12/5/2014

# Some Dam – Hydro News™

## And Other Stuff

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***Quote of Note:*** *"He who has the fastest golf cart never has a bad lie." --Mickey Mantle*

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**"Good wine is a necessity of life." - -Thomas Jefferson**
***Ron's wine pick of the week:*** **Canoe Ridge 2010 Cherry Street**
**"No nation was ever drunk when wine was cheap." - - Thomas Jefferson**

## *Dams:*

(The tree is bigger than the dam, but the dam is more dangerous!)

### Bitterroot River: Diversion dam fix at top of funding priority list

By Perry Backus, m.missoulian.com, 11/23/14

Fixing a dangerous diversion dam on the Bitterroot River was given No. 1 priority on the state's proposed list for renewable resource grants this year. The Montana Department of Natural Resources recently released rankings for the grant program that will be forwarded to the 2015 Legislature for consideration. The Bitterroot Conservation District's request for $125,000 from the state program to partially pay for a project to make the Supply Ditch Diversion Dam safer for floaters was rated No. 1 out of 100 requests. "We are really excited to hear that," said Montana Fish, Wildlife and Parks Region 2 fisheries manager Pat Saffel.

“We needed someone to step forward with the funding to help get it kick-started.” The state closed a portion of the Bitterroot River last year to floaters for several weeks due to safety concerns that followed several boating accidents at the dangerous low-head diversion dam.
The diversion is located about three miles downstream form the Woodside Fishing Access Site. The low-head dam creates a dangerous recirculating current directly below the structure that has caused several boating accidents over the past several years, including the drowning death of a 6-year-old girl in 2013.

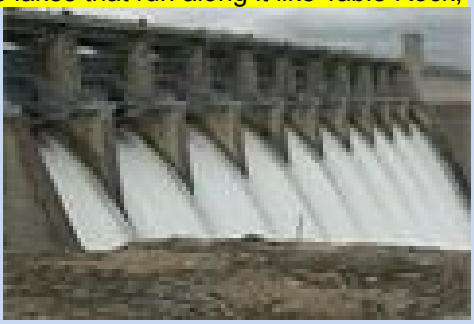
The renewable resource grant program was established by the Montana Legislature to fund conservation, management, development and preservation of Montana’s renewable resources. It has funded irrigation rehabilitation projects in the past. This was the first time the Bitterroot Conservation District has made a grant request from the program. The civil engineering firm Morrison-Maierle developed the proposal. Molly Skorpik of Morrison-Maierle said the Legislature traditionally funds the top 50 grant applications when it meets every two years.
The proposal to fix the problem at the diversion dam includes building a rock ramp behind the structure that would include a boat ramp similar to what’s in place now at the Hedge Diversion Dam, Skorpik said. The downstream hydraulic would be eliminated by the project, which is expected to cost about $478,000. If allocated, the grant monies would be added to a number of other funding sources, including FWP, the conservation district, irrigators and some private fundraising monies. Saffel said the state is also making a request for funds through the Recreation Boat Safety Program that is administered by the U.S. Coast Guard. “That money is set aside to help fund boater safety,” Saffel said. “It’s a new thing for us to try to tap into. We don’t know if we’ll get it.” Up until now, Saffel said the state has been able to find several smaller funding sources to pay for the proposed project. “We’ve been scraping funding together up to this point,” he said. “A big lump sum like this will kick in some momentum. For it to be ranked No. 1 by the DNRC will add some additional credibility when people ask for more.” Depending on how the funding comes together, the work could start as early as next fall or in the spring of 2016.

(A lot of dam history.)

## The Dams that Changed the Face of the Ozarks

By Grant Sloan, and Lex Smith, 1/24/2014, ozarksfirst.com

Forsyth Mo. - The White River may be known better by the lakes that run along it like Table Rock, Taneycomo and Bulls Shoals; but the lakes that pull in millions and provide power to thousands weren't always there.



