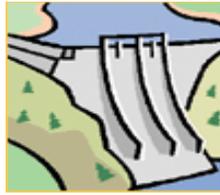


5/3/2019



Some Dam – Hydro News™ And Other Stuff



Quote of Note: *“Success consists of going from failure to failure without loss of enthusiasm.”*
— Winston Churchill

Some Dam - Hydro News → Newsletter Archive for Current and Back Issues and Search:
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“Good wine is a necessity of life.” - -Thomas Jefferson
Ron’s wine pick of the week: 2016 San Felice Italian (Tuscany) Red “Bell’Aja”
“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson



Dams:

(Big Chuck is a guy who really exists. Flood control can be a good thing. I think he means spillway crest when he’s referring to water over the top of the dam.)

Big Chuck: East Sidney Dam has always impressed me

By 'Big Chuck' D'Imperio, Apr 15, 2019, thedailystar.com

Oneonta, NY - The East Sidney Dam never fails to impress. Not in 1950. And not in 2019. It was a great thrill for me and my siblings to take a ride up from Sidney to view the “brand new” East Sidney Dam back in the late 1950s. I remember that when I first laid eyes on the dam, I thought that this had to be the biggest thing in the world. Back then we were able to walk right up to the bottom of the south side of the dam and touch it. Just a trickle of water would be leaking out from a crack or valve in the concrete. It was very cool. Then



we would walk up to the viewing platform and look at the other side. Back then there was a pretty much dry river bed (Ouleout Creek) which stretched out into the distance. Of course, **this all changed in 1965 when the lake formed by the dam opened up as a recreational area for campers, swimmers, boaters and picnic goers.** Big, deep lake on one side. Little trickle coming out of the other side.

So why was the dam built in the first place?

In 1936, there was a devastating flood along the creek that was historic in proportions. A severe rainstorm hovered over our area causing the creek to swell to a raging torrent. The water rushed down the valley where it joined the Susquehanna River, doubling the size of that main waterway. The devastation along the river's route was a sight even the oldest of old-timers had never seen before. Pretty little communities were reduced to Mad Max-like moonscapes with piles of timbers and parts of houses scattered about crazily. As the water gained strength, it slammed into the Binghamton area like a watery thunderbolt. Here, houses were swept off their foundations and bridges exploded into splinters leaving many areas isolated from their neighbors, and several businesses were destroyed.

Enough was enough. The U.S. Congress quickly passed the Flood Control Act of June 23, 1936, which authorized a comprehensive plan to protect our area from future destruction. It was decided that a perfect place for a dam to be built spanning the Ouleout Creek would be four miles south of Franklin and six miles north of Unadilla.

After a couple of years of construction, this protective behemoth was officially declared completed in April 1950. It is a gravity-type concrete dam with earthen embankments on either side. **It is the length of six football fields and is 146-feet tall. That is as high as a 14-story building.** Last week I was coming down state Route 357 after a speaking engagement at the Franklin Railroad Museum. It was a beautiful afternoon and I suddenly found myself passing the dam. I pulled into the parking spot and walked out. Still, big deep lake on one side. Little trickle of water on the other. I walked out on the catwalk. How many times did I do this as a kid? Great memories. How many pennies did we drop down the hole at the top to watch the coin flutter away in the breeze seemingly never to hit the water? **I drove to the lower section and got out. You cannot walk up to the dam and touch it anymore.** But you can get close enough to take in the enormity of what you are looking at. The stream next to you burbles along being fed by that little trickle coming out of the concrete mass. But, you can almost feel it in your chest. An ominous sensation of foreboding. That wall in front of you is holding back millions of gallons of water just a few feet away. There is a sense that this whole engineering tableau is somehow alive. Breathing. As you stand at the bottom and look up, you think not only would it be impossible for water ever to reach the top of the dam but surely no water would ever come over it. **Wrong.**

The Army Corps of Engineers has placed an information exhibit here for all to see. It describes the construction of the dam, why it was built and its specific dimensions. And, there is a full color photograph of water actually coming over the top of the dam after the major storms of 2006. It was the only time water came over the top since it was built on 1950. It is a frightening image.

Yes, the East Sidney Dam never fails to impress. I'll catch you in two ...

(The best advice is to NOT go near any dam. Take photos with a zoom lens. Why does it take so long? Kayakers don't pay attention to signs. The dam and flow are too small to use it for anything.)

Citizens seek swift removal of Will County dam on DuPage River where couple recently drowned

By **Alicia Fabbre**, Chicago Tribune, Apr 16,2019, chicagotribune.com

A petition is circulating to seek removal of the dam, which was the scene of the drowning deaths of two people recently. (Antonio Perez/Chicago Tribune)
Alicia FabbreChicago Tribune (Photo caption)

The recent drownings of a young couple in the DuPage River have prompted calls for Will County Forest Preserve officials to speed up the removal of a dam in Shorewood.

James Kennedy, of Shorewood, launched a petition April 3 on change.org after Hannah Tammeling, 22, of Plainfield, and Abraham Ramos, 28, of Palatine, drowned in the river near the dam at the Hammel Woods Forest Preserve. Their bodies were found April 1 about a half-mile from where witnesses



had seen them struggling in the river near the dam the day before. The drownings have brought new attention to the low-head dam, which was built in the 1930s for recreational purposes but which also has been the scene of other tragedies over the years. Though the concrete and limestone dam is only about 4 feet above the riverbed, authorities have stressed the dangers of the dam, noting that the boil that churns below it can suck people back into the water and is very difficult to get out of, even for strong swimmers. The concerns about the Hammel Woods dam echo those about similar structures across the state and nation, including in the Will County city of Wilmington, where about 20 people have died near the Kankakee River dam in the past 35 years.

