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# Some Dam – Hydro News™ And Other Stuff



**Quote of Note:** *“Ability is a poor man’s wealth.” - John Wooden*

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**“Good wine is a necessity of life.” - -Thomas Jefferson**  
**Ron’s wine pick of the week: 2014 Peachy Canyon Zinfandel “Westside”**  
**“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson**



## **Dams:**

(Broken dam Are promises made and broken?)

### **After decades of shattered expectations at Lake Oroville, can residents trust state?**

By Ryan Sabalow and Dale Kasler, MAY 15, 2017, sacbee.com

OROVILLE, CA - There was going to be a steam train – and a monorail. Plus a major resort featuring a 250-seat restaurant and a 1,000-seat amphitheater. As many as 5 million visitors a year would show up. **When it came to wooing Butte County about the construction of Oroville Dam, state officials weren’t shy about setting grand expectations.** In return for losing entire communities



and thousands of acres of taxable land, the region would become home to California’s second-largest reservoir, Lake Oroville, and a tourist destination akin to Disneyland. “The construction boom in Oroville is over,” Gov. Ronald Reagan said at the dam’s dedication ceremony in May 1968. “But it will be followed by even larger growth as recreation brings millions to the lake.”

Then the state's dam builders left, leaving behind a string of shattered expectations and half-kept promises. The train, monorail and amphitheater, spelled out in 1960s-era state documents, never got built; neither did the fancy restaurant. Oroville became another hardscrabble Gold Rush town. The state's inability to live up to its part of the bargain has long fostered resentment, frustration

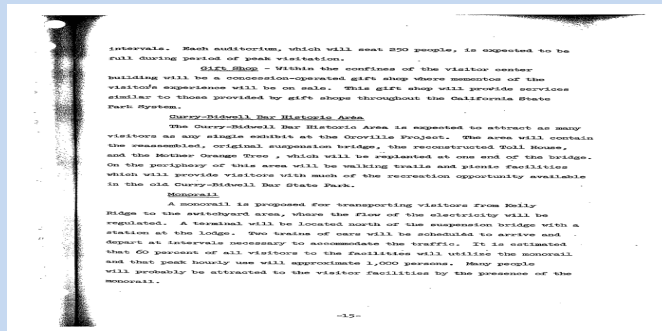


The Bidwell Bar store was burned, along with the rest of the town, in 1964 to make way for the inundation of the area by Lake Oroville.  
Courtesy of Larry R. Matthews

and cynicism about the California Department of Water Resources. February's spillway failures at Oroville Dam, which forced thousands of residents to abandon their homes and jobs for two days, only made relations worse. Three months after the emergency evacuation, some ask why they should trust the state to keep them safe after it spent decades not keeping its word. "The burden of this dam was supposed to come with certain benefits ... a whole lot of which have not been fulfilled," Oroville resident Tasha Levinson, 68, told DWR officials at a tense town-hall meeting earlier this month. "Among the things you can do is start keeping your promises." State officials insist they will make Oroville Dam safe, and say the 1960s documents were planning concepts, not literal promises. But

they acknowledge they have to overcome historic skepticism. "I know that is going to be a big ask on our part," said DWR Chief Deputy Director Cindy Messer at the town-hall meeting. 'It never happened'

There was a certain irony that DWR held its town-hall meeting at Oroville Municipal Auditorium, a musty, century-old building with an exterior covered in rectangles of painted-over graffiti. "There was supposed to be a train right here," said Butte County Supervisor Bill Connelly, a longtime area resident, as he surveyed the cracked pavement of the auditorium's modest parking lot. In 1966, state officials wrote a memo pledging to build 1,500 parking spaces outside the auditorium. They'd need those spaces to accommodate the steam train that would shuttle hordes of visitors to the reservoir six miles away. Once there, they'd hop on a monorail for a tour of the lake's multitude of facilities.



Once there, they'd hop on a monorail for a tour of the lake's multitude of facilities.

"It never happened," Connelly said. One in four Oroville residents lives below the federal poverty line. Connelly said many of them occupy low-income housing left behind decades ago by dam construction workers. A roofing contractor given to swearing, Connelly refused to attend DWR's town hall meeting. It would have made him too angry and bring back memories of DWR's public relations blitz in the early 1960s, when, he said, state officials promised a mother lode of recreation in return for flooding huge swaths of county land. 'Lethal arrogance'? Oroville Dam crisis sprang from Pat Brown's towering ambition. Will Trump reimburse California for Oroville Dam? It may come down to pre-existing conditions

Hatchery mishap kills 300,000 baby salmon. What will this mean for California fishermen? DWR officials even made a presentation to his fourth-grade class, he said. "We've always been shorted on this thing," he said. Dam repairs have forced the closure of the reservoir's main boat launch, which sits adjacent to the emergency spillway, for the next two summers. Some roads and hiking trails around the dam also have been blocked off to the public. DWR officials have

warned they might permanently reduce public access because of terrorist concerns. These issues are fueling more anger toward DWR. Bill Harper, manager of privately run Bidwell Canyon Marina, is upset by the state's plans to keep water levels relatively low this summer as spillway repairs get under way. Low water will make conditions more difficult for boaters. "I've got five years of drought and now I've got this," Harper said during a recent meeting of the Oroville Recreation Advisory Committee, a citizens group that meets with DWR officials. "You're basically putting me out of business." DWR official Eric See told him the state will try to "accommodate the recreation season," but repairs and public safety must come first.

It's not that Lake Oroville and its 167 miles of shoreline are a complete backwater. The reservoir's boat ramps, beaches, equestrian trails and campgrounds drew nearly 1.2 million visitors last year. The tower at the visitors' center offers panoramic views. But area residents say the lake is a shadow of what it could have been. Many of the promised campsites and other amenities have yet to materialize, and the tourism boom has been less than advertised. In the minds of locals, Oroville has been managed to benefit Bay Area residents and Southern Californians whose water is stored behind the dam. "Billions of dollars flow in the water down south, yet we can hardly get \$5 million, \$10 million a year to build out the infrastructure," said Kevin Zeitler, a financial adviser who chairs the recreation committee. "We're the ugly cousins that they throw scraps to. This should be the best facility in the state of California." Butte County surrendered 40,000 acres of taxable land to the project. Butte was the only Northern California county where a majority of residents voted in favor of the bonds to finance Oroville and the rest of the State Water Project in 1960.

A pair of DWR blueprints released in 1966 and 1967 spells out the grand vision for Lake Oroville. There would be 10 separate recreation areas, state-of-the-art boating facilities and other recreational facilities. The crown jewels were the amphitheater and restaurant. "It is estimated that 60 percent of all visitors to the facilities will utilize the monorail and that peak hourly use will approximate 1,000 persons," DWR said in an April 1966 report, two years before the dam was completed. Part of the grand vision for the Lake Oroville was a monorail to transport tourists from the visitor center at Kelly Ridge to the electrical switchyard near the base of the dam. "This was going to be a combination dam, reservoir, Disney World," said Butte County Counsel Bruce Alpert.