The dams that would eventually help to create those lakes have changed the face of the Ozarks forever. In the case of Empire Electric's Powersite Dam, it was one of the original catalysts for development in Taney County. "It would be an engineering marvel now days," says former Powersite Dam plant manager, Tom Snyder, "but back then when they were doing it at the turn of the century." The hike to the Powersite powerhouse is a 100 year old walkway, that Snyder used for 35 years before retiring with empire electric. The concrete and has been reinforced over the years, but Snyder says it looks very similar to when it was built.

"As far as we know this was the largest dam this side of the Mississippi [River] when it was built in 1912 or 1913," says Snyder. The four generators inside the powerhouse help to create electricity for about 4 thousand people, it may be a drop in the bucket now for Empire Electric, but it stands to show the hard work inside the Dam that has stood the test of time. "A lot of it was mules and teams of mules moving rock," says Snyder, "we did have some steam, but a lot of it was humans and shovel." Construction of the dam employed more than 800 men at one point, when Snyder says less than that lived in the area. Snyder says the dam that would eventually feed power to a

lead and zinc mine in Joplin, was in many ways the starting point for growth in Taney County at the turn of the century.

"A lot of history in this area came out of this dam" says Snyder. "Grandpa worked at the dam when it was being built, or great grandpa, maybe even great," he says. Snyder says the White River was chosen because it has a steep drop off from beginning to end, some 2000 feet. That drop off helps to generate horsepower for the generators, which is part of the reason why the Army Corps of Engineers would put in their own dams decades later. Another large reason for the construction of the Army Corps of Engineers Dams was flood risk management. "There are pictures of Hollister," says Army Corps of Engineers Park Ranger, Leah Deeds, "residents told stories about walking through ankle deep mud downtown, having farms washed away and trains off the tracks." Deeds makes sure those at the Dewy Short Visitor Center don't forget the work that went into building the Army Corps of Engineers Dams at Bull Shoals, Table Rock and Beaver. 'A lot of people are surprised to learn how they work together" says Deeds, "Beaver Lake dumps into Table Rock which dumps into Bull Shoals." The system still helps protects residents from floods, a risk that can be seen by the floods that halted construction on the Table Rock Dam in 1957, or the measurements kept downstream at Calico Rock today. "Where it would have been had the dams not been in place," says Deeds, "so in 2011 it would have been higher that it had ever been." The Dams didn't come without scarifies, two communities and dozens of farmsteads had to be abandoned when the lakes were made. However, part of the payoff is the electricity that reaches homes across the Midwest. Everyone thinks it goes to power the Branson Strip," says Deeds while laughing. The money it took to build Table Rock Dam in the 50s would be near half a billion dollars today, but it's not the largest, that title goes to Bull Shoals Dam. But when it comes to recreation on the lake created by Table Rock Dam it is far and away the leader. "About 66 million dollars in sales a year," says Deeds, "that's based on 2012 when we had about 4 million visitors." Whether it's flood management, fishing or the hydroelectricity created like Powersite before it, it's clear the impact of the dams on the White River are as powerful as the waters they help hold back. "A drop of rain in Fayetteville, we get to generate it a lot of times," says Snyder.

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(It's the only photo I could find of a Gilbert Dam and it's picturesque!)

## Water Authority continues efforts to preserve Gilbert Dam

By Alex Davis, November 26, 2014, bradfordera.com


Bradford City Water Authority, PA officials are continuing efforts to preserve the spillway at the Gilbert Dam, hoping to avoid an estimated $1 million in replacement costs. Rehabilitation at the dam is already coming in at $4.3 million, part of a two-year project that would bring the earthen dam up to date with state and federal regulations.
"It looks positive at this point" that added costs will be bypassed, said executive director Kim Benjamin, during the authority's meeting on Tuesday. Core borings of the existing spillway were taken Oct. 28 with GAI Consultants and dam safety engineers on site, according to Benjamin. The Gilbert Dam reinforcement is critical for damage prevention and possible embankment breach if a major storm strikes. Constructed in the 1800s, the dam contains 206 million gallons of water. For many years, the Gilbert Dam has appeared on the state Department of Environmental Protection hazardous dam list. A $5.2 million H20 PA Act Grant will be used to pay for the work. The authority in June approved a $4.297 million contract with Bob Cummins Construction Co. of McKean County.

