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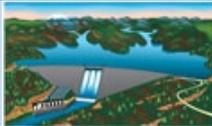
# Some Dam – Hydro News™ And Other Stuff



**Quote of Note:** *“Never be afraid to sit awhile and think.” - Lorraine Hansberry*

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**“Good wine is a necessity of life.” - -Thomas Jefferson**  
**Ron’s wine pick of the week: 2012 La Posta Malbec “Pizzella”**  
**“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson**



## ***Dams:***

[\(Dam removal marches on!\)](#)

### **Environmental Journal: Removing White Rock Dam on Pawcatuck River will ease passage for many spawning fish**

By Alex Kuffner, November 29, 2014, [providencejournal.com](http://providencejournal.com)

Fish-lovers — I’m talking conservationists, not diners — have to feel good about what’s been happening with the Pawcatuck River over the past few years. A series of projects have been completed to remove dams and restore fish passageways along its meandering 31-mile path through South County, making it easier for River herring, shad and eels to reach their historical spawning grounds. The latest proposal to come along as part of those efforts is the removal of the White Rock Dam, a 6-foot-high concrete barricade that stretches 108 feet across the river from the east bank in Westerly to the west bank in Stonington, Conn. An information workshop on the project is scheduled for Wednesday evening at the Westerly police station. Representatives of the Nature Conservancy, which is coordinating the work, will be there, as will officials from project partners at the U.S. Fish and Wildlife Service, the Rhode Island Department of Environmental Management and the Wood Pawcatuck Watershed Association. Taken alone, removing the White Rock Dam may not mean so much in the bigger picture. But in the context of all the work that has

preceded it, it surely grows in importance. Just a few months ago, a trio of projects spearheaded by the Wood Pawcatuck Watershed Association was completed. They included creating a natural fishway at Kenyon Mill dam, removing the dam at Lower Shannock Falls and installing a fish ladder and eelway at Horseshoe Falls. Those projects opened up a section of the river that had been blocked off to fish for two centuries by dams that were built to power Industrial Revolution-era mills.

“That’s one of the reasons this is so attractive,” Scott Comings, associate state director for The Nature Conservancy, said of the proposed removal of the White Rock Dam. “It’s building on all the work that the Wood-Pawcatuck Watershed Association has already done.” Comings describes the overall goal as improving “river connectivity.” In layman’s terms, removing the White Rock Dam would help more fish to be able to swim up the Pawcatuck from its terminus in Little Narragansett Bay in Westerly to the river’s source at Worden Pond in South Kingstown.

The White Rock Dam isn’t an insurmountable obstacle to spawning fish that return to the freshwater river every spring from the ocean, where they spend the rest of the year in saltwater environs. They can swim up a 1,200-foot mill chase that runs along one side of the dam. But conditions have to be perfect for them to do that. If the water’s flowing too fast, they get pushed back down. Overall, about one in five fish make it above the dam. Taking out the dam won’t just benefit fish. It would also help sediments trapped behind the dam move downstream and could boost flood abatement, said Comings. Moreover, he said, it reduces the risk of an accident. The dam isn’t failing now, but it is old — the original rock-and-timber dam is believed to have been built in the 1800s, but was replaced after the Hurricane of 1938 destroyed it.



The White Rock Dam is a 6-foot-high concrete barricade that stretches 108 feet across the Pawcatuck River between Westerly and Stonington, Conn. Conservationists would like to remove the dam to help fish move up river.

The dam, which is no longer used for power, is owned by Griswold Textile Print, which operates a mill on the Westerly side of the river. Comings said the company has been supportive of the project but is still waiting for more details before deciding whether to allow the dam to be removed. The project is being financed through \$1.9 million in federal relief funds awarded in the wake of superstorm Sandy. The Nature Conservancy is also using the money to study the removal of the dam at the former Bradford Dyeing Association mill, in Westerly. The deadline to use the grant is April 2016. That means that the groups involved in the work are under a tight schedule. They’ve hired engineering firm Fuss & O’Neill to draft plans for removing the White Rock Dam, and they hope to have permits submitted by January. If all goes well, the work could start as early as next summer. And that would be good news for everyone who wants to bring more fish back to the Pawcatuck.

(This river is a constant flooding problem.)