“I won’t be taking my kids to Hammel Woods anymore because of the dangers of the dam,” Kennedy said after presenting the petition to commissioners at a forest preserve board meeting Thursday. Forest preserve officials have targeted the Hammel Woods dam for removal but said last week it will take months before studies are completed and permitting is approved. Kennedy and others want the process to move more quickly. Kennedy’s petition had about 1,200 signatures as of Monday. He said more than 800 of those came from people who live in Joliet, Shorewood and the surrounding area. Many who signed the petition said the recent drownings was their reason for doing so. “Together we can send a strong message that one more life lost is one too many,” the petition reads. “Regardless of how or why people end up trapped in the dam, removal of this drowning machine as soon as possible will immediately mitigate these dangerous conditions forever.” There have been other drownings in the river near the dam. In 2013, a 24-year-old Itasca man drowned while swimming. In 1993, a Joliet man died after jumping into the river to retrieve some fishing gear. In 2015, two men were rescued after their canoe overturned in the river after it went over the dam.

In the most recent incident two weeks ago, Tammeling had gone into the water to help Ramos, but it was unclear how or why he went into the river, a Fire Department official said. The dam’s removal was studied in the 1980s but was met by public opposition and the board instead moved forward with safety improvements, including a portage around the dam for boaters as well as dam repairs. In 2003, the Conservation Foundation studied five dams along the DuPage River, including the Hammel Woods dam, and suggested removal would improve safety and be beneficial to aquatic species. Another study in 2017 identified removal of the dam as a high priority. Funding from the Lower DuPage River Watershed Coalition, which was formed in 2012 to address issues along the DuPage River, became available in 2019 for the dam removal. On Thursday, commissioners approved a second phase of studies for engineering for the project. Forest Preserve District officials have said the dam removal may not happen until next year, noting that in addition to the engineering study, approvals for a permit allowing the removal are still needed from the Army Corps of Engineers, the Illinois Department of Natural Resources and the Illinois Environmental Protection Agency.

“We’re working through the process,” said Will County Forest Preserve District Board President Laurie Summers, D-Crete. Commissioner Tom Weigel, R-New Lenox, asked if the timetable for dam removal could be reviewed or accelerated. He also asked district staff to review safety measures, such as additional signage, that could be taken until the dam is removed. Signs are posted along the shoreline above and below the dam warning kayakers to port their watercraft to

the other side of the dam. A large sign warning against swimming and wading in the water also is posted on an overlook at the dam. Ralph Schultz, chief operating officer for the district, said the district is talking to its risk management agency to determine whether additional signage or other safety measures are necessary. Forest preserve Commissioner Joe VanDuyne, a Wilmington Democrat whose district includes Shorewood, noted that Wilmington city officials have grappled with similar issues over its dam. The city installed warning signs in English and Spanish near the dam and in 2018 approved an exclusionary zone that prohibits people from entering the Kankakee River 100 feet north of the dam and 50 feet south of it. City Council members also briefly discussed installing a chain link fence to keep people away from the dam but quickly dropped the idea because it would limit access for first responders, according to city officials.

Suggestions to remove the Wilmington dam have been met by resistance from officials who fear that would mean an end to Island Park, a popular attraction in the city. In 2016, the city hired an engineering firm to study the possibility of putting notches in the dam, or “stepping down” the dam, to help break up the force of the undertow at its base. Since the 1980s, the Wilmington dam has claimed the lives of many people including children, the elderly and rescuers. In 2006, a 4-year-old boy was saved after falling in the water near the dam, but the three people who tried to save him, including the boy’s mother, drowned. In 2000, two adults drowned after their canoe capsized when it went over the dam. In 2016, a young brother and sister died after the 12-year-old boy went into the water to touch the dam and his sister went in after him to try to save him. Most recently, a woman died in 2017 after kayaking near the dam. *Alicia Fabbre is a freelancer.*

(A solution, people are going to extremes for Orcas – Would they do the same for people?)

Activists Rally for Woman on Hunger Strike to Draw Attention to Plight of Orcas

Photos by Emma Epperly / WNPA Olympia News Bureau, 4/11/19, chronline.com

Lanni Johnson of Snohomish is on a 17-day fast in front of the Washington State Capitol building, to convince lawmakers the Southern Resident Orcas need help now. On Friday more people who worry about the survival of the orcas, which have been declining in numbers, set up displays and joined Johnson in front of the Capitol. Johnson’s fast, a length chosen in honor of the mother orca who carried her dead calf for 17-days in 2018, will end on Wednesday.



A display put up by the “North Olympic Orca Pod,” an activist group pushing for the removal of the four lower Snake River dams, shows the remaining Southern Resident Orcas. There are 75 orcas currently alive in the region. The group also put up a “ghost fin” display showing the 35 orcas who have died since 2005. -- Photo by Emma Epperly, WNPA Olympia News Bureau

(This is considered the most unsafe dam in the world. This spillway chute is working fine. In case you wondered, 2500 cubic meters per second is about 88,287 cfs.)

Mosul Dam reinforcement ongoing as water reaches 30-year high

By Rudaw, Apr 18,2019

Engineers working at the site of Mosul Dam in northwest Iraq say the structure is not at risk of collapse despite recent heavy rain filling its reservoir to a 30-year high. Located 50 km north of the war-torn city of Mosul in Nineveh province, the dam straddles the Tigris River. Placed a heavy strain on Iraq’s crumbling infrastructure. Weak foundations, war-damage, and neglect have long made Iraq’s biggest dam a pressing concern, with observers warning the spring storms

could cause it to collapse. Although the Mosul Dam is now storing a record 9 billion cubic metres of water, engineers working at the site insist the structure is stable. "There is no any danger to Mosul Dam and what people hear from the media is not true," chief engineer Ryadh Azadeen Ali told Rudaw on Wednesday.