In other matters, E & M Engineering of Foster Township has completed the field survey work for the possibility of extending water to Gates Hollow. Benjamin said that the drawings and cost estimates are 75 percent complete, and a full report is due Dec. 16. Residents seem welcome to

the idea of hooking up to the city's water, according to surveys conducted earlier this year. Twenty-one homeowners said they are interested in connecting immediately, eight said they would be interested in connecting at a later date and four said they were not interested. No one who completed a survey was undecided. Also at the meeting Tuesday, the water authority approved awarding the semi-annual water treatment plant chemicals to JCI Jones Chemical Co. of Caledonia, N.Y., paying $6,000 for liquid chlorine and caustic soda, $13,275. In addition, Benjamin announced that water treatment plant filter upgrades are expected to start in late February or early March. In September, water authority members approved contracts worth $992,000 for rehabilitating eight water treatment plant filter beds. William T. Spaeder Co. Inc. will do the mechanical work for $820,000 and Lanco Electric Inc., electrical for $172,000. Benjamin also announced that access to all gates to the water authority watershed roads will be open for hunting season starting Monday.

(This is to justify removing dams.)

## Suit filed to prevent Snake dredging

**$6.7 million river project is set to start next month**

By Nicholas K. Geranios Associated Press, November 26, 2014, spokesman.com

Environmental groups and the Nez Perce Tribe have filed a lawsuit to stop proposed dredging of the lower Snake River to aid barge traffic from Lewiston the farthest inland seaport on the West Coast. The lawsuit, filed Monday in federal court in Seattle, challenged the U.S. Army Corps of Engineers' approval of a $6.7 million dredging project scheduled to begin next month. The lawsuit was filed by Earthjustice on behalf of a coalition of environmental groups. The Army Corps contends that dredging behind Lower Granite Dam is needed to maintain the corridor for barges between Pasco and Lewiston. Opponents contend barge traffic on the lower Snake River is declining and doesn't justify the dredging. They also claim the dredging would hurt salmon, steelhead and Pacific lamprey. The corps on Tuesday declined to comment on the lawsuit.

The corps' Walla Walla District released its draft sediment management plan two years ago, asserting that dredging and other maintenance would provide benefits far in excess of costs. Last week, the corps issued a record of decision adopting the plan, with work to begin on Dec. 15. Four dams on the Lower Snake River between Lewiston and Pasco allow for barges that carry fuel, timber, agricultural products and other cargo. Environmental groups contend the dams should be removed because the structures sharply reduce runs of salmon and steelhead. "These four dams are responsible for pushing the Snake River's wild salmon and steelhead to the edge of extinction." said Joseph Bogaard, director of Save Our Salmon. The groups also say barge traffic has been dropping, which removes justification for dredging. "Climate change and other factors are making the lower Snake River dams ever more deadly to migrating fish while the economic justification for this waterway is slipping away," Bogaard said. The lawsuit contends the corps violated the National Environmental Policy Act and the Clean Water Act with its plan to remove about 400,000 cubic yards of sediment from the navigation channel. The lawsuit also says the corps failed to consider whether the work was economically justifiable. The corps spent $16 million to prepare the plan. The corps, seaport managers and farmers have said the costs of maintaining the waterway are justified. The agency estimates about 3 million tons of commodities are shipped on the river each year and moving them by barge instead of truck or rail saves about $8.45 a ton, or about $25 million a year. The dams were constructed from the 1950s to the 1970s and made Lewiston and Clarkston into seaports.

(Hogwash!)