## **Reconstruction of Big Dam almost complete**

### **Flood-related damages expected to be finished this winter**

By Saja Hindi, Reporter-Herald Staff Writer, 11/30/2014, reporterherald.com

What took the Big Thompson River, CO about a week to dismantle, crews hope to finish restoring 18 months later. The 60-foot-plus Nelson Big Dam, just west of Loveland’s water treatment plant, suffered major damage in the 2013 flood, and crews are in the process of not only reconstructing it, but making the dam more durable than it was before. The dam was built in 1895 after a flood the year before destroyed another dam nearby. It supplies water from the Big Thompson River

that irrigates about 20,000 acres of farmland in Larimer and Weld counties, most of the drinking water for the Johnstown treatment plant and diverts raw water for the city of Loveland to its treatment plant. The dam, built on 15 feet of sand and gravel on the old river bed, cost \$11,000 to complete at the time, and is considered a historic landmark, with its masonry stone arch shape.

"When people see it, they don't really realize it's not just a little retaining wall in the river. It's a pretty big structure," said Gary Gerrard, a board member for the Consolidated Home Supply Ditch and Reservoir Co. The company owns the dam and has contracted with the city of Loveland since the late 1800s. Since its construction, the dam has remained maintenance-free for the most part, according to Gerrard, but that changed last year. Although the 1976 flood didn't have a major impact on the dam, the 20,000 cubic feet per second of water flow going over the dam during the 2013 flood proved to be too much. To put it in perspective, Gerrard said average flows in September are typically around 100 to 200 cubic feet per second. Witnesses said the heavy water flow carried a lot of debris and large objects that struck and damaged the top of the dam. Home Supply hired Gerrard Excavating to not only reconstruct the dam but to also complete deferred maintenance, unrelated to the flood — such as replacing the mortar between the rocks, which has eroded, and gate repairs — and constructing an additional spillway to mitigate future floods.



Louis DeAngelis is attached to a crane as he uses a power washer to clean out a portion of the Nelson Big Dam, west of Loveland, on Sept. 24, before shaping stones to replace ones that were damaged. (Steve Stoner / Loveland Reporter-Herald)

The Loveland City Council approved contributing funding to the dam repairs, and FEMA has also obligated funds. According to Gerrard, the cost of the project is between \$2 million and \$2.5 million. Larry Howard, city senior civil engineer, said the city agreed to split the cost in half with the company of non-reimbursed flood repairs and maintenance (excluding projects on the dam that are only the company's). "The city has been just a great partner throughout the whole thing," Gerrard said. The dam is not only important to the city for its water diversion, but Howard said it's also where the city has developed its treatment processes over the years. While Loveland has other sources of water, such as the Green Ridge Glade Reservoir, the dam is their main source of raw water. With more than 5-feet of the dam knocked off as well as some of the stones from the arch, crews had their work cut out for them. Immediately after the flood, Gerrard, who is also the project's construction manager, said the goal was to fill all the reservoirs and move the river. Then, crews built concrete abutments, or concrete structures on both sides of the dam to hold the arch secure. "The first thing was to get the repairs made to the dam," Howard said. "That work began last winter after the flooding and was carried on throughout the winter." Construction took a hiatus when flows became too high to allow for work in the spring, but work was continued on the arch during the summer months. After Aug. 1, construction was underway to fill in the rest of the crest with concrete and the stone portion was repaired. Howard said the project is unique in that stone construction is rarely seen anymore. "The goal from the beginning was to maintain the historical appearance of the dam, and I think we've been able to do that," he said. To replace some of the stones, crews were able to get more stones from the Arkins quarry, on North County Road 27, which is where the original stones were from. Crews added the new spillway, which is electronically controlled and is brand new technology, Gerrard said. "We're excited to see that work," he said. "Once that was completed and the rest of the arch was complete, we moved into the Home Supply system," which included repairing gates and deferred maintenance. The reservoirs, he said, were filled early this year, making it easier to manage the river for construction and not diversion. Flood-related repairs are planned to be completed this winter, and then re-mortaring between rocks will begin.

(Looks innocent now!)

## Panel: Dam needed to prevent Washington farmland flooding

By Don Jenkins, Capital Press, December 2, 2014, capitalpress.com

**A group appointed by the governor says a dam is the only way to control flooding on the Chehalis River in southwest Washington.**

A new dam on the Chehalis River is the only way to guard against another massive flood, like the one in 2007 that drowned scores of livestock and washed at least two southwest Washington dairies out of business, according to a governor's study group. Washington State Dairy Federation executive director Jay Gordon, a group member, said the six-member panel searched for alternatives to a dam, which has already drawn opposition.