"We assure the people of Iraq that the dam is safe and working. If it wasn't, I wouldn't stay here with you!" he added. If Mosul Dam fails, cities along the length of the Tigris River to the Persian Gulf could suffer inundation – including the capital Baghdad. Workers are continuing to drill deep holes around the dam and filling them with cement to bolster the integrity of its foundations. So far, 2,600 holes have been drilled. An Iraqi team has been working here under the supervision of an Italian firm since the dam was briefly occupied by Islamic State (ISIS) militants in 2014. According to AFP, the Italian Trevi conglomerate has a \$2 billion contract to shore-up the dam.

Mosul Dam can store up to 11 billion cubic meters of water, which is used by households, farmers, fisheries, and to produce hydropower, providing an average of 580 megawatts of energy per day. In 1988, the dam held a record 10.5 billion cubic meters.



An average 2,500 cubic meters is emptied into the Tigris each day through the dam's five main gates. "There is no danger to the Mosul Dam and everything is working as normal and we are assuring everyone that waters are released through the gates in a normal way," said Muhsin Kochar, the dam's assistant manager. The structure is capable of withstanding another two billion cubic meters of water, he said. "The foundations of the dam are very strong," he added.

(Does anybody know this dam safety expert? He says some things of concern.)

I spoke to Scott Cahill, the dam safety guy, today, about the Oroville Dam Spillway situation. Not so good.

godlikeproductions.com, Apr 26, 2019

Greetings all.

Scott Cahill is at Watershed Services of Ohio, along with his wife who is also an expert in dam safety. He has three decades of dam safety teaching and experience under his belt. [link to www.linkedin.com (secure)] The phone number is online, so I called to ask about the spillway. I never expected a call back, but within a few hours he and his wife called me back. I asked him several questions and we spoke for over half an hour. I want to add my general impression of the man. He is very gracious and kind and answered every question, and is not by any means a "doomer", but a realistic sounding person who wants to hope for the best and cares about lives below a troubled dam. He said I could repeat anything he said- i.e., not worried about a lawsuit- but there are some things I won't repeat in case I didn't remember the exact details perfectly and I don't want to misquote him. He gave me the disclaimer that he has not been out on the dam this spring, nor party to DWR secret information. He does have some CA contacts Inc. engineers who have told him things the past couple years, but are afraid to go public because they will lose their jobs.

The new billion dollar spillway has failed. Too much water is coming up from underneath. They bolted it down to the underlying rock, but it had been bolted down in 2017 and we saw what happened. They are afraid to use it now lest a slab be pushed up from the water pressure. They are hoping that there is no more major rain, and the Hyatt Power Plant discharge (approx. 10,000 cfs) can handle the snow melt enough to not make the spillway necessary this year. The new emergency spillway would fail from erosion cutback, same as last time. No question. They need

excess water to go down the primary spillway, not the emergency spillway. I asked him, if the 2017 "canyon" did not cut back to the lake, and the spillway failed again this year, could it cut back to the lake this time? He said maybe. He said the information about the underlying rock and all the geology has been made a national security item, so the public is not to be told anything. I asked about grouting the voids. He said that if the rains stop and they don't need to use the spillway, they could take maybe six months and try to grout all the voids where the water is moving underneath. I asked if they could definitely seal the places where water is moving and he said maybe.

Lots of maybes with this dam. He told me that some years ago he was asked to be on a panel to assess the California dams. He did his investigation, wrote up a report of all the problems, and made recommendations. This what he does- dam safety. The panel report finally came out and they had eliminated every single thing he had written, and basically said the dams were fine. I asked why- I mean, it is just so wrong- and he said CA is bankrupt and they don't want to face all the work that needs to be done on their dams. Cahill said that in 2017 when the spillway broke and carved that nasty canyon in the hill, it was visually awful but not a threat to the dam itself. However, the gates are the big threat. He said they should not have tried to fix the spillway yet but made the gates the top priority the last two years. (all sorts of cracks). I asked about Juan Brown (Blancolirio). He said Juan was a good guy who started out reporting on the dam and flying his plane over, but he is a pilot and not a dam safety person. Juan is pretty much the same as DWR now when it comes to what you will hear presented. Cahill wasn't critical or bitter, (he knows they say nasty things about him at the Blancolirio site), but Juan believes what DWR says and DWR is not honest. He then told me some possible insider knowledge about conflicts of interest and shady business dealings within the CA govt, structure as it relates to dams. No surprise, and I think I'll let it go at that. He said a hundred thousand people may have to die in a dam failure before CA does what has to be done. He talked about the loss of Oroville dam to Central Valley agriculture and the S CA water supply. It would be disastrous. He made a big effort to contact responsible persons and agencies about his concerns but nobody official writes or calls back. If you pray to the Lord, you can pray for mercy that it doesn't rain and that when the water levels drop they can grout all the voids so well that there are no more water leaks. And that they fix the gates. Or else accept that this dam may fail and pray the people below can get out safely. I can't tell you how to pray, but it is not a good situation. *Thanks for reading.*

(Now, they don't have to worry if there's a whole lot of shakin' goin' on.)

At age 80, Lake Gregory Dam is finally ready for an earthquake

Seismic upgrade work is complete, ending years of disruption in

By SANDRA EMERSON | sbsun.com | April 18, 2019

Work to protect Lake Gregory from a disastrous earthquake is done. And, just in time for summer. Crews recently finished retrofitting the 80-year-old seismically unsound dam that protects the lake, at the heart of Crestline, bringing an end to years of traffic, noise and other impacts — current and potential — on the unincorporated mountain community.



"If this water dried up because of a big earthquake this town would dry up," said Ron Driscoll, of Crestline. "You have to deal with inconvenience to make things better." Work began in March 2018 to retrofit the dam, which officials with the state Division of Safety of Dams deemed a "high hazard," to meet earthquake safety standards. As part of the project, a 40-foot earthen stabilization buttress was built on the downstream side of the dam. While the bulk of the project, which cost the county \$24.6 million, wrapped up in early April, work is still underway to reopen the section of Lake Drive between the Crestline Sanitation District and intersection at Edelweiss

Drive. That part of the road has been closed for the past year, sending residents on a detour along San Moritz Way around the lake. "For the residents, I mean the beauty of this I think is they got a chance to see it happen," said Rick Dinon, a 19-year Crestline resident and member of the Lake Gregory Improvement Committee, which was formed by Supervisor Janice Rutherford in 2011 to oversee improvements at the lake.