#### **'Opened old wounds'**

Progress on Lake Oroville's recreational facilities has been stymied in part by state law. In 1961, the Legislature declared that the water agencies paying off the cost of building and operating Oroville couldn't be billed for developing recreational facilities. The law has contributed to a longstanding funding shortfall at Oroville, according to a 2009 report by the Legislative Analyst's Office. "It is up to the Legislature, at its complete discretion, whether to provide funding," the report said. State officials already were trying to lower expectations before the dam was completed. A Reagan aide, speaking at a town hall meeting in Oroville in late 1967, said the recreational plan unveiled by Reagan's predecessor, Gov. Pat Brown, was "somewhat exaggerated." Reagan's administration scaled back DWR's plan to build 10 recreational areas right away, reducing initial construction to three sites. Even Reagan's appearance in Oroville for the dedication in 1968 was a disappointment. A crowd of 3,500 turned up, far less than the 20,000 or so that had been expected. Still, the governor and DWR director William Gianelli struck a positive tone.

Oroville was destined "to become one of the major, if not the major, recreation attractions in the state of California," Gianelli said. Yet two months later, the only recreational facilities were a few picnic tables and a few campsites. The head of the Butte County Development Commission fumed at a Chamber of Commerce event that "nothing seems to be going on in Sacramento regarding this," according to a Chico Enterprise-Record story from July 1968.

A quarter-century later, recreational development had lagged to the point that the feds stepped in.

The Federal Energy Regulatory Commission, which licenses the dam, ordered DWR in 1994 to build “additional campsites, picnic areas, and boating and fishing facilities.” FERC had received thousands of letters from area residents demanding better facilities. See, the DWR official, acknowledged in an interview that there was a “disconnect” between what was promised and what got built. The agency’s 1960s blueprints represented “a conceptual plan,” he said. “It wasn’t a bullet-list set of requirements.” The 1994 order, by contrast, set out a more definitive set of priorities. In the years that followed, See said the state spent about \$30 million on amenities such as expanded boat ramps, an equestrian campground and even a floating campground that lets visitors camp in tents on the water. “That’s unique to Lake Oroville,” said See, who is chief of DWR’s federal license coordination branch.

A decade later, the state made an even bigger commitment. As part of its effort to get the dam relicensed, the state signed a 2006 settlement with the city of Oroville and nearly 50 other parties. The agreement promises spending \$1 billion on wildlife habitat and enhanced recreational facilities. The recreation component called for \$438 million in new spending over 50 years, including additional RV campsites, more boat docks and picnic spots, and expanded parking. Yet more than a decade later, the vast majority of the funds hasn’t been spent. DWR can’t act until FERC approves the dam’s new license, See said. FERC finally finished the paperwork last year but can’t do anything because the five-person commission has only two members, one shy of a quorum.

Earlier this month, DWR was able to release \$3 million for facilities improvements from its “supplemental benefits fund,” a pot of money that doesn’t need FERC approval. See said the funds were a recognition that “the community could really use (the money) right now.” Critics call the \$3 million a public-relations move following the spillway fiasco. See said DWR sincerely wants to improve recreation in Oroville. “We’re looking forward to proving that we can get that done,” See said. Community leaders remain skeptical. The city of Oroville is considering backing out of the 2006 settlement; Butte County never signed it in the first place. The raw feelings from the February evacuation leave many in the community wary of taking DWR at its word about anything, said Oroville Mayor Linda Dahlmeier. “It’s opened old wounds,” she said.

(The fix is on. Now, we don’t need rain.)

## California to shut dam’s battered spillway for repairs

May 18, 2017, by The Associated Press, washingtonpost.com

OROVILLE, Calif. — California plans to shut the shattered main spillway of the Oroville Dam for the summer on Friday, launching an all-out race to get it operational again before the next rainy season. The spillway is the main outlet for water from man-made Lake Oroville, a half-century-old complex that includes California’s second-largest reservoir and the tallest dam in the United States.



The dam’s operator, the state Department of Water Resources, plans to start scaling back water releases down the main spillway at 9 a.m. Friday, closing its flood gates completely by afternoon.

The shutdown will let construction crews tackle the bulk of a \$275 million project to rebuild and strengthen the 3,000-foot-long (900 meter) concrete spillway by Nov. 1. Huge swathes of the spillway’s upper reaches began crumbling and washing away in February, sending torrents of water and debris cascading down bare, steep hillside. When a nearby hillside that made up the dam’s second, emergency spillway began giving way as well, authorities on Feb. 12 ordered the evacuation of nearly 200,000 people downstream. Residents were allowed to return two days later.

Authorities have used the collapsed main spillway only sparingly since then, to keep water from once again reaching the top of the dam during one of the state's wettest winters on record. State water officials said this week that they would use the water-release gates in the dam's hydroelectric power plant as the main way of releasing water from behind the dam during summer construction. A contingency plan calls for using the main spillway one more time if water from snow-melt in the Sierra Nevada fills the reservoir harder and faster than currently expected, the state said. State officials "will continue to adjust as we balance community concerns, regulatory requirements and Mother Nature," acting water-agency director Bill Croyle said in a statement. An April memo from a forensic team appointed to conduct a post-mortem on the crisis said experts were looking at possible failings in design, maintenance and inspection of the spillways. The experts are slated to release their final findings next fall, with dam operators nationwide watching closely to see what lessons the crisis holds for other aging infrastructure.

(The public is ticked off. They want to know too much.)

## Angry public, insistent media unclocking Oroville Dam repair secrecy

By Joyce Terhaar, sacbee.com, May 19, 2017

State water officials told The Sacramento Bee that they want a do-over on how they communicate with the public about Oroville Dam. After denying public records requests from The Bee, and facing angry citizens at recent public meetings, a somewhat chastened group of officials say they want to be more transparent. "As these weeks have unfolded we've heard from you guys, we've heard from the community and elected officials about the need to balance this transparency and also safety. So we have changed what we are sharing," Erin Mellon told The Bee. Mellon is spokeswoman for the Natural Resources Agency, the parent agency for the California Department of Water Resources. She suggested the public "treat this as a bit of a reset for us in terms of moving away from emergency response to emergency recovery." And she said the department would review earlier decisions to keep certain information confidential, including documents requested by The Bee under the state's Public Records Act.