"If anybody's got any other options, we'd like to hear from them," said Gordon, an Elma dairyman whose own farm was one of 19 dairies that flooded seven years ago. The Chehalis Basin Work Group submitted a report Nov. 25 to Gov. Jay Inslee recommending the state fund more environmental and engineering studies on building a flood-control dam 3 miles south of Pe Ell in Lewis County. The work group also recommends restoring fish habitat, and replacing culverts and other barriers to enhance fish runs. The group asserts the river could have more fish than ever, even with a dam.

The work group has requested \$52.8 million to keep studies and relatively small flood-control and fish-enhancement projects going for the next two years. The work group estimates that a dam and fish projects could eventually cost \$500 million to \$600 million. In a letter back to the work group, Inslee said he supports small flood-control and fish enhancement projects while a dam is studied. He stopped short of endorsing a dam or pledging to include funding in his 2015-17 budget proposal. A governor's spokeswoman said Inslee is still considering the work group's funding request. Gordon said more studies need to be done before anyone can commit to supporting a dam. "I don't think any of us are endorsing a dam. We don't have enough information," he said. The Quinault Indian Nation has vowed in the past to oppose a dam on the Chehalis River, arguing it would block salmon and damage spawning habitat. Calls to tribe officials for this story were not returned. The 125-mile Chehalis River originates in the Willapa Hills and flows north, east to Chehalis and north again before turning west and emptying into Grays Harbor. The river has often flooded farmland. Gordon said his grandfather coped with flooding on the family farm in the 1930s. The flood of 2007 was particularly devastating. The waters rose quickly and reached levels never before recorded. Interstate 5 was underwater.

Flooding was most severe on the upper Chehalis River. Gordon said at least two dairies never recovered. Two others survived thanks to cows donated from other dairies. Even if Inslee and state lawmakers support more studies, a dam could be five to eight years away from being finished, according to the work group. According to the study, one option would be to build a dam that has one function: hold back the river when there is a danger of flooding. Another option would be a dam that creates a reservoir and releases water in the summer to help fish.

Gordon said a dam, whatever the type, would have to be built in tandem with improving fish runs. "This isn't going to be your grandpa's dam. It can't be," he said.

(Dumb things people do around dams!)

## Crocodile kills man retrieving balls at golf course dam

December 04, 2014, Associated Press, foxnews.com

Johannesburg – A crocodile killed a man while he was retrieving golf balls from a dam called Lake Panic at South Africa's flagship wildlife reserve, officials said Thursday. The crocodile

grabbed 29-year-old Jacques van der Sandt in its jaws on Wednesday night and disappeared under the water at a golf course next to a staff residential area within the park boundaries, according to Kruger National Park officials. **Rangers killed the crocodile after a two-hour search following the attack, according to a park statement.** It said the body of Van der Sandt, the son of a park employee, was recovered with tooth marks on the back and front but did not have any "mutilation." Oubaas Coetzer, a police officer, said the crocodile attacked van der Sandt while he was standing at waist height in the water and reaching below the surface to feel for golf balls on the bottom of the dam. **"One guy challenged the other to see who can retrieve the most golf balls,"** Coetzer said. He described van der Sandt as a keen golfer who grew up in the park and had probably seen crocodiles in the dam in the past. The victim's mother works for the park, and his father also worked at Kruger until his retirement.



### **Hydro:**

## **Power Industry Sees Rising Number of Hydroelectric Maintenance, Refurbishment, Modernization Projects**

Sugar Land--December 2, 2014--Researched by Industrial Info Resources (Sugar Land, Texas)--Hydroelectric maintenance, refurbishments and modernizations are a **growing part of the North American Power Industry.** Industrial Info is tracking 46 hydroelectric refurbishment projects in North America valued at more than \$773 million; 42 hydroelectric maintenance projects valued at more than \$201 million; and 18 hydro modernization projects valued at \$1.45 billion. These projects are scheduled to begin construction between January 2015 and December 2017.



(You don't see this often! With names like Emmet and Everett, you know they can build stuff.)

## **How a North Country family harnessed an Adirondack river**

Drive though the tiny Adirondack town of St. Regis Falls in upstate New York and you will see...  
by Brian Mann, in St. Regis Falls, NY, 12/2/14, northcountrypublicradio.org

Dec 01, 2014 — Drive though the tiny Adirondack town of St. Regis Falls in upstate New York and you will see something new standing against the flow of the river. **This summer, a family that owns hydro-dams in Essex and Franklin counties rebuilt the historic log dam using local labor and materials. Using 19th century techniques, the Smiths and the Foleys preserved a dam that generates power and creates an important impoundment on the St. Regis River.** Brian Mann visited the project a few weeks ago as it was nearing completion and has our story. Going old school to save an Adirondack dam You know it's just like a lot of North Country businesses. The only way big things get done is when the whole family comes together.