"It was six years of talk and two years of action as far as they were concerned," Dinon said. Before the retrofit could begin, an outlet pipe and valve needed to be reconfigured to allow water to be released from the lake into Houston Creek. This work, which began in 2015, required the use of dive teams to inspect and enlarge the tunnel. The lake was also dredged to remove sediment, deepening the lake and clearing the water. More than 30,000 cubic yards of material was removed and stored near the San Moritz Lodge. Originally, the idea was to use that sediment to help build the buttress on the dam, but state officials believed the material was too organic to be used, Dinon said. Instead, material was driven up the mountain by truck from Colton and the lake material was hauled away. "Over the course of this there were as many as 200 trucks a day coming up, dumping a load, and taking a load down," he said. In the weeks leading up to the start of construction on the dam, roads were modified, improvements were made to other channels and basins, and the trees surrounding the dam were removed, giving residents a clearer view of the dam than they had before. Another noticeable precursor to the retrofit project was the lowering of the lake by 2 to 3 feet, as mandated by the state to relieve pressure on the dam. "There were 10 engineering solutions to repair the dam and, of those, eight of them involved essentially draining the lake which was less than optimal for the residents," Dinon said. The lake level has returned to about two feet below the spillway, up from its lowest at 8 and a half feet below the spillway, Dinon said. It is around 80 feet at its deepest, he said. "It was not a pleasant experience for us as residents to see it get as low as it got," Dinon said. The project has been among Rutherford's highest priorities since elected to the 2nd Supervisorial District in 2010.

"While I'm disappointed it took longer than we anticipated, and of course cost more than we anticipated, it is finally done, which is great news for that community and for the safety of everyone," Rutherford said. It's tough to quantify what effect the project, particularly the lower water level, had on the community, Rutherford said. It definitely was harder to attract people to the lake. "The pictures make it look sandier than lake-ish, so it looked a little depressing," Rutherford said. "But it certainly rebounded from that. And Mother Nature helped with this year's rain. The lake is the fullest I've ever seen it, and it's looking beautiful." Though the dam project is complete, Dinon said the committee's work is not. They will help oversee additional work planned for the swim area this fall, the repair of boat docks destroyed during winter storms, and the hiring of a contractor to oversee park activities. "I think everyone's appetite right now is toward normalcy," Dinon said. A completion ceremony is planned for 8 a.m. Friday, April 26 atop the dam. Parking and shuttle service will be available at the Crest Forest Senior Center, 24658 San Moritz Drive. To RSVP email SBD2rsvp@gmail.com.

More about Lake Gregory

Lake Gregory is a man-made lake in Crestline, CA an unincorporated community in San Bernardino County. It was created by Redlands citrus grower Arthur Gregory who bought and developed the land, originally known as Houston Flat, with the intention of creating a small resort community from the waters of Houston Creek that previously drained into the tributaries of the Mojave River, according to the county. The nearly 100-foot-high dam was built in the 1930s to protect the lake, in Lake Gregory Regional Park, which has been a popular recreation area for nearby residents and visitors.

(Guess, they're going to look at what went right and what went wrong.)

INSPECTIONS BEGIN ON OROVILLE DAM SPILLWAY

Engineers will be performing an inspection on the Oroville Dam Spillway now that releases down the spillway have stopped.

By: Elita Goyer, Apr. 18, 2019, actionnewsnow.com

OROVILLE, Calif. - Engineers are performing inspections on the Oroville Dam Spillway now that releases down the spillway have stopped. Current lake levels are at 867 feet with releases into the Feather River from the Hyatt Power Plant being at 9,500 cubic feet per second. With the snowpack in the Sierra mountains at more than 150 percent of average, DWR expects the lake level to rise with releases expected to continue through the spring.

(Spectacular view of Salmon dam in Idaho by drone.)

<https://newsradio1310.com/drone-offers-spectacular-view-of-salmon-dam-from-above/>

Scroll down and view the video.

(Human interest story. You couldn't do this on a large reservoir.)

Unusual Step to Relieve Dam Pressure During Heavy Transylvania Co. Rain

By Rex Hodge, April 19th 2019, wlos.com

TRANSYLVANIA COUNTY, N.C.--It was a dramatic scene Friday in Transylvania County where a local fire department took an unusual step to relieve pressure on a dam and to protect a home on Sawyer Lane in Horseshoe Traci Hopkins says she's lived here for decades and has never seen the water this high in the lake. She's concerned about the pressure on the dam giving way. Volunteers with the Little River Fire Department came to literally pump some of the water of the lake and take the pressure off the dam.



The idea...literally get some water out of the lake at Hensley Cove. Hopkins says the overflowing water ran over and around the dam and toward her children's home below "We did what we did with shovels and rock rakes to eliminate water from the structure. But it's not worked," she says Fire crews shot the water high into the air and a track hoe dug a trench diverting water away. "The house is just high enough it's going under the house. It's not going into the main level," says Little River Volunteer Fire Chief Jason Merrill. Hopkins hopes these measures work and says they'd be in worse shape had it not been for Mills River reinforcing the lake bank with 66 thousand pounds of rock gravel last month. Like many folks here she's hoping for clearer and drier days ahead.

(More on saving Orcas.)

WDFW: Up to 60,000 more Chinook salmon could survive with more dam spill

State plans to increase the amount of water that's spilled over the top of dams in hopes of increasing the number of Chinook salmon that survive to adulthood.