It would be refreshing to see this state agency figure out how to be more open with the public even as it works to ensure security of the dam. For the past couple of months, officials have regularly refused to release information, citing federal security regulations designed to protect us from terrorism. Even when the agency started reversing course to be more transparent, it only released a handful of reports. Some of those documents are heavily redacted. Treat this as a bit of a reset for us in terms of moving away from emergency response to emergency recovery. We are as much in favor of dam security as the officials safeguarding it. Remember, this is California's second-largest reservoir and the country's tallest; it needs to be protected. But it is legitimate to also demand that public officials be as open as possible about every aspect of repair tied to the February near failure of the emergency spillway. More than 188,000 people fled in a panicked and chaotic evacuation during that crisis. It is fair for every single one to want to understand how the state intends to fix the dam's spillways. It is also common sense to expect the public to scrutinize a project that will cost taxpayers or ratepayers an estimated \$550 million. Officials say they are trying to balance security concerns with transparency.

*"We're still trying to hide our vulnerabilities, we don't want to make our vulnerabilities obvious to everybody, but we also realize you gotta share some information, otherwise folks start thinking you're keeping secrets," said David Gutierrez, the retired head of DWR's Division of Safety of Dams, whom the agency recently hired as a consultant.*

We applaud that thinking. Yet the reality is that DWR has yet to make public certain details and decisions about the spillway repairs, so it continues to look like it is keeping secrets. For instance, DWR released a 16-page report to the public in early May that showed outside consultants agree with its plans to stretch spillway repairs over two summers. But DWR redacted five paragraphs that spell out consultant recommendations to make the plan work, citing terrorism concerns. We're still trying to hide our vulnerabilities, we don't want to make our vulnerabilities obvious to everybody, but we also realize you gotta share some information, otherwise folks start thinking you're keeping secrets.

That kind of decision creates a credibility gap for DWR as it works to repair relationships with the community. Californians like to point out that if this state were a country, it would be the world's sixth largest economy. As the state capitol, Sacramento boasts legions of people with public policy, water, engineering and legal expertise who closely review public documents of significance. Others weigh in as well. J. David Rogers, a dam-safety expert at the Missouri University of Science & Technology, told Bee reporter Ryan Sabalow the subject of the redacted five paragraphs looked more like the kind of information a lawyer would black out to protect a client in a civil lawsuit than something that would protect the public from terrorists. Will the state change its mind about such redactions? Sabalow asked DWR's acting director, Bill Croyle, and Mellon to re-evaluate our Public Records Act requests. We learned this week that only a team of state lawyers and engineers reviewed them before denial; neither Croyle nor Mellon were aware of the specific requests. The documents Sabalow requested would provide insight into February's near catastrophe. At the advice of experts and sources, Sabalow requested design specifications, federal inspection reports, technical documents, the results of rock sampling and other documents. State officials denied the entire request.

The Bee also asked for internal communications and emails about the crisis from the office of Gov. Jerry Brown. His office refused to release records that would reveal the response of Brown and his staff as the crisis unfolded. In his appeal of DWR's denial, Sabalow requested additional recent dam safety reviews, along with "Dam Safety Compliance" reports that DWR recently classified as secret. Surely, the Department of Water Resources will understand why the public is interested in dam safety reports. Those living downstream of Oroville Dam certainly do.

(More criticism. Enough is enough. Just fix it.)

## After Oroville Dam debacle, we deserve straight talk and safety

By the Editorial Board, [sacbee.com](http://sacbee.com)

Without a doubt, California's first Gov. Brown had big ambitions. He wanted to re-plumb the state, and to do that, he needed to build a massive dam on the mighty Feather River. Toward that end, Pat Brown did what politicians do: He spun a story, replete with big promises and some exaggerations. In a historical account of the dam's construction, The Sacramento Bee's Ryan Sabalow, Dale Kasler and Christopher Cadelago wrote that the father of our current Gov. Jerry Brown "brought an almost evangelical zeal to erecting the structure that would hold back the Feather River to deliver water to the parched southern half of the state."



Workers and a firefighter watch water pouring down Oroville Dam's damaged main spillway on Feb. 20. Hector Amezcua [hamezcua@sacbee.com](mailto:hamezcua@sacbee.com)

Fifty years later, many of the promises made by Brown and his successor, Ronald Reagan, haven't come to pass. There is no monorail, no major resort, no 1,000-seat amphitheater and there aren't 5 million visitors a year. But for 50-plus years, through dry years and wet ones, Lake

Oroville has delivered on its grandest and most fundamental promise: water. In part because of the water it has delivered, California has flourished. In 2017, Californians probably wouldn't support building such a massive and expensive structure. Even if it were constructed, it would be very different. Certainly, engineering has improved, as have construction materials. There would be many more concessions to fisheries and the environment.

But because of Lake Oroville, 50,000 acres of San Joaquin Valley farmland receive water. It is a primary source of water for 25 million Californians – in the East Bay and Silicon Valley, and also Los Angeles and San Diego. Turbines at the dam generate enough carbon-free hydroelectricity to power a city the size of San Francisco. For Sacramento and other cities downstream, it has provided protection against floods. On Christmas Eve 1955, a decade before Oroville Dam existed, a Feather River flood killed at least 37 people. In a 1964 flood, the partially completed dam averted deaths and damage in Oroville, Marysville and Yuba City. "The great lesson of this flood comes from the fact that where dams and levees exist there was little or no flooding but where the rivers are uncontrolled there was great damage and destruction," a report said. But in the deluge in February, the dam became cause for deep worry for some people who live below it. Their concerns are wholly reasonable. As the spillway crumbled and an emergency spillway seemed to fail, Butte County Sheriff Kory L. Honea wisely ordered the evacuation of 188,000 residents. Now, acting state Water Resources Director Bill Croyle is apologizing to residents for the disruption caused by the damaged spillway. The Department of Water Resources, which manages the State Water Project, is seeking what it calls a reset.

They should do nothing else. The state and federal governments and the contractors who depend on the State Water Project fed by Lake Oroville are about to reconstruct the crippled spillway. Hundreds of construction workers will be arriving, so many that the department is scrambling to find housing. Croyle and others in the department promise to be as transparent as possible as they rebuild as much of the spillway as they can this summer before next winter's rains. What isn't completed before November will be done in 2018, they say. In 2017, no one should realistically expect a Butte County version of Disneyland at Oroville. There will be no monorail or amphitheater. But residents of Oroville and those of us downstream do expect straight talk, and a dam and spillway that will be safer and more secure. The Legislature has an important role, too. With the immediate crisis averted and spring temperatures rising, lawmakers are contemplating parks and water bonds, which would go before voters in 2018.

One of the measures, a \$3.5 billion bond embodied in Senate President Pro Tem Kevin de León's Senate Bill 5, would provide \$800 million for parks in poor communities, \$750 million to clean polluted water and \$510 million for wildlife habitat threatened by climate change. All of that is no doubt needed. The proposal includes \$500 million for flood control. Compared to the need, that's a modest amount, though more than is offered in a \$3 billion Assembly version. The Department of Water Resources has estimated as much as \$52 billion is needed to shore up levees and dams in our heavily re-engineered state. The state cannot fill that need with one bond, or even many. But the damage to Oroville Dam makes clear there must be forward-thinking discussion of this state's water infrastructure, and it must happen now. It's not surprising that past governors promised not just dams, but monorails and amphitheatres. Infrastructure is such a dreary word. But California finds itself in arrears in part because legislators prefer to spend money for parks in their districts, rather than shoring up existing structures, like dams. The near-disaster at Oroville Dam shows how short-sighted that can be.