## Dams Emerge as Key Climate Change Suspects

By Marc Howe, 28 November 2014, sourceable.net

While dams have long been believed to make a major contribution to reducing carbon emissions by enabling the generation of renewable energy in the form of hydropower, researchers now suspect they could be one of the world's leading sources of greenhouse gas emissions. The

reservoirs created by dams generate copious amounts of methane as a result of the bacteria that thrive in their oxygen-deprived environments.

These microbes are essentially the same as those that occupy the intestinal tracts of bovine livestock and human landfills, emitting methane instead of carbon dioxide after consuming organic carbon to produce energy. While it has long been known that these microbes make artificial lakes and reservoirs a major source of anthropogenic methane, scientists now believe that previous research grossly underestimated the volume of their emissions. It was previously believed that reservoirs accounted for around one fifth of all man-made methane emissions. A study conducted by researchers from the National University of Singapore, however, notes that many of these assessments have been fraught with uncertainty.

Efforts by many countries to reduce their carbon footprint by building hydroelectric dams could be misbegotten should these facilities also prove to be a major source of greenhouse gas emissions.

In the paper Uncertainties of Carbon Emissions from Hydroelectric Reservoirs, Siyue Li from NUS's Institute of Water policy and X.X. Lu from the university's Department of Geography points out that global methane emissions from all large dams could be as high as 104 teragrams a year. This is a staggering volume given NASA's estimate that the total amount of methane entering the atmosphere globally as a result of the burning of fossil fuels – the chief source of such emissions the United States, is within the range of 80 and 120 teragrams annually. It would also make reservoirs a major contributor to climate change, given the significance of methane as a greenhouse gas. The Intergovernmental Panel on Climate Change estimates that around 25 per cent of anthropogenic climate change is the result of methane emissions. Should reservoirs truly prove to be copious methane producers, however, it will bode poorly for concerted efforts by developing economies to reduce their greenhouse gas emissions by expanding their usage of hydropower. A recent study led by Dr. Christiane Zarfl at the Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB) in Berlin found that rising demand for clean energy from renewable sources has prompted a surge in hydropower development following a protracted plateauing of growth. The world is currently host to an unprecedented number of hydropower dam projects, primarily in the developing economies of Asia, Latin America and Africa.

***Hydro:***

(Some great photos.)

**Dam, that's big! World's top hydro power stations**

http://www.cnbc.com/id/102195921?trknav=homestack:topnews:4

(Hydropower meets new technology.)

**Vantage Completes 4.5MW Data Center Expansion in Quincy**

by Jason Verge on November 21, 2014, datacenterknowledge.com

Vantage Data Centers has completed the second phase of its Quincy, Washington, data center. An additional 4.5 megawatts brings the building's total capacity to 6 megawatts. The build was accelerated to meet a Fortune 100 customer's requirement, the company said without disclosing the customer's name.
The data center campus is located in the heart of the Columbia River Valley and has access to cheap hydropower. The company's long-term plan calls for four data center buildings totaling 560,000 square feet and 55 megawatts of critical load.

Vantage is working with the Uptime Institute on a possible Tier III Certification and anticipates receiving LEED Platinum, like it has done in Santa Clara, California. The data center has newly-built mechanical and electrical infrastructure. It has a custom-developed indirect evaporative cooling system designed to eliminate impact from outdoor conditions through a closed-loop delivery infrastructure. The data center also has EPA Tier 4 generators that reduce emissions by 90-95 percent as compared to traditional generator deployments. The EPA's Tier 4 standard is designed to reduce hazardous emissions from backup generators. Most data center generators are exempt from Tier 4 standards through an exemption for gensets used for emergency backup. A few years ago, Quincy residents expressed concern at the number of generators as the result of a booming data center industry. Vantage went the extra mile. Vantage launched in 2010 with backing from Silver Lake Partners. Silver Lake's Sureel Choksi was named CEO in 2013, replacing the founding CEO Jim Trout. The company's first data center was in Santa Clara. The first facility in Quincy was announced in 2011 and opened in 2013. It has around 60,000 square feet of raised floor inside of a 133,000 square foot building. "Our location in Quincy benefits from access to abundant, low-cost hydropower as well as significant tax incentives, driving industry-leading TCO for customers," Choksi said in a statement. "We are pleased to support our customer's faster-than-anticipated growth and look forward to building additional data centers on our Quincy campus to support more customers." With its low-cost hydro power, Quincy has been an attractive market for companies with web-scale operations, including Microsoft, Yahoo, and Dell. In April Vantage boosted its credit line to $275 million in support of expansion.

