYLE SPURR, THE BULLETIN, June 23, 2019, bendbulletin.com

The number of spring chinook returning from the Pacific Ocean is down this year across the Northwest. But there is reason for optimism for spring chinook that originated in the Deschutes River Basin. So far, 46 upper basin spring chinook have returned and been released to spawn in the Deschutes tributaries above the Pelton Round Butte Hydroelectric Project near Madras. That is a huge increase from just five returning to the region last year. Steve Corson, a spokesman for Portland General Electric, credits the work the energy company has done with the Confederated Tribes of Warm Springs and other organizations in the Deschutes basin to reintroduce the salmon that were cut off when Pelton and Round Butte dams were built in the 1950s and 1960s. PGE and the Warm Springs tribes completed a new fish passage system at the dams in 2010 and have monitored the spring chinook return each year. This year has been the highest yet, with 14% returning.

Corson said he hopes to see the numbers continue to increase, but he is remaining realistic about his expectations. "The sobering reality is this is very much a long-term project," he said. "These runs were cut off for the better part of 50 years, and we are not less than 10 years into the reintroduction effort." Another possible reason for the higher return of spring chinook is the way dam operators are collecting and releasing them around the Pelton and Round Butte dams, Corson said. Two years ago, dam operators started collecting and releasing the fish at night, rather than during the day when they are more vulnerable to predators. "By doing night releases, we give the fish a chance to re-acclimate to the river and get on their way and hopefully have better survivability," Corson said. Of the 46 upper basin spring chinook that returned this year, five made their way to Whychus Creek near Sisters, where environmental agencies have worked to restore the habitat along the creek. The five adult fish is the largest number to return to Whychus Creek in any year of the creek's restoration.

Brad Chalfant, executive director of the Deschutes Land Trust, said Whychus Creek used to run completely dry each year before his organization and others started a restoration effort. Through the work of the land trust, Deschutes River Conservancy and Deschutes Watershed Council over the past 20 years, the creek is starting to have a healthy stream flow and habitat to support a variety of species, including fish, birds and beavers. Chalfant said it is a positive sign to see spring chinook reaching Whychus Creek and is an example of the years of restoration work starting to pay off. "To see the number of these upper basin fish actually going up, that would suggest for us that despite bad ocean conditions and despite drought, we are beginning to see some return on all of the work and investment that has been made," he said.



Other Stuff:

(City rankings.)

Best Place to Work? Not Google or Facebook Bain & Company consulting comes in at No. 1 in new ranking

By Newser Editors, Newser Staff, Jun 14, 2019, newser.com

(NEWSER) – **Which companies are the best to work for in America?** And the worst? 24/7 Wall St has come up with rankings in both categories, using data from Glassdoor. The info comes employee reviews that take into account a host of factors, including pay, satisfaction, and job opportunities. **The company with the best ranking is Bain &**

Company consulting, headquartered in Boston. At the bottom is The Fresh Market, a supermarket chain based in North Carolina.

The 10 best companies, along with two key factors:

1. Bain & Company, Boston: 4.7 out of 5 score; 95% of employees would recommend it
2. Power Home Remodeling, Chester, Pa.: 4.6; 90%
3. TaskUs, Santa Monica, Calif.: 4.6, 94%
4. NVIDIA, Santa Clara, Calif.: 4.4; 91%
5. In-N-Out Burger, Irvine, Calif.: 4.4; 91%
6. Google; Mountain View, Calif.: 4.3; 86%
7. Facebook, Menlo Park, Calif.: 4.3; 86%
8. McKinsey & Company, New York City: 4.3, 87%
9. Vector Marketing, Olean, NY: 4.3, 87%
10. Boston Consulting Group, Boston: 4.3, 85%

The worst companies to work for:

1. The Fresh Market, Greensboro, NC: 2.2; 25%
2. Frontier Communications, Norwalk, Conn.: 2.4; 23%
3. Union Pacific, Omaha: 2.4; 26%
4. Alorica, Irvine, Calif.: 2.5; 36%
5. Family Dollar Stores, Matthews, NC: 2.5; 27%
6. Conduent, Florham Park, NJ: 2.5; 34%
7. Genesis HealthCare, Kennett Square, Penn.: 2.5; 31%
8. US Security Associates, Roswell, Ga.: 2.5; 34%
9. LA Fitness, Irvine, Calif.: 2.6; 33%
10. Regal cinemas, Knoxville, Tenn.: 2.6; 35%

(Full list of the best companies here: <https://247wallst.com/special-report/2019/06/12/the-best-companies-to-work-for-4/>)

Full list of the worst companies here: <https://247wallst.com/special-report/2019/06/12/the-worst-companies-to-work-for-4/>



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