It is a raw fall day and I'm walking along the bank of the St. Regis River just across from the big powerhouse. Everett Smith sees me coming and gives a wave. "It's too late, Brian!" he shouts. "We're all done." Through the fall, I've been trying to make it out to see this project and Everett's right. I've missed most of the action. Everett along with, his son Emmett, and Emmett's uncle Matt Foley have been working with a half-dozen local guys from to build a massive new dam across the river. "We went to old books. We went to books from the turn of the century about how you build wooden timber crib dams." The structure here across the St. Regis River is more than 100 feet wide. It was built in 1947 and refurbished in the 1980s when the power station was added.

Matt Foley says this method of corralling rivers, using local materials, used to be common in the North Country. "It seems very unique now but a hundred years ago, you could have taken your pick of people who knew how to build these things. They were all over the place." The last couple of years it was clear this structure needed to be replaced entirely after decades of floods and ice, partial repairs just weren't cutting it any more. The family tried to find financing for a concrete dam, but that would have cost three or four times as much and the money just wasn't there. So they went back to tradition, using native wood and stone. "The big surprise for us in the process was simply that the bedrock [under the river] was further down than we



The old dam, ready for demolition to begin .

anticipated," Everett says. "So we needed about forty percent more timber than we anticipated." Local materials and local builders Building the dam this way meant they could use local materials. But they could also use local guys. Crews from the North Country built the big stone coffer dam to divert the river while the log dam was rebuilt. They milled the big tamarack logs and hauled the rock.



The wood-faced dam could last half a century. Photo provided.

"My main job was to run the excavator and fill the dam back up with all the stone," says Darwin Kelly who live here in St. Regis Falls. All summer long, using old haul trucks and a crane that looks like a museum piece, they wrestled this massive Lincoln-log dam into place. He says there were tough days working with cobbled-together equipment, improvising when things broke down. "Putting all the beams in places with limited equipment. But we don't see many wood dams and structures like this," Kelly adds.

A big yellow box of rocks. On this day, the work is almost done. The network of logs and heavy rocks is set in place,

headed with heavy wooden planks, still bright yellow and new.

It looks almost like a big yellow box wedged sideways across the river. John Carr is an engineer from Malone who helped design the project. We walk across the top of the structure, sixteen feet high. He says the basic concept is pretty simple. "It's constructed of logs that have been squared

and spiked together, a series of them and filled with all these large boulders to provide weight to hold the water back." Carr tells me one of the coolest parts was working with a family, a family building something big together. "You can't say enough about the family effort that was put together here to rebuild this historic dam."

### **A family affair born out of necessity**

Emmett Smith, he's Everett's son, says this has been a huge part of the experience this fall, going to work every day with his dad and his uncle. He took time off from his day job in Clayton on the St. Lawrence River, where he's a curator at the Antique Boat Museum.

"It's been wonderful working together as a family, staying at camp, getting up early," Emmett says. "You know it's just like a lot of North Country businesses. The only way big things get done is when the whole family comes together." But building a dam isn't building a work of art. It's hard and risky and this family put all their resources—money, sweat, physical risk—into making this happen. Emmett says building this way was necessity. "Us doing it together and building this log structure in a traditional way is pastoral, but we didn't do it this way for the poetry of it. It was a question of cost. This is the only way we could do it. This was the cheapest way we could do it. It had to happen now and the price of power is so low that this was the only way it was going to get done." Harnessing a river may be the easy part.

This is a part of the story that's kept me thinking about the dam in St. Regis Falls all summer. Work in the North Country has always been shaped by family, by traditional methods of getting hard jobs done, grappling with forces of nature like this river. But work like this has also been shaped by outside forces, by money and politics far beyond the Adirondack Mountains. In this case, electric power is selling on wholesale markets at dirt-cheap prices. And while politicians have moved to subsidize green low-carbon power like wind and solar and biomass—traditional North Country hydro-dams like this one generally don't qualify for those programs. "I mean as far as whether it's going to be profitable in the long run, it becomes political. Does the government and the people want to support green energy or not?" Everett asks. Emmett says it's good that the government is investing in new kinds of renewable power. But he says hydro—long a traditional source of energy in the region—shouldn't be left behind. "Everyone's for green energy, but we have to keep track of the energy we already have, and make sure we don't lose the green energy we're already producing." So Everett and Emmett Smith say they're proud of this thing they've wrestled into place. But what happens next is kind of out of their control.