(How do you do that? Watch out other hydro owners.)

**Judge: Alcoa to show riverbed rights under NC dams**

By Emery P. Dalesio, AP Business Writer, wral.com

Raleigh, N.C. — Alcoa Inc. will have to show it has ownership rights to the riverbed under four North Carolina dams it has operated for as much as a century, a federal judge ruled.
U.S. District Judge Terrance Boyle decided late Thursday that a trial starting in two months was needed to sort out the claims over riverbed ownership crucial to operating the Yadkin River hydropower dams. "The availability of clean water and affordable power sources is critical to the welfare of Twenty-First Century America. At its core, this case highlights the importance of these two vital resources," Boyle wrote in his ruling. "Alcoa has the burden of proving valid title at trial."
The lawsuit brought last year by Gov. Pat McCrory's administration involved deciding who owns 40 miles of the Yadkin River bottom on which Alcoa and its predecessor built dams that once powered an aluminum smelter. The plant employed thousands before closing in 2007. The company has sold the electricity to commercial customers since then. Alcoa sold about $34 million of electricity over the year ending in September. With the jobs now gone, McCrory and his Democratic predecessor, Beverly Perdue, have resisted a new federal license for Alcoa that would allow it or a future buyer to continue operating the dams for up to 50 years. North Carolina's lawyers argued it has owned the riverbed since after the American Revolution and that the public has a stake in Alcoa's dams that were built on it.

Ownership of riverbeds beneath commercially navigable waterways has historically gone to state governments upon statehood. Because North Carolina was one of the original 13 states, the trial will have to determine whether at the time the country was founded the Yadkin was navigable along the 40 miles where the dams were built. If the section of the river was passable for boats and the bottom owned by North Carolina, the next step is whether the state transferred its property rights to new owners and Alcoa acquired title that way, Boyle said. Ray Barham, the

Alcoa executive responsible for securing the federal license, said the company has owned the riverbed for nearly 100 years and paid taxes on it. "We look forward to the opportunity to fully present our case and demonstrate our rightful ownership," he said in a statement. The Yadkin is the state's second-largest river system and provides drinking water for about 700,000 residents of the state's Piedmont. The river flows for about 200 miles from the Appalachian foothills south through central North Carolina and becomes the Pee Dee River before entering South Carolina on its route to the Atlantic Ocean.

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(Nice little guy needs some work.)

## Hydro dam work delayed, design plan being altered

By Jessie Perrine on Nov 25, 2014, brainerddispatch.com

Repair work at the city's hydro dam is taking a lot longer than expected following this year's high water levels. There's also a hiccup in the project that will likely change the original design of the new spillway apron, which crews started working on earlier this year. At a Brainerd Public Utilities (BPU), MN Commission meeting Tuesday, the group heard an update on the project, as well as residents' concerns about whether the public is being informed on the changes. The spillway apron (the concrete flat area below the dam) started being rebuilt this summer. This project is one of the upgrades needed at the site, per the Federal Energy Regulatory Commission (FERC). It comes at a cost of about $2.4 million.