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(Oroville spillway may be unique. Don't know of any that long or like it in the U.S. or the world for that matter. The new Shasta and Calaveras dam spillways are getting close.)

### **Is 'potential Oroville waiting to happen' at other spillways?**

By Ryan Sabalow, sacbee.com, May 21, 2017

Federal dam regulators are reevaluating how they conduct dam inspections in the wake of the Oroville Dam spillway crisis, and they've ordered the nation's dam operators to thoroughly inspect their facilities to see "if they have a potential Oroville waiting to happen," a federal dam inspector

said Sunday. “Can we make things different? Can we improve things?” said Frank Blackett, a regional engineer at the Federal Energy Regulatory Commission’s Division of Dam Safety and Inspections. Speaking Sunday on a panel at an engineering conference at the Sacramento Convention Center, Blackett listed the array of state and federal inspectors who visited Oroville Dam over the years. All of them, he said, missed signs that could have foreshadowed the gaping crater forming in the dam’s concrete spillway in early February, eventually leading to the frantic mass evacuations of 188,000 people downstream of the dam.



“One thing we (the inspectors) all have in common is that we didn’t predict this happening,” Blackett said. Since the crisis, Blackett said, the Federal Energy Regulatory Commission has sent letters to the nation’s dam operators ordering them to conduct thorough on-site inspections of their spillways, reevaluate their construction and design plans, and try to envision scenarios to determine “how that structure could fail.” “We want all of our licensees to focus on these features and determine if they have a potential Oroville waiting to happen,” Blackett said. Inside FERC, he said, the agency has hired consultants to perform an internal audit “to look at the way we do inspections, the way we run our program.” Blackett’s remarks are among the few candid, public statements made by FERC since the Oroville crisis. FERC licenses Oroville Dam, which is operated by the state Department of Water Resources.

A massive sinkhole formed in Oroville’s main spillway on Feb. 7 during heavy storms. Lake Oroville rapidly filled and water started flowing over the adjacent emergency spillway – a concrete lip above an unlined hillside – for the first time in the dam’s history. The hillside eroded badly, prompting fears that the emergency spillway would crumble and release a “wall of water.” That triggered the two-day emergency evacuation of 188,000 residents downstream on Feb. 12. The crisis, including an ongoing two-year repair plan, is estimated to cost \$550 million. A DWR official on the same panel as Blackett also noted that inspections conducted over the years failed to predict the spillway failures. In 2014, an inspection “actually dismissed the plausibility” of failures arising from erosion at the emergency spillway “or a failure of the concrete chute” in the main spillway, said Mark Andersen, an acting DWR deputy director. “So clearly ... we need to look institutionally at how we are doing these inspections and what we’re learning from them,” Andersen said.

(Score one for the beavers.)

## Beaver dams may buffer against temperatures that threaten sensitive species

Dams may mitigate warm waters which threaten salmonids

17-MAY-2017, eurekaalert.org

Both natural and artificial beaver dams may alter stream temperatures which may benefit temperature-sensitive salmonid species, according to a study published May 10, 2017 in the open-access journal PLOS ONE by Nicholas Weber from Eco-Logical Research, Inc., USA, and colleagues. Beavers are ecosystem engineers,

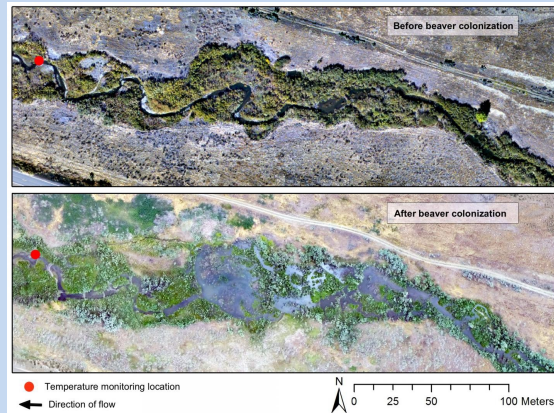


altering stream temperatures by building dams that increase surface water storage and connectivity with groundwater. Some studies suggest that the dams make water warmer and so are detrimental to salmonids, which are sensitive to temperature. Weber and colleagues tracked beaver dams and monitored water temperatures along 34



kilometers of the John Day River in Oregon over eight years. In addition, the team assessed the impact of artificial beaver dams on water temperature along four reaches of Bridge Creek.

The researchers found that beaver dams may alter stream temperatures to the benefit of salmonids. Studies suggest that juvenile steelhead salmonids in Bridge Creek experience extreme stress at about 25°C, and the researchers found that maximum daily temperatures in much of the study stream exceed this temperature for much of the summer. However, temperatures rarely exceeded 25°C after the proliferation of beaver dams, likely because they help moderate temperatures both by increasing water storage and encouraging exchange between surface water and groundwater exchange. This fits with



the fact that both beavers and salmonids were once more abundant and widely distributed in North America, and suggests that beaver dams could help mitigate the thermal degradation that can threaten sensitive species.

Dr. Weber notes: "Beaver are often considered a keystone species, and their propensity to build dams plays an integral role in maintaining biodiversity and enhancing aquatic processes that benefit an array of aquatic and terrestrial organisms. Recognizing this, beaver relocation efforts and installation of structures designed to mimic the form and function of beaver dams are increasingly being used as effective and cost-efficient approaches for restoration of stream and riparian function. Despite this trend, the notion that beaver dams negatively impact stream habitat remains common, specifically the assumption that beaver dams increase summer stream temperatures to the detriment of cold-water species such as trout and salmon. However, by tracking beaver dam distributions and water temperatures throughout a high-desert, scientists have demonstrated that beaver dam can actually reduce high stream temperatures by increasing surface water storage and connectivity with cool groundwater. These results suggest that construction of artificial beaver dams and beaver relocation projects could be used to mitigate the impact of human induced thermal degradation that may threaten sensitive cold-water species."

(Making sure it's safe.)

## I-Team checks on structural integrity at Falls Lake Dam after drenching floods

By Jon Camp, May 19, 2017, abc11.com

FALLS LAKE, North Carolina (WTVD) -- Here's something you may not think about: Falls Lake is basically the Neuse River with a plug in it. That plug is the Falls Lake Dam. On the heels of Hurricane Matthew and the drenching that followed in April, the I-Team decided to check on the dam, see who's in charge, and how it's doing. In the process, we found that the main mechanism they have for keeping the dam intact is the very thing that regularly floods communities downstream.