There was a time when they did consider letting this dam go. There were so many hurdles, so many risks, and so little certainty of reward. But Matt Foley says rebuilding was important for the family and for the community of St. Regis Falls. "This dam has a pond that's six miles long with twelve dozen houses on it and big wetlands," he says. "So in addition to our generating plant, the town people here have a vested interest in having a dam here." On this day, the crew has begun removing the temporary coffer dam. Water is already beginning to spill against the wooden planks of the log dam and spilling through the turbines, generating electricity. The hope is that this summer's work will pay off, harnessing the St. Regis for the next half-century. *In the interest of full disclosure: Everett and Emmett Smith are News Director Martha Foley's husband, and son. Matt Foley is her brother.*

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### **Governor shows support for new hydro-power facility**

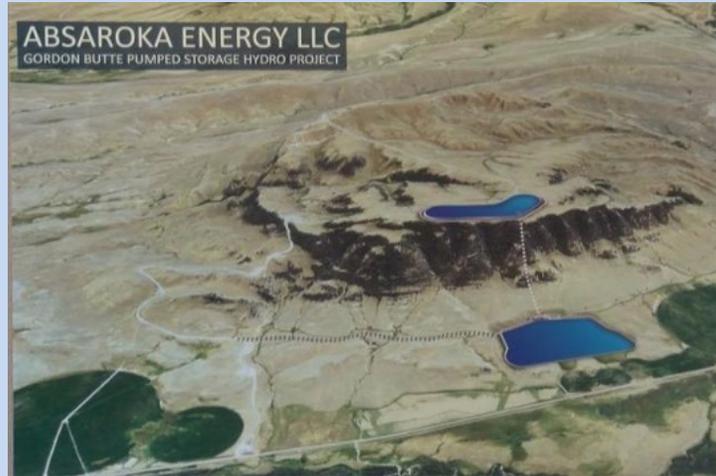
Gallatin County

By Jacqueline Gedeon, KTVM Butte Reporter, ktvm.com, Dec 01 2014

Bozeman, Mont. - Governor Steve Bullock was in Bozeman Monday, announcing his support for the a new hydro project, that advocates say is one of the first of its kind in the country. Called the Gordon Butte Pumped Storage Project, it's a 400-megawatt energy storage, regulation and generation hydro-power facility. It's in Meagher County, which is north of Bozeman and east of Helena.

The company behind the project said it will create more than 300 jobs over three years, and put more than \$57 million of revenue into the regional economy. More from NBC Montana There will be two reservoirs near each other; water would get pumped from the lower reservoir to the upper reservoir, then be released through hydroelectric turbines, generating energy. That energy can be saved and stored for later use.

"This is a really unique environmentally friendly tool that allows us to interconnect and reliably manage a whole bunch of different kinds of generation resources," said Absaroka Energy LLC President and CEO Carl Borgquist. "They've come together in a way that ultimately we could provide both energy storage and generation that will really help out not just Montana, but the entire region," said Bullock. The designer of this project is in Bozeman. They expect to break ground in Meagher County in 2017.



(Hydro research gets money.)

## Energy Department Announces \$4.4 Million to Advance Hydropower Manufacturing

einnews.com, 12/2/14

The Energy Department today announced a total of \$4.4 million for two projects in Michigan and Pennsylvania to support the use of advanced materials and manufacturing techniques in the development of new "low-head" hydropower technologies. The United States has major opportunities across the country to add new hydropower generating capabilities at low-head sites, which operate with a change in elevation between 2 and 20 meters, including waterways at existing non-powered dams, canals, and conduits. According to Energy Department assessments, there is a technical resource potential of more than 50 gigawatts of potential capacity at these low-head sites.

New, low-cost, integrated hydropower turbine and generator sets made with modern materials and manufacturing technologies will help power providers harness the full generating potential of these existing low-head sites and produce cost-competitive, renewable electricity. In support of the Energy Department's Clean Energy Manufacturing Initiative, the funding will advance research and development of new technologies that can be quickly manufactured at low cost and rapidly deployed without the need for expensive powerhouses.

- Eaton Corporation of Southfield, Michigan, will develop a turbine and generator system that uses lightweight advanced materials and advanced manufacturing techniques such as laser-assisted welding, surface treatments, and processing. The turbine will be designed to deliver a constant source of energy despite changes in water flow by using a system that operates efficiently across a range of ebbs and flows. The Eaton Corporation will design, fabricate, and test its turbine at 1/10th scale.
- Pennsylvania State University will develop and demonstrate a low-head hydropower turbine and generator system prototype that combines lightweight, corrosion-resistant metallic components that can be produced through an additive manufacturing process. A condition-based monitoring system will also facilitate improved operation and maintenance.