By Allison Sundell, April 19, 2019, king5.com

A dam spill agreement that was signed in December could produce thousands of additional adult Chinook salmon, offering a boost to Washington's struggling Southern Resident killer whales. The Washington State Department of Fish and Wildlife wrote in a blog post Thursday that increasing water spill at certain times of day could result in 10,000-60,000 more adult Chinook annually. The agreement, which was negotiated by federal agencies, states, and tribes, ups the amount of water that's going over the dam instead of through turbines during times of day when regional energy demand is lower. It also decreases spill when demand is higher. With more water moving over the dam, juvenile salmon hopefully have a higher survival rate as they move out to the ocean, according to WDFW. The dams will spill up to 120 percent total dissolved gas in 2019 and up to 125 percent in 2020. Dwindling prey is one of the top factors impacting Southern Residents, whose population dropped to an over 30-year low last year. In addition to increasing spill, orca advocates have pushed for



removing dams on the Columbia and Snake rivers entirely, arguing the most aggressive approach is needed to save the orcas. Boat noise and pollution are two other factors negatively impacting the group. A series of bills that target orca protection recently passed both chambers in the state Legislature, including House Bill 1579, which aims to increase the prevalence of Chinook salmon. The bill would allow WDFW to stop work on hydraulic projects that harm fish, increase penalties for violating hydraulic code, and liberalize recreational fishing licenses for fish other than salmon.

(Tailings dam problems reach far.)

Clearing the air on mining dam failure

Author: David Chambers, 4/21/19, adn.com

Opinion:

"Pebble dam designers didn't design the failed Mt. Polley tailings facility" was the title of a recent ADN op-ed column by Ken Embree, president of Knight Piesold, a Canadian mine-engineering consulting firm. Mr. Embree was "troubled" that a colleague of mine, Dr. Cameron Wobus, and I had "incorrectly cite(d) Knight Piesold as the designer of the tailings facility that failed at Mount Polley." Before I go further, I would like to share with you a quote from the Imperial Metals' Mount Polley Mine 2004 Feasibility Study, which states: "Knight Piesold Ltd., has been the geotechnical engineering consultant for the Tailings Storage Facility, providing design, technical specifications, contract documents, construction supervision and quality assurance/control, reviews of instrumentation and monitoring records and annual inspections." It can't be said much clearer than that.

Personally, I dislike having he-said/she-said discussions in public, but Mr. Embree chose not to consult me about his column. Mr. Embree explains that Knight Piesold withdrew from its responsibility nearly four years prior to the dam breach, and that Knight Piesold is not "responsible in any way for the Mount Polley dam failure." What Mr. Embree did not say was that in response to a lawsuit by Imperial Metals, the owner of the Mount Polley Mine, Knight Piesold and AMEC, the engineering firm that took over dam supervision after Knight Piesold, agreed to pay Imperial Metals \$108 million in an out-of-court settlement. That settlement certainly implies Knight



A massive tailings pond breach in 2014 spilled 24 billion cubic meters of mine waste into a British Columbia watershed. (Photo credit: Canadian Ministry of the Environment)

Piesold had some complicity in the dam failure, and in fact the Mount Polley Independent Expert Engineering Investigation and Review Panel (2015) "concluded that the primary cause of the breach was dislocation of the embankment due to foundation failure." This likely explains Knight Piesold's involvement and settlement in the litigation with Imperial Metals.

There's plenty of dirty linen to air at Mount Polley. From my outsider's vantage point the engineering firms, the mining company, and the British Columbia regulators all bear some accountability in that dam failure. I would welcome more discussion of why this accident occurred and how we might prevent failures like it in the future, because I don't believe this discussion has taken place in a meaningful way post-Mount Polley. I certainly don't place all the responsibility for the dam failure on Knight Piesold, but for Mr. Embree to claim Knight Piesold was not the designer of the dam, or that it was not responsible in any way for the dam's failure, clearly isn't correct. David M. Chambers, Ph.D., P. Geop., is a geophysicist with the Center for Science in Public Participation in Bozeman, Montana. *The views expressed here are the writer's and are not necessarily endorsed by the Anchorage Daily News, which welcomes a broad range of viewpoints. To submit a piece for consideration, email commentary(at)adn.com. Send submissions shorter than 200 words to letters@adn.com or click here to submit via any web browser. Read our full guidelines for letters and commentaries here.*



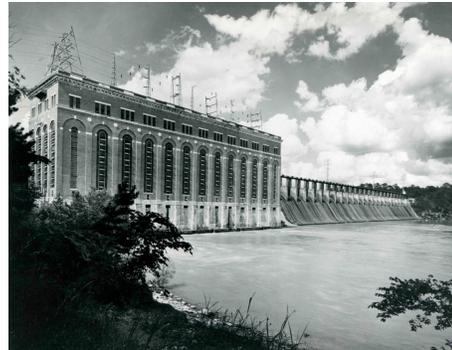
Hydro:

A bit of history.)

On this day in Alabama history: Lay Dam went into service

By Alabama NewsCenter Staff, April 12, 1914, alabamane.wscenter.com

Alabama Power built Lay Dam, its first hydroelectric plant, which was completed on December 31, 1913, and went into service on April 12, 1914. The facility was called Lock 12 Dam until November 1929, when it was named in honor of William Patrick Lay, organizer of Alabama Power and a proponent of developing the navigation and electrical potential of the Coosa River. After the dam was completed, as with other dams in the state, the dam operators and their families continued to live in the company village. Although the village had fewer residents, a guest house was maintained and a club house was added. For a small fee, other Alabama Power employees could catch a special train from Birmingham and spend weekends and vacation at the club house.



(This puts an ice pick in hydro.)

Federal regulators approve removal of Presumpscot River dam

Taking down the Saccarappa Dam will benefit migratory fish species and allow Westbrook to extend its popular River Walk path.