The government built the dam in the early 1980s and has been maintained by the Army Corps of Engineers ever since. Megan Garrett runs the safety program at the dam and says it's never had any major issues or reason to put into

play the Emergency Action Plan (EAP). Garrett walked us through the steps they take to make sure the dam is intact, from GPS markers to water pressure gauges to regular basic visual inspections. She says there's been no degradation or slippage of the dam in its more than three decades of use. But not everyone is convinced the dam is being managed as well as it could be. Bobby Harrison has lived a few miles below the dam on the Neuse River for more than 30 years.

Every time the Army Corps of Engineers lets a certain amount of water out of the dam and down the spillway, Harrison's yard starts to fill up with water. In major storms, if the Corps opens the gates to allow about 4,000 cubic feet of water per second to flow out, Harrison's street starts getting wet. A few weeks ago during a period of heavy rain, the Corps let 6,000 cubic feet of water. "It seems to be fill and flush," Harrison said. He wants the Corp of Engineers to rethink how and when they start releasing water in anticipation of a major storm. "They fill it up and they flush it. So, once it gets filled, they dump it on us. They don't do it gradually, they do it rapidly. Let a little out earlier and then stretch it out over a longer period of time."

The I-Team put the question to the Army Corps of Engineers. Lisa Parker, Public Affairs Officer for the Army Corps of Engineers, emailed this answer:

"We don't release prematurely because weather forecasts are often not accurate, and it would depend where the rainfall fell in the basin and how much, also, was the ground already saturated, or were there long periods of time of dry weather. There are a lot of variables, and one of the primary purposes of the dam is to reduce flooding. The dam is designed to experience a Probable Maximum Flood (PMF) event and not overtop. The PMF is the largest flood that could conceivably occur at this location so the probability of overtopping of the dam would be remote. As far as contingencies in the event an overtopping did occur: This type of event would not develop so quickly that we wouldn't know it was going to happen. Spillway flow would be occurring well before overtopping could start. While some evacuations downstream would have likely already taken place because of other non-failure related flooding, our Emergency Action Plan does provide procedure for notifications of local Emergency Management Agencies in the event of an expected overtopping."

That may not satisfy those homeowners along the river whose streets turn into rivers because of how it's done now. Bobby Harrison, who's dealt with "man-made" flooding since moving in more than 30 years ago says he thinks it can be done better. "It's been managed in the past by different people who manage it quite well. But it depends on who's in charge down there to how well they seem to manage it."

(Major repairs.)

### Major maintenance work planned for Coolidge Dam

By JOEY CHENOWETH, Staff Writer, May 19, 2017, pinalcentral.com

CASA GRANDE, AZ — Coolidge Dam, which regulates the distribution of much of Pinal County's irrigation water, could be close to undergoing some major maintenance work.

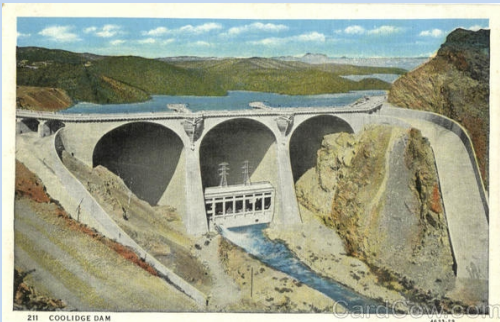
In a letter obtained by PinalCentral sent to affected public agencies by the Bureau of Indian Affairs, which oversees the dam's operations, project manager Ferris Begay outlined the work that will be done. He wrote the project calls for a rehabilitation, update and/or installation of operation, control and security features on the dam.



At the center of the project is the replacement of the dam's cylinder gate and upgrade the outlet mechanisms. It will also work to provide master

control of dam operations off-site and improve the security of the dam, as the control room can become inaccessible to workers should bad weather be in effect.

“The project is needed because the existing cylinder-type isolation gates in the outlet works intake towers are corroded and the hydraulic gate operating system for the high-pressure slide gates is functionally obsolete,” Begay writes in the letter. “Flows are currently regulated by dual regulating-type high-pressure slide gates in the downstream conduit that were installed in the mid-1980s. The current condition does not allow isolation (dewatering) of the penstocks needed to inspect and perform maintenance on the penstocks of the dam.” The culprit for the gate’s deterioration is the use of shotcrete, which was applied to the three domes that make up much of the gate’s structure. Over the course of recent years, the shotcrete has been delaminating, sloughing off the domes and into the reservoir. That debris has in turn clogged up the intake tower trash racks and is impairing operation of the dam intakes. In addition, cracks have begun to appear at the base of the intake towers.



The letter says that BIA is considering three different options to move forward. The first two differ only in the type of components that will be installed in the outlet works. The third option is to do nothing at all and continue to operate the dam in its current condition. Should BIA choose to move forward with the project, they will first need to conduct an environmental assessment that will address potential problems that could arise. Once construction begins, it is expected that it will last up to two years, up to half of which would involve accumulating supplies,

with the rest allocated to the demolition, construction and installation of the new mechanisms. The letter informs agencies that they have until June 9 to express any concerns they might have with the project to BIA. Coolidge Dam, located 31 miles southeast of Globe in Gila County, regulates the flow of water on the Gila River. The water that is dispersed through the dam is delivered to land on the Gila River Indian Reservation and to non-tribal land that is managed by the San Carlos Irrigation and Drainage District, based in Coolidge. “Implementation of the action alternatives would not affect reservoir levels or dam releases to the Gila River,” Begay wrote.

(After 80 years, we all need a checkup.)

### The City’s Aging Dams Are Getting a Costly Check-Up

The city of San Diego worries some of its dams “may be nearing the end of their useful service life” and is spending up to \$5 million to see how they’re doing. Most city dams are 80 years or older.

By Ry Rivard | May 19, 2017, voiceofsandiego.org

The city of San Diego worries some of its dams “may be nearing the end of their useful service life” and is spending up to \$5 million to see how they’re doing.

Last year, city officials hired an engineering firm to do detailed checkups on each of the city’s nine dams. Carlsbad-based GEI Consultants has been working quietly ever since on a study that could take up to five years.

Most city dams are 80 years or older.

Brent Eidson, a spokesman for the city water department, said the study may ultimately find that no significant work is needed on the dams.



Officials already have a few concerns, though. In fall 2014, for instance, the city limited the amount of water it can store in the lake formed by the El Capitan Dam near Alpine, which is the city's second-largest reservoir.

That's because officials spotted water seeping out from underneath the dam. Some seepage is normal, but it could also be a sign of problems.

So far, there hasn't been enough rain to raise the dam above that limit, so the city hasn't been forced to spill any water to keep the lake low, said Isam Hireish, the deputy director of water system operations. "We are below the level of restriction – barely there, but we are there," he said. **But if there were ever enough downpours, the city is only allowed to keep the dam full temporarily.** That means El Capitan, which has the capacity to store as much water as 900,000 people use in a year, can only store about half that much water for any extended period. Nobody knows for sure if El Capitan is a safety issue yet. Engineers plan to do several different tests to determine the condition of the 83-year-old dam and the soil and rock on which it sits. It's unlikely the recommendation would be so drastic as to call for the dam to be taken out of service, said Rania Amen, an assistant director of the water department. "They're not going to tell us the dam is no good," she said. "Those dams are built to last forever – kind of."