The project, which was originally scheduled to be done Nov. 28, has been delayed several times because of high water levels. That means it won't be completed before winter hits, so officials are contemplating what to do for an "interim fix," which means just getting the slab done and getting it back to the correct elevation, said Scott Magnuson, BPU superintendent. "We're not going to be able to get the whole project done, so we need to concentrate on getting ready for spring, but move forward with the design," he said. "We don't want to pour this concrete and tear it out in the summer." Magnuson said those suggestions should be brought forward by the engineers in the next few days. One other issue that might alter the project is the thickness of the current apron. Radar showed some areas might not be four feet thick as originally thought, Magnuson said. So crews are continuing to assess the thickness of the apron, and might have to alter the project based on what they find. That could mean a change to the cost, whether it be an increase or decrease, Magnuson said. If there is a price increase, it would have to come before the BPU Commission for approval. During public forum at Tuesday's meeting, Brainerd residents Guy Green and Jeff Czeczok took issue with the extra work and both questioned if the public was being made aware about the new work and potential new costs.

Czeczok said the public needs to know if "unforeseen issues" will cost money. "You are saying there's a likelihood that there will be more cost," he said. Magnuson said, "There's a likelihood that the design will change." Officials don't know how that will alter the cost. It could be less, Magnuson said. Green pushed the issue further, noting that the cost will likely go up. "Did (officials) offer you a scenario in which the cost would not rise?" he asked. "No," Magnuson said. There is no estimate on when the project will be done. Water is still flowing at the site, though normally generators are shut down by this time of year, Magnuson said. "Water is higher than high," he said. "That's good for making power, but not good for construction work." The project

should be ready to operate by March 1, he said. Construction work can be done year-round, but it isn't optimal for crews because of the cold conditions. An interim plan will get the hydrodam through winter and able to operate in the spring, when the work can be continued. In the meantime, BPU officials are looking into breaking up the repair work into up to three separate projects, to maximize on potential Department of Natural Resources grants. For this first part in the project, BPU was too late to apply for DNR grants.

(Can't beat the cost of hydro.)

## Bee in Turlock: Power rates might rise a little

### TID to hold hearing Tuesday, may take vote

By John Holland, modbee.com, 11/26/2014

Electricity customers in the Turlock Irrigation District face a possible rate increase that is not as large as first discussed. The district staff in September had proposed a 5 percent increase for 2015. Under the revised proposal, rates would go up 2 percent with the new year, and the district could make two smaller adjustments later in 2015 based on conditions in the energy market. TID also would tap its "rate stabilization fund" to ease the impact on customers. The average residential bill, now $125.33 per month, would rise to $127.42 as of Jan. 1. Smaller adjustments could follow in April and October, and they could be credits if TID's power costs are down. The district board will hold a public hearing on the proposal Tuesday. It could vote then or at a later meeting.

TID has about 98,000 power customers in an area stretching from south Modesto to north Merced County and from the La Grange area to the hills southwest of Patterson. The hearing will happen a week after the board of the neighboring Modesto Irrigation District balked at a proposed power rate increase averaging 3.5 percent. TID staff said more money is needed to cover the cost of supplying electricity. Some electricity comes from hydropower from Don Pedro Reservoir, which long has been cheap for TID and MID but now needs an expensive new license from the federal government. The Turlock district staff also cited the costs of natural gas for other generating plants, the 2013 overhauls of two of these plants and the attractive salaries needed for employees running the sophisticated grid. The initial proposal for a 5 percent rate increase was based on a gap of about $17 million between expected income and expenses in 2015. TID has projected about $373 million in revenue and $390 million in spending with the current rates.

"This is still true," spokesman Calvin Curtin said by email this week. "However, staff is not proposing that TID increase rates to cover the whole shortfall. Staff is proposing a balanced approach to covering the shortfall."

The details:

- About $6 million of the needed $17 million would come from the initial 2 percent rate increase.
- Up to about $4 million would be through the adjustment based on market conditions, mainly the cost of natural gas. Under board policy, it can range from a credit of 0.5 cents per kilowatt-hour to a surcharge of 1 cent on power bills, which average 15.28 cents per kilowatt-hour. The adjustment is made each June and December.
- About $7 million would be drawn from the rate stabilization fund, which stands at $69.2 million. The fund is part of TID's substantial reserves, which guard against unexpected expenses and help the district get low-interest financing for capital projects.