BY DENNIS HOEY STAFF WRITER, April 18, 2019, pressherald.com

Federal regulators Thursday gave final approval for removing the Saccarappa Dam, a hydroelectric facility on the Presumpscot River in downtown Westbrook, Maine, a project expected to expand fish migration. The Federal Energy Regulatory Commission issued a so-called surrender order, which means FERC has signed off on the dam removal. The order follows a settlement agreement reached by dam owner Sappi North America, Friends of the Presumpscot River, the Conservation Law Foundation



and the city of Westbrook. Removal of the 322-foot-long dam is expected to start next year, with a new fish passage in place by no later than May 1, 2021, when fish runs begin. The dam is bisected by a small island, which creates eastern and western river channels. The settlement agreement has been years in the making. "We are pleased that the dam removal has been approved by all stakeholders so that we can commence this important project," Olga Karagiannis, spokesperson for Sappi North America, said in a statement. Sappi's Westbrook mill is located on Cumberland Street. The company, formerly S.D. Warren, was founded in the 1800s.

Once the dam is removed, the river will become home to "an abundance of anadromous fish spawning habitat, habitat that will be capable of supporting hundreds of thousands of alewife and blueback herring, tens of thousands of American shad, and a small population of endangered

Atlantic salmon,” Friends of the Presumpscot River and the Conservation Law Foundation said in a joint statement. Anadromous fish are born in freshwater, migrate to saltwater where they mature, and then migrate back to freshwater to spawn. River herring and alewives are a staple food for bald eagles, osprey and striped bass. “Based on the experience in other locations in Maine where dams have been removed, the increase in these fish populations will bring eagles, osprey and heron back to the Presumpscot as well as other wildlife,” the statement says. “Opportunities for sport fishing, as well as recreational canoeing, kayaking and boarding will open up as well.”

Sean Mahoney, executive vice president of the Conservation Law Foundation, said Sappi will be responsible for removing the dam and creating the fish passage to help fish negotiate the rapids that will remain. Mahoney estimated the project will cost around \$5 million. Mahoney said Sappi has also agreed to transfer ownership of a strip of land on the northern side of the Presumpscot River to Westbrook for \$300,000 paid by the Westbrook Environmental Improvement Corporation and the Cornelia Warren Community Association, according to Westbrook City Administrator Jerre Bryant. Bryant said the riverfront property will allow the city to extend its 1.2-mile River Walk, which follows the south bank of the Presumpscot River across the Bridge Street footbridge to the northern bank, creating a loop trail through downtown Westbrook. The extended trail, running parallel to Brown Street, will allow pedestrians to cross the river on the footbridge or the Black Bridge, a former railroad trestle located downriver from Bridge Street. Sappi no longer needs the land, which contained a utility line that carried hydropower from the dam, Bryant said.

Bryant said the much-publicized rotating ice disk that formed in the river next to the River Walk last winter publicized a section of downtown Westbrook that newcomers did not know existed. Bryant called the ice disk a wonderful marketing tool. Extending the River Walk to the other side of the river will only generate more interest in the downtown, Bryant predicted. Bryant said the city is pleased with FERC’s decision to allow removal of the dam. “It’s a great advancement for Westbrook and the downtown,” Bryant said. “It really enhances the natural features of our downtown.”

(Always something new.)

Company aims to power remote communities worldwide with river hydro system

By Phil Dzikiy - Apr. 18th 2019, electrek.co

A Maine company announced the commercial launch of a renewable river-driven energy system that it hopes will be used to power remote communities around the world — communities which often rely on diesel to generate electricity at extremely high prices. Ocean Renewable Power Company (ORPC) launched its RivGen Power System on Wednesday, an underwater turbine system that generates electricity from river currents.



The system is designed to connect directly into a remote community’s electrical grid. ORPC’s RivGen Power System isn’t new — in fact, some versions of the system have been used to deliver electricity to the community of Igiugig, Alaska (pop. 50) for a few years. Igiugig is being used as a test site for RivGen, and a revamped system installed in 2015 has been able to generate nearly a third of the small community’s electricity needs, ORPC says. Unlike more traditional hydropower, RivGen’s system doesn’t dam a whole river, instead taking up a rectangular footprint underwater. It’s also relatively easy to dispatch and deploy by comparison.

The National Hydropower Association noted in 2016 that electricity generation in Igiugig cost almost \$0.80/kWh, compared to the national average of \$0.10/kWh. Reliance on diesel fuel for

electricity generation is both expensive and detrimental to the environment — ORPC's RivGen system aims to lower costs and provide emission-free electricity. ORPC announced that its newest RivGen system would be delivered to Igiugig with the hopes of offsetting diesel fuel use in the community by up to 50 percent, and eventually, moving the community to a point where diesel fuel would only be used as a backup. With RivGen's commercial launch event, the company clearly has big plans to provide many other communities with similar benefits. ORPC co-founder and CEO Chris Sauer said, "ORPC's RivGen Power System is the future of sustainability for 2 billion people mostly indigenous people [sic] around the world, 700 million of whom who currently rely on diesel fuel to power their homes. ORPC provides a marine renewable energy solution that combines our patented power systems with smart grid electronics and energy storage to build the no-carbon microgrids of the future." The company also makes a TidGen Power System that works similarly, but generates electricity from tidal currents, as opposed to river currents.