**Other issues at other dams are not serious enough to require operational limits, which in dam safety parlance are known as "fill restrictions."**

Yet, that doesn't mean there may not be expensive dam retrofits in coming years.

The state Division of Dam Safety has "identified dam safety deficiencies that could potentially require costly modifications to city dams," the city's engineering consultant said in a report. "The dam safety concerns that have the greatest potential for costly modifications are related to: stability of concrete, rockfill and hydraulic fill earth dams; stability and capacity of outlet towers; and potential for overtopping of dams during the design flood." A dam's outlet tower houses the controls that allow water to be released from the reservoir. Officials are already planning to spend \$22.5 million to repair the seismically unstable tower at the city's oldest dam, the Morena Dam near Campo.

**Officials also found a deficiency with the dam's spillway, the flood control channel that famously fell apart at the Oroville Dam in Northern California earlier this year, but Morena is in no real danger of spilling water: It's 91 percent empty right now.** The outlet tower at Savage Dam, which holds back the Lower Otay Reservoir, is also a problem. The tower is seismically unstable, according to the city's engineering consultant. Some of the potential upgrades are in anticipation of problems – things like pipes, ladders, hatches and instruments are old, so they need to be fixed up before they become safety issues. Other issues have already been identified either by the city, which does regular inspections of its dams, or by state regulators, who do yearly inspections. **The city's largest dam, the San Vicente Dam near Lakeside, is newly remodeled. The city of San Diego and the San Diego County Water Authority worked together to raise the dam in 2014 so that the lake it forms could hold more water to get the region through dry spells and emergencies for years to come.**

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(Article too long for Newsletter, but worth looking at.)

## **12 of the World's Most Fascinating Dams**

May 21, 2017, /interestingengineering.com

<http://interestingengineering.com/12-worlds-fascinating-dams/>

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## Hydro:

(PR piece. Largest % for a State in the Country.)

### Hydro power: Being good stewards

May 17, 2017, idahocountyfreepress.com

Cooperatives are cool! Did you know that 85 percent of the power we buy comes from a source that is carbon free and renewable? What's this source of power? Hydro power. We are very fortunate to live in the Northwest where dams and rainfall allow us to utilize this form of energy production. As an electric cooperative, Idaho County Light & Power strives to be good stewards of the environment. But to be competitive and provide our members with the service they desire, we must go further! Customer service, knowledgeable and competent employees, and good value for the money set us apart from other electric companies. Since we live here, and are 100 percent locally owned, we believe in making our communities stronger.

One way we have done this beyond our everyday service, is through our wholly owned subsidiary, Idaho County Propane (ICP). Twenty years ago, we heard the need for a locally owned propane source that would put customer service and value above all else. We believe that through your continued support in ICP that we have achieved that. However, our goals don't stop there. We are committed to being your energy providers and providing you with peace of mind, whether through ICL&P or ICP. We are locally owned and invested in your future! We also know that without our members and customers we would be just another provider! Good value and great local people serving you every day, but isn't that how it's supposed to be?

(Hydro history.)

### A Dam Fine History

#### Lake Wissota and the dam that created it turn 100 this year

May. 17th, 2017, by Barbara Arnold, volumeone.org

Lake Wissota, one of Chippewa Falls, WI' crown jewels – which sparkles like hundreds of diamonds on a sunny day – and the dam that created it celebrate their 100th birthday this year. The occasion will be marked with the publication of a commemorative book and the debut of a special musical/visual extravaganza. One hundred years ago, the Wisconsin-Minnesota Light & Power Company (later known as Northern States Power and now as Xcel Energy) hired 700 workers, created a temporary village, and built the hydroelectric dam that created Lake Wissota. The dam took only 18 months to complete, from November 1915 to May 1917, and cost almost \$6 million. Manpower, a horse-drawn steam shovel, and seven little locomotives were used to build the dam, spillway, and powerhouse. All still stand today. The utility company also hired a professional photographer to shoot more than 500 black-and-white work-in-progress photos, which are now archived at the Chippewa County Historical Society. The dam and the lake became part of the area's economy and were nicknamed "The Niagara of the Northwest." At the time, the dam was considered the largest earthen dam in the world, measuring 67 feet high and 4,390 feet long. The Chippewa River drops nearly 700 feet in elevation along its length, which is ideal for hydropower. Lake Wissota covers 6,148 acres, has 56 miles of shoreline, and has a maximum depth of 72 feet.



Lake Wissota Dam construction in 1917  
(Image: Chippewa County Historical Society)



Lake Wissota today (Image: Andrea Paulseth)

The Chippewa County Historical Society will soon publish *Lake Wissota: The Dam Story*. The new pictorial history book celebrates the lake's 100-year anniversary with approximately 300 photos and hundreds of newspaper clippings and memoirs of the building of the dam and the lake as well as the people who lived, worked, and played there then and now.

Volunteer authors Donna Bourget, Anne Keller, and Jim Schuh compiled the volume. All proceeds from the sale of the book will be donated to the Chippewa Area History Center Capital Campaign. The money will help build the new home of the Chippewa County Historical Society and the Chippewa County Genealogical Society next to the south entrance of

Irvine Park on Bridgewater Avenue. Beginning in early June, the book will be available for \$20 from the Chippewa County Historical Society, 123 Allen St., and five other locations, including Foreign Five, 123 N. Bridge St.; Gordy's Market Lake Wissota, 17158 County Highway J; Pine Harbor Campground, 7181 185th St.; Sand Bar & Grill, 17643 50th Ave.; and Wissota Café, 17255 County Highway X. The visual history of Lake Wissota and the dam inspired retired music teacher and entertainer Jerry Way to create *Wissota in the Making*, which tells the story of the building of the dam and the creation of the lake in words, music, and slides. It will be performed at the Heyde Center for the Arts at 7:30pm Aug. 10-11 during Chippewa Fall's Pure Water Days. The Swampers – a musical lumberjack aggregation featuring Amanda Tanzer, Kathy Danielson, Judy Brist, Tim Danielson, Rob Kuchta, along with Swamper Jer – will perform the story playing a variety of folk instruments and singing a unique blend of three-and-a-half-part Swampgrass harmony. This debut will mark the group's 16th original Pure Water Days production celebrating the Chippewa Valley past and present. Tickets will be \$11 for adults, \$10 for senior citizens, and \$5 for youth.



## **Environment:**

(But, there are benefits. Always a new study.)