TID's average residential bill has risen 32 percent since 2007, when it was $94.75 per month, but it is still among the lowest-cost providers in the state. Actual use varies widely from the average, thanks mainly to heavy use of air conditioners in summer. West Side customers have extra charges to cover the cost of buying the system from Pacific Gas and Electric Co. in 2003.

When the board voted 4-1 in September to set Tuesday's hearing, members made it clear that the initial 5 percent proposal could change. Director Joe Alamo dissented because he wanted to see the final budget for 2015 first. He added that an easing of the drought "would do a lot for our budget next year," thanks to increased hydropower. TID electricity customers bear some of the cost of the irrigation system, on the grounds that they get low-cost hydropower. Farmers,

however, could see their rates more than double under a proposal that is the subject of a Jan. 13 hearing. The water system subsidy has been controversial in MID, and it was among the reasons its board passed on the power rate increase this week. That board also is looking at boosting farm water prices, but a detailed proposal has not emerged.

***Environment:***

(How does this dam impede the flow?)

**Small Placer dam is a big barrier to salmon**

By Matt Weiser, SACBEE.COM, 11/22/2014

On a recent day after a rainstorm, several dozen fall-run Chinook salmon trying to migrate upstream in Auburn Ravine found their progress frustrated. Efforts to complete their long spawning run from the Pacific Ocean were halted by a small dam on the outskirts of Lincoln. Known as Hemphill Dam, for decades it has blocked fish from accessing more than 5 miles of potential spawning habitat in Auburn Ravine, a creek that runs from the Sacramento River into the Sierra Nevada foothills beyond Auburn. Only in very high flows can salmon manage to jump over the dam and carry on.

"There's so many salmon pooling up at the bottom of the dam, and there's so little water in there, that the salmon are just in there swimming back and forth," said Jack Sanchez, president of Save Auburn Ravine Salmon and Steelhead, a nonprofit group working to restore the creek. "It's very frustrating because the salmon are here and we can't get them over the dam." Fixing such impediments is considered crucial to the survival of Central Valley fall-run Chinook salmon, particularly as water temperatures warm due to climate change. The fish need better access to cold, high-elevation water cut off in prior decades by major water storage projects, like Folsom Dam on the American River. The Nevada Irrigation District, which owns Hemphill Dam, has been working with Sanchez's group for several years on a plan to modify the dam for better fish passage. Relatively simple fixes at small dams can open up many miles of habitat to wild-spawning salmon. These fish serve as an important buffer against the negative effects of hatchery salmon production. Studies have shown that salmon produced in hatcheries have less genetic diversity and are less able to withstand environmental strain such as drought, disease and low water flows. "It's been on my priority list for a number of years now," Michael Healey, a fisheries biologist at the California Department of Fish and Wildlife, said of Hemphill Dam.
The Hemphill Dam, about 100 feet across and 6 feet high, was built in the 1920s and diverts water from the ravine into Hemphill Canal, which delivers irrigation water to rural properties in the Lincoln area.

The dam allows water to flow downstream into Auburn Ravine in a narrow band – only about a half-inch deep – across its entire width. This is too narrow for fish movement. Last year, the district spent $20,000 to install new stainless steel panels to shunt more water toward one side to create a deeper channel of water, in hopes this would create an easier path for fish. This year, the

district planned to spend an additional $50,000 to build a fish passage channel out of boulders downstream of the dam. Sanchez said the district waited too long to seek a required streambed-alteration permit from the Department of Fish and Wildlife, and the project didn't get built in time for the salmon run. Healey, at the Department of Fish and Wildlife, said the permit application was submitted to his agency on Nov. 3. By then, the salmon run was already underway. The permit is pending and may still be approved, he said. But such permits generally forbid working in streams when fish are present, which is likely to be the case for the rest of this year. Remleh Scherzinger, general manager at Nevada Irrigation District, said his agency is "fully engaged" in trying to help salmon navigate the dam. "We are aware that there is a fish passage concern there," Scherzinger said. "It is not a barrier to passage, but it does pose a problem. We need to be good stewards, and we need to do the appropriate permitting. There are a lot of players to get to the table."