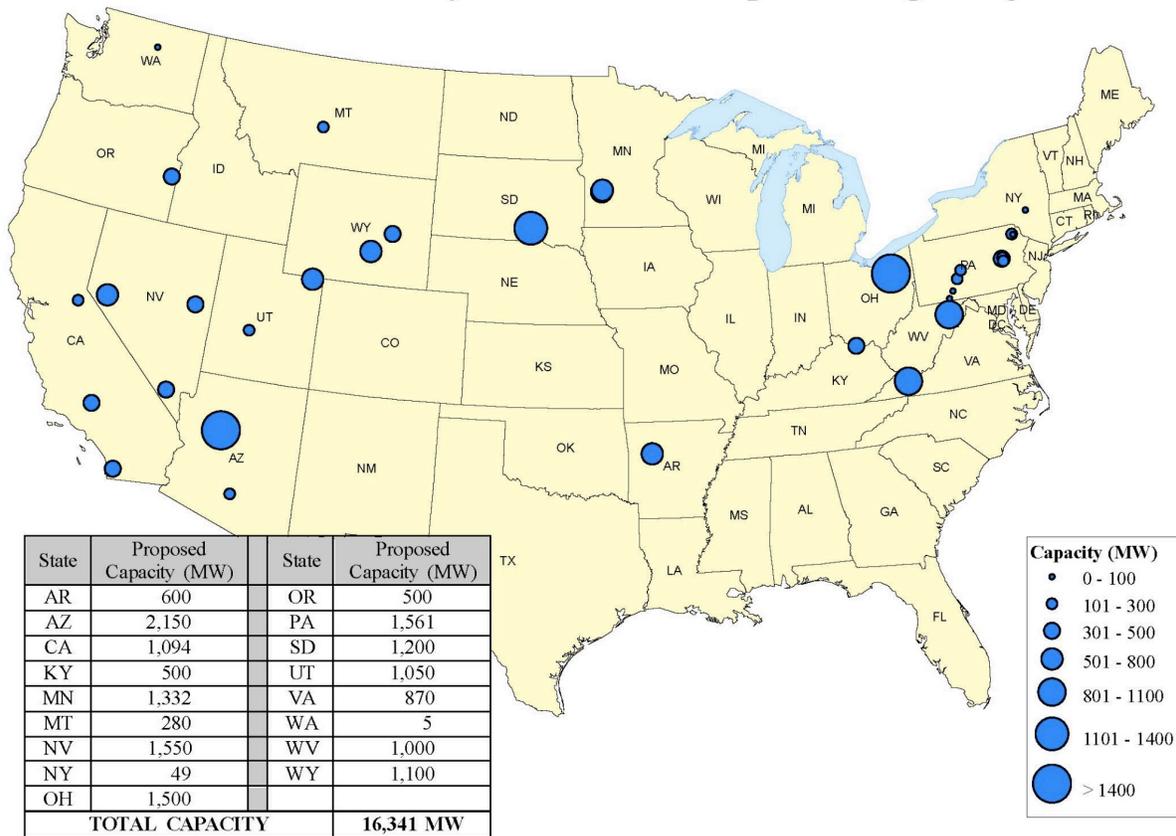
(That's a lotta sites.)

2 GW of pumped hydro storage proposed for Arizona

Of Earth's 500,000 potential sites for closed-loop pumped hydro storage, the largest U.S. site under development is in Arizona. If the project is built, the potential for pairing with solar could open new opportunities for solar development.

April 19, 2019, by WILLIAM DRISCOLL, pv-magazine-usa.com

Issued Preliminary Permits for Pumped Storage Projects



Source: FERC Staff, February 1, 2019

Earth has an estimated 500,000 suitable sites for closed-loop pumped hydro storage, which can pair well with solar power. In the United States, 24 pumped hydro storage units are in operation, totaling 18.4 GW of capacity. Most were authorized more than 30 years ago—attesting to the longevity of the technology—as reported by the Federal Energy Regulatory Commission (FERC).

The largest new project proposed in the United States would create 2 GW of closed-loop pumped hydro storage in Arizona. Project owner Big Chino Valley Pumped Storage LLC, which holds a preliminary permit from FERC, is owned by ITC Holdings Corp., the largest independent electricity transmission company in the U.S.—which is itself a division of Fortis. The project has a website.

A project report and update describe a 2,000 MW closed-loop pumped storage hydro facility, with two water reservoirs covering 420 acres, one powerhouse with reversible hydropower turbines, and a daily operational schedule of 10 hours generating and 12 -14 hours pumping. FERC considers a hydro system to be closed-loop if it is not continuously connected to a river. While the project is not paired with solar power, its arid location and the attractive cost of solar generation in such regions make pairing with solar likely. The proposed project would be located five miles southeast of Seligman, Arizona, and ITC Holdings is conducting ongoing feasibility and environmental studies. A project timeline shows that a final FERC decision is expected by early 2021; the preliminary permit's expiration date is November 30, 2020. If approved by FERC, ITC Holdings projects a commercial online date of 2025-2028. ITC Holdings is considering three potential transmission interconnections:

1. A 500 kV tie to the Western Area Power Administration at a future Peacock Substation in Mohave County, Arizona
2. A 500 kV tie to Southern California Edison at the Eldorado Substation in Clark County, Nevada
3. A 500 kV tie to Arizona Public Service at the Yavapai Substation in Yavapai County, Arizona.

At times of low electricity demand or high renewable generation, electricity could be used to pump water from the lower to the upper reservoir using reversible turbines. At times of high electricity demand or low renewable generation, water could flow from the upper to the lower reservoir, through the turbines, to generate electricity. Stakeholder comments on the proposed project have been summarized by ITC Holdings. FERC says it has recently seen an increase in the number of preliminary permit and license applications filed for pumped storage projects, and has issued licenses for several new projects in recent years.

(Others are getting serious about pumped storage. Hydro s always cheaper.)

Water Officials: Water Battery Better Than Other Batteries

By Ry Rivard, 4/22/19, voiceofsandiego.org

In a new paper, the city of San Diego and the San Diego County Water Authority and several of their consultants argue their plan to construct a giant new hydroelectric facility in East County can provide cheaper energy storage than large-scale battery projects. Together with a private company, the city and the Water Authority would build what amounts to a giant water battery. The project is designed to make money off daily changes in energy prices and provide enough green energy to power 325,000 homes. When power is cheap, water would be pumped uphill to a newly created reservoir; when power is expensive, the water would be released to generate power that the agencies would then sell.