### **Dams are major driver of global environmental change**

May 17, 2017, phys.org

Water reservoirs created by damming rivers could have significant impacts on the world's carbon cycle and climate system that aren't being accounted for, a new study concludes. The study, conducted by researchers at the University of Waterloo and the Université libre de Bruxelles, appears in *Nature Communications*. It found that man-made dam reservoirs trap nearly one-fifth of the organic carbon moving from land to ocean via the world's rivers. While they can act as a significant source or sink for carbon dioxide, reservoirs are poorly represented in current climate change models.



The Roman dam at Cornalvo in Spain has been in use for almost two millennia. Credit: Wikipedia/ CC BY-SA 2.0

"Dams don't just have local environmental impacts. It's clear they play a key role in the global carbon cycle and therefore the Earth's climate," said

Philippe Van Cappellen, a Canada Excellence Research Chair in Ecohydrology at Waterloo and the study's co-author. "For more accurate climate predictions, we need to better understand the impact of reservoirs." There are currently in excess of 70,000 large dams worldwide. With the continuing construction of new dams, more than 90 per cent of the world's rivers will be fragmented by at least one dam within the next 15 years. The study's researchers used a novel method to determine what happens to organic carbon traveling down rivers and were able to capture the impact of more than 70 per cent of the world's man-made reservoirs by volume. Their model links known physical parameters such as water flow and reservoir size with processes that determine the fate of organic carbon in impounded rivers.

"With the model used in this study, we can better quantify and predict how dams affect carbon exchanges on a global scale," said Van Cappellen, a professor in Waterloo's Department of Earth and Environmental Sciences. In similar recent studies, the group of researchers also found that ongoing dam construction impedes the transport of nutrients such as phosphorus, nitrogen and silicon through river networks. The changes in nutrient flow have global impacts on the quality of water delivered to wetlands, lakes, floodplains and coastal marine areas downstream. "We're essentially increasing the number of artificial lakes every time we build a dam," said Taylor Maavara, lead author and a PhD student at Waterloo. "This changes the flow of water and the materials it carries, including nutrients and carbon."

(A long fish story. Strong spokesman for the fish.)

### **Saving Idaho's salmon: Nature again turns against returning fish that already face long odds**

By Rocky Barker, idahostatesman.com, May 20, 2017

Idaho's salmon run this year is beginning to look bleak. Oregon and Washington officials shut down fishing season on the lower Columbia River earlier this month because so few spring chinook heading for spawning grounds in Idaho and other Snake River tributaries had shown up at the Bonneville Dam near Portland. Idaho's Fish and Game Commission took a wait-and-see stand Wednesday on whether to close fishing season, because fewer than 400 salmon had made it to Lower Granite Dam on the Snake River in Washington, the last of the eight dams between the Pacific Ocean and Idaho.

For the past decade, nearly 30,000 spring chinook had returned on average by now. Idaho Fish and Game biologists worry they won't have enough salmon returning to supply brood stock for the fish hatcheries that account for 80 percent of the run — and might mean no fishing at all for spring and summer chinook, which are the salmon most Idahoans catch. The chinook that are born wild and not in hatcheries make up 20 percent of the run, and they aren't much better off.

Salmon are born in tributaries like the Salmon and the Clearwater rivers, and are swept by rushing spring flows to the Snake, the Columbia and the ocean as year-old smolts. They spend two, three or four years in the ocean before starting their journeys home to spawn, and die, in the rivers where they were born.

Watching the number of returning spring chinook run is important because the early return is a harbinger for what's ahead and for Idaho's other three species of salmonids that are listed as endangered or threatened under the Endangered Species Act.

For more than a decade, the Columbia River and its tributaries have seen relative abundance, with favorable ocean conditions contributing to good runs of salmon and steelhead, which bring joy to anglers and spiritual sustenance to the region's Indian tribes. It's also eased the pressure on the region's dam managers to take drastic action — such as removing dams. The Bonneville Power Administration is the regional agency that sells the hydropower produced at the federal



Travis Brown, assistant manager at the Eagle Fish Hatchery, checks a sockeye salmon for a transponder tag in 2015. Kyle Green  
kgreen@idahostatesman.com

dams on the Columbia and Snake rivers. It has spent \$15 billion over the past 25 years on modifying dams, restoring habitat, expanding and operating hatcheries, and conducting research and predator-control programs to improve the lot of salmon and steelhead.

Since 2000, mostly ideal ocean conditions boosted the salmon's food sources and limited their predators. That's critical to healthy populations because the ocean is where salmon spend two-thirds of their lives, feeding, growing and gaining strength for their arduous return trip upstream. Salmon, especially those raised in hatcheries, have been returning to Oregon and Washington at rates not seen since the last of the dams were built in the 1970s. But abundant ocean conditions no longer favor salmon and no longer mask the unfavorable conditions in the Northwest rivers. A so-called "blob" of warm water in the Pacific Ocean has reduced salmon productivity by as much as a factor of 10. Add to that the regular ocean cycles and the warmer river temperatures, increasing numbers of predators and low river flows of recent years, and biologists worry today about the returns not just of the endangered wild fish, but also of the much greater number of hatchery fish.

### **ECHOES OF THE 1990S?**

This spring's run looks disturbingly like the 1990s, when salmon numbers crashed, especially for those Idaho fish that must survive all eight dams on both legs of their migration. Wild stocks dropped so low that, beginning with the Snake River sockeye salmon in 1991, 13 species of Columbia River Basin salmon species were listed as threatened or endangered. Idaho's Snake River sockeye were listed as endangered. The Snake River spring-summer chinook, fall chinook and steelhead were listed as threatened, a slightly less-dire and less-restrictive category. That was a turning point. Once the fish were listed, the act forced federal dam, water and land officials to ensure that the actions they take don't further endanger the survival of the fish. That sounds simple, but it's a complex, bureaucratic and restrictive process. And it gives sportsmen, environmentalists and Indian tribes more openings to scrutinize the government's plans and efforts — and take them to federal court.

It was in the 1990s that biologists and notably the Idaho Statesman editorial board began to talk seriously about breaching the four lower Snake Dams in Washington to maintain the fish that spawn in central Idaho, the wildest, most pristine habitat left in the lower 48 states. The dams have turned the river into a series of reservoirs that slows migrating the salmon as they go from freshwater to saltwater fish. Some fish die in the hydroelectric turbines, despite bypass systems that divert them into barges that carry them through the dams. Most smolts are "spilled" over the dams, now aided by fish "slides" that increase survival but result in what scientists say is "delayed mortality" after the salmon reach the Columbia estuary below Bonneville Dam near Portland. NOAA scientists say that even with the improvements at the dams made since 2000, more needs to be done to improve migration of the wild Snake River salmon if they are to be self-sustaining. Breaching the dams to return the river to a more natural state is considered the best, but perhaps not the only, way to do that. Talk of breaching or removing the dams created a powerful backlash. Many Northwesterners take pride in the colossal accomplishment of harnessing the river for cheap, reliable, abundant electricity, an effort born in the depths of the Depression. Those Northwest dams brought power, jobs and prosperity to rural communities. That electricity produced the aluminum that went into the bombers and powered the reactors that made the nuclear cores for bombs dropped on Japan to end World War II. The four dams also created opportunities more than 500 miles inland at ports in Clarkston, Wash., and Lewiston. For decades paper, lumber and other products were shipped to market down the Columbia, and wheat is still barged downstream. A small group of farmers pump water from the pool behind one dam to irrigate their crops.