In 2012, the district spent $1 million building a fish ladder at the Lincoln Gauging Station, a smaller structure downstream that also blocked fish movement. This was successful, allowing salmon to swim as far as Hemphill Dam under most flow conditions. "I think that demonstrates our commitment to a solution," Scherzinger said. Yet other questions surround Hemphill Dam. The Placer County District Attorney's Office is conducting an investigation into the dam, although officials won't say why. Scherzinger said he was unaware of the investigation. "Because the investigation is ongoing, it would be inappropriate to comment on any facts surrounding the investigation," Assistant District Attorney Jeffrey Wilson told The Bee, via email. Sanchez said it may be related to repairs made to Hemphill Dam in the 1980s, after a flooding event. Scherzinger said the federal government approved the work and also provided grant funding. "Those modifications were done under federal authority," said Scherzinger, who did not work for the irrigation district at the time. Adding some urgency to the situation, Healey last year completed a salmon survey in Auburn Ravine, which revealed a surprise. The survey found numerous juvenile winter- and spring-run Chinook salmon, both of which are endangered species, unlike the fall run. He suspects the endangered salmon were born in other streams and swam up Auburn Ravine from the Sacramento River, in search of safety and food, before completing their downstream migration to the ocean. "It shows these smaller tributaries are probably providing some pretty good rearing habitat for some of these endangered fish," Healey said. "And little is known about that."

(Well, surprise, surprise!)

## Letter - Salmon runs back with dams in place

Union-bulletin.com, November 24, 2014

Several people have asked what is going on with the Columbia River salmon.

This year, the combined spring, summer, and fall Chinook runs over Bonneville Dam totaled over 1,339,000, compared with a low of 286,000 in 1939 and the lowest total in 1983 at 244,346. Steelhead numbers are over 324,600 and still running, while their lowest return was in 1943 at 92,133. Steelhead topped out in 2001 at 676,793. Coho bottomed out at 790 in 1945 with 292,397 this year setting a record since 1938. Sockeye reached their lowest level in 1995 at 8,774, compared with 614,179 this year, which eclipsed the previous record of 515,673 in 2012.

The spring and summer runs of Chinook, though very good, were not the best on record. The fall Chinook run, projected to be the largest since counting began at Bonneville, did not pan out. The primary reason was that the managing agencies allowed the commercial and Indian fishermen a larger share of the runs. Sport seasons and quotas were also increased.

Sport seasons allowed up to six Chinook per day in the Snake River and mid-Columbia. Coho seasons were opened in the Wenatchee, Yakima, Clearwater, and other streams due to the Yakama and Nez Perce Indians restoring these runs.

The Snake River coho runs were extirpated by 1985, but restoration programs started in the mid-1990s returned over 16,000 this year including the new Idaho state record coho reported recently in the U-B. With over 610,000 wild fish going up the Columbia, Indian, commercial and sport sockeye fisheries were also liberalized. A friend in Ellensburg caught 54 Chinook and 54 sockeye where seasons had been closed for decades. The Snake River component, still ESA listed and hatchery supplemented, totaled almost 2,400 fish. Those not needed for hatchery production

were released into lakes in the Salmon River basin to spawn naturally. Some claim the outstanding runs are due to Judge Redden's spill at the dams. NOAA fisheries has estimated over 77 percent survival for juvenile Chinook, and over 50 percent for juvenile steelhead with the judge's spill, almost as good as if the dams weren't there. Reduced avian predation helps, but NOAA fisheries estimated that seals and sea lions took 45 percent of the adult spring Chinook between Astoria and Bonneville Dam. Reduced harvest, restoring habitat and improved in river and ocean survival are bringing the runs back with the dams in place. *John McKern, Walla Walla. WA*

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