This kind of hydroelectric facility is known as a “pumped storage” operation. The authors, including UCSD energy expert David Victor, a consultant for the city, found that despite falling prices for electric batteries, “batteries will remain overall more expensive than pumped storage — possibly 50 percent more expensive than pumped storage.” That means if the city wants to find a way to store cheap solar power for use at night, it may be best to do the water project. Several years ago, some Water Authority board members said they were uncomfortable with the project, because its overall return on investment didn't look too good at the time, but officials there seem to have become more comfortable with the idea. The city is also making a major bet that it can provide cheap green energy in the future.

(Oroville isn't the only one.)

FEMA Denies Federal Assistance to Repair Lake Hiddenwood Dam

April 22, 2019, KDLT Newsroom, kdlt.com

SELBY, S.D. – The future of a South Dakota recreation area is in doubt tonight. Lake Hiddenwood has been closed due to heavy rains washing out the dam in May 2018. FEMA has since denied requests for federal assistance to help rebuild it. Officials say the state has no plan to repair or restore the dam. However, officials are meeting with the National Guard about alternatives for the dam.



Other Stuff:

(Technology is moving too fast.)

5 Energy Companies Using AI for Cost-Efficiency

Energy companies are exploring ways to employ AI technologies to improve their efficiency.

By Ellen Chang, Contributor, April 12, 2019, usnews.com

THE USE OF ARTIFICIAL intelligence is increasing as more industries, such as energy companies, adopt the technology that mimics human abilities and provides predictive analytics as part of their daily operations. AI includes components like machine learning, neural networks and natural language. The energy industry uses it to predict potential failures in equipment, corrosion, or security breaches, improve efficiencies and productivity and increase worker safety.



AI will incorporate emerging technologies like quantum computing to develop more sophisticated models, which could lead to innovations in grid optimization and breakthroughs in the development of sustainable energy," says Mahesh Sudhakaran, a chief digital officer at IBM (ticker: IBM). For instance, IBM's AI helps the energy sector improve efficiency and reliability such as utilities monitoring their power plants for predictive maintenance and maximum efficiency, he says. Here's a look at five energy companies that are harnessing AI to help their bottom line.

- Exxon Mobil Corp. (XOM)
- ABB (ABB)
- Schneider Electric (SBGSF)
- BP (BP)
- Royal Dutch Shell (RDS/A)

Exxon Mobil

IBM works with oil companies like Exxon Mobil to explore the use of quantum computing to accelerate the development of more realistic simulations with artificial intelligence, in addition to developing chemistry calculations for more efficient carbon capture. "Service interruptions cost the energy sector millions of dollars a year and can negatively impact return on equity, customer satisfaction and safety," Sudhakaran says.

For once, a letter from Oroville that isn't about Oroville dam.)

Letter: Our failing infrastructure is embarrassing

By LETTERS TO THE EDITOR | April 14, 2019, chicoer.com



Having seen photos of beautiful buildings, airports, bridges, dams, bullet trains and highways from countries like Indonesia, Japan, Bahrain, Saudi Arabia, China, etc., I'm appalled that the US is so far behind these countries in infrastructure to the point that it is embarrassing. We are number one of 10 countries who possess 74% of the world's private wealth. And, per capita, we are only number 11 of the world's richest

countries. Having dumped trillions of dollars into unwinnable and never-ending wars, you would think our Congressional leaders would learn and say "enough" and the people would revolt against the loss of our treasure to war rather than to the betterment of our people and country.

Throwing makeshift patchwork repairs or rebuilding in a 20th century manner is rather ridiculous for lasting infrastructure investments. Nancy Pelosi has proposed a bipartisan program for infrastructure of \$1 trillion to \$2 trillion (as opposed to Trump's \$200 billion proposal). We need to secure America's place in the world by getting serious about modernizing our infrastructure for the better of our economy, for the benefit and safety of our people and pride in our nation. Just to bring it home in a simple way, how many years has a safe and modern highway between Butte County and Marysville been hoped for, promised and sorely needed? Hopefully, Congress will work together as Americans for Americans to pass expeditiously a comprehensive infrastructure package before there's another fatality on that highway. — Linda Cheffet, Oroville, CA

(Does this list have the right people on it?)

Fortune Names 10 Best World Leaders

Jacinda Ardern cracks top 10, as does Robert Mueller

By Arden Dier, Newser Staff, Apr 19, 2019, newser.com

(NEWSER) – As Fortune sees it, the world's greatest leaders share one thing in common: They have courage to "make bold choices" and take personal risks, whether a journalist reporting under threat of death in South Sudan or a nation's leader expressing compassion when faced with the opposite. Such "hardy individuals don't see the world as threatening or see themselves as powerless against large events," per Fortune. "They think change is normal, the world is fascinating, they can influence events, and it's all an opportunity for personal growth." Bill and Melinda Gates came in at No. 1, and the most controversial name is perhaps No. 3—special counsel Robert Mueller. The top 10 on Fortune's list of 50 across arts, business, philanthropy, and government:

1. Bill and Melinda Gates; Gates Foundation
2. New Zealand Prime Minister Jacinda Ardern
3. Special Counsel Robert Mueller
4. Pony Ma; Tencent Founder and CEO
5. Microsoft CEO Satya Nadella
6. Climate activist Greta Thunberg, age 16
7. Margarethe Vestager; Commissioner for Competition, European Union
8. Anna Nimiriano; Editor-in-Chief, Juba Monitor
9. World Central Kitchen founder José Andrés
10. Walmart's Doug McMillon (CEO) and Lisa Woods (Sr. Director of US Health Care)

See the full list of 50 leaders here: <http://fortune.com/worlds-greatest-leaders/>



New Zealand Prime Minister Jacinda Ardern

<https://www.news.iastate.edu/news/2019/04/22/levees>



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