### **JUDGES STEP IN**

The Columbia River system once sustained 8 million to 16 million salmon returning annually. But 150 years of overfishing, habitat destruction, dam building and water pollution took its toll. By 1995, less than 700,000 returned. Once the fish were listed under the Endangered Species Act, the onus was on the federal government to show its actions were helping, not harming, the fish.



Three federal judges since 1994 ordered the BPA, the Army Corps of Engineers and the Bureau of Reclamation to take increasingly stronger steps to reduce or offset the effects of the dams on salmon. The latest was U.S. District Judge Michael Simon in 2014, who ordered the agencies to conduct a new environmental review and write a new biological opinion on the effects of the dams. He expressed frustration that since Idaho's lawsuit against the dam plans in 1993, the agencies had four times "ignored the admonishments of Judge (Malcolm) Marsh and Judge (James) Redden to consider more aggressive changes ... to save the imperiled listed species." In 2014, 3.5 million fish, mostly hatchery salmon, returned to the Columbia River and its tributaries. The federal agencies began their latest review in 2016 with a series of meetings, including one in Boise, that generated more than 250,000 comments nationwide. The agencies must come back in 2018 with an immediate plan for operating the dams and in 2021 with a final decision on a long-term plan. Simon said that plan must include a review of breaching the four Snake dams.

### WHAT'S TO COME?

This is a story I have covered since 1990, having been up and down the Columbia and Snake rivers and to the headwaters of the Salmon River near Stanley, 870 river miles from the Pacific. It took me across the country in 1999, when I stood with utility CEOs, anglers, environmentalists, and Republican and Democratic state officials on the banks of the Kennebec River in Augusta, Maine, as the Edwards Dam was removed. In 2011, I watched federal officials (with the help of Jerry Dilley of Superior Blasting of Nampa) remove two dams on the Elwha River in Washington's Olympic National Park. I returned to the Kennebec in 2005 and the Elwha in 2016 to find them transformed into rich ecosystems, where everything from bottom-feeding bacteria to aquatic insects to salmon have returned in abundance.

I remain chastened by the faces of the working-class men and women in Maine who watched the Edwards Dam come down. They had grown up working at the textile mill the dam had once powered. They weren't celebrating. They were crying as the river washed away the last vestiges of the way of life they'd thought would last forever. Despite the endless court cases and the billions spent on dams, the future of Idaho's salmon remains as uncertain today as in the 1990s when they were protected by the nation's most powerful environmental law. So the Statesman is sending me to follow the salmon home to Idaho again. We're beginning a five-month project, in conjunction with our McClatchy colleagues, to examine the challenges that face our salmon, our economy and our culture. Videographer Ali Rizvi was part of the McClatchy team that won a Pulitzer Prize for explanatory reporting for its work on the Panama Papers story, revealing the shadowy world of offshore banks and corporations. Follow us on our trip beginning in Astoria, Ore., this week on Instagram, Twitter and Facebook. This is the first of several trips we hope will illuminate what humans can do to best help the fish that swim through all our lives in a time of economic transition and rapid climate change.

(Where have all the fish gone?)

### **Fisheries managers forecast 'unprecedentedly low' summer steelhead** **The Oregon Department of Fish & Wildlife is forecasting just 131,000 summer steelhead in the Columbia and Snake rivers.**

By George Plaven, East Oregonian, May 22, 2017, eastoregonian.com

The Oregon Department of Fish & Wildlife is forecasting dramatically low returns of summer steelhead to the Columbia and Snake rivers, which will likely result in fishing restrictions for Northwest anglers. Tucker Jones, Columbia River program manager for ODFW, said the agency is predicting a total run of just 131,000 steelhead based on a number of factors, including the suffocating 2015 drought and warm water "blob" over the Pacific Ocean. The agency met May 11 in The Dalles, and will meet again Wednesday in Clackamas to hear public input on recreational summer steelhead



fisheries. However, Jones said some restrictions will be necessary to meet federal guidelines under the Endangered Species Act. “Things don’t look great for steelhead this year,” Jones said. “The forecast is very low, and we have to operate under ESA constraints.”

Fisheries managers are considering a plan that would close steelhead retention downstream of The Dalles Dam during the entire month of August; between The Dalles and John Day dams during the month of September; and from John Day Dam to the Oregon-Washington border during October and November. “I think we are taking a logical and hopefully measured approach,” Jones said. “The response so far has been fairly positive for the proposal.” This year’s steelhead forecast is even lower than last year’s disappointing run of 183,000 fish — which itself was about 83,000 fewer than ODFW originally expected. So far, 2,050 steelhead have been counted on the Umatilla River at Three Mile Falls Dam, compared to 4,540 around the same time in 2016 and 6,050 in 2015. The 2015 drought is one potential reason for the decline, Jones said, when ODFW temporarily banned fishing for trout, salmon, steelhead and sturgeon after 2 p.m. in most streams across the state. Adult and juvenile fish both had to contend with low flows and high water temperatures that proved fatal for cold water-loving salmonids. Jones also pointed to “the blob,” a mass of warm ocean water off the Northwest coast, that may have had an impact on migrating fish populations.

“There was not the normal assemblage of nutrient-rich prey,” Jones explained, while adding it is hard to tell how exactly the ocean may have played a role in steelhead levels. Bob Rees, executive director of the Association of Northwest Steelheaders, said the steelhead forecast is evidence that fish are suffering the effects of climate change and hydro dams across the Columbia and Snake river basins. “We’re just having to roll with the punches,” Rees said. “These fish are pretty vulnerable to those environmental conditions that humans have had a hand in.” The Association of Northwest Steelheaders is a conservation and sport fishing advocacy group, and is one of the plaintiffs suing the federal government over its management of Columbia and Snake river dams to protect salmon and steelhead. That suit has been ongoing since 2001. Rees said this year’s steelhead forecast is nothing short of a crisis, though he said they are confident ODFW will implement proper measures for the season. “There are some pretty important fisheries that are going to be sidelined because we have to protect these fish,” he said. Changes in fishing regulations will likely be announced within the next couple of weeks. Wednesday’s ODFW meeting will be held from 6:30 to 8:30 p.m. at the ODFW Northwest Region Office, 17330 S.E. Evelyn Street, Clackamas. Comments can also be sent via email to either [john.a.north@state.or.us](mailto:john.a.north@state.or.us) or [tucker.a.jones@state.or.us](mailto:tucker.a.jones@state.or.us).



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