Together, these organizations will combine advanced materials and manufacturing techniques to maximize efficiency and improve the design, performance and durability of innovative hydropower manufacturing capabilities. The Department's Office of Energy Efficiency and Renewable Energy accelerates development and deployment of energy efficiency and renewable energy technologies and market-based solutions that strengthen U.S. energy security, environmental quality, and economic vitality. To learn about the Energy Department's work in hydropower, please visit the Water Power Program's hydropower webpage. To learn more about how hydropower captures energy from flowing water, watch this Energy 101 video.

(Some people want the dam!)

### **Dam a gateway to cost-effective energy**

newsminer.com, December 3, 2014, by Anne Seneca

Fairbanks — With the abundant energy and natural resources available throughout Alaska, it is no wonder Alaskans witnessed its 2014 candidates sparring over energy and resources issues. And while most will likely equate Alaska energy with oil and gas resources first, it's important to note that Alaska also has other plentiful energy resources. Its many rivers, for instance, offer some of the highest hydroelectric power potential in the nation, while large portions of the Alaska coastline offer significant wind and geothermal energy potential. Hydroelectric power supplies about one-fifth of the state's electricity generation, with 49 hydroelectric power plants supplying Alaska communities with electricity. Two additional plants are under construction. But hydropower has the potential to play an even larger role in Alaska energy. Lately, we have heard much discussion about new forms of renewable energy, including the Susitna-Watana hydroelectric dam, scheduled to be completed by 2027. The dam, perhaps the biggest renewable-energy project of its kind, is one of many hydroelectric projects in various phases of study or construction throughout the state. The Susitna-Watana dam is a great example of how renewable energy resources can play an integral role in providing stable and low-cost energy to consumers. Why? The proposed Susitna-Watana project would be a 735 foot dam, with a 600 megawatt capacity, expected to supply about half of the Railbelt energy demand, according to Alaska Energy Authority (AEA). To put that in perspective, the proposed project would cover 50 percent of the electricity needed by more than 80 percent of Alaska's population — providing stable energy costs to Alaskans for more than 100 years.

On top of providing stable energy supplies, Alaskans also will see increased economic activity in the region and new jobs. The project is estimated to bring about 1,000 jobs during the construction phase and 20 full-time jobs to maintain and operate the facility upon completion. The project is undergoing an environmental study that will assess how it would affect various nearby resources through 2015. However, we already know the Susitna-Watana dam can provide Alaska with new renewable energy resources and supply hardworking Alaskans with consistent and low-cost energy. Indeed, the harsh winter months, when power use is traditionally high, will serve as a reminder of how important the project is for providing long-term stable power for generations of Alaskans. Consumer Energy Alliance-Alaska supports the Susitna-Watana dam project as an important part of Alaska's energy future. It is a vital aspect of a national "all of the above" energy strategy that we so desperately need. From hydroelectric power to solar, natural gas, oil, coal, wind, nuclear and geothermal, it's clear that we need it all. By diversifying the state and nation's energy portfolio through the development of renewable energy sources, we can help to find ways that cost-effectively expand the use and diversity of our energy resources. Not only will it help consumers cut energy costs, but it will also help Alaska to focus on promoting electricity generation in an environmentally and economically beneficial manner. There is no doubt that Alaska's natural resources and pristine environment are a great benefit to all Americans. By following an "all of the above" approach — including the support of hydroelectric power — we can ensure that Alaska energy consumers are able to utilize these benefits effectively for future generations to come. Anne Seneca is the executive director at Consumer Energy Alliance-Alaska. She lives in Anchorage.

(Good combination, hydro and education.)

## Hydroelectric facility supplies 8 percent of Penn State's energy

### The partnership with Mahoning Creek Hydroelectric Facility also provides educational opportunities for students

By Susan Bedsworth, December 3, 2014, news.psu.edu

A partnership in support of the creation of a hydroelectric facility has provided Penn State with both sustainable energy and educational opportunities for students. The Mahoning Creek Hydroelectric Facility -- a certified low-impact plant, built using existing infrastructure -- now supplies Penn State with 8 percent of its energy. "This exciting project contributes directly to many of our goals, including our target of a 35 percent reduction in greenhouse gas emissions by 2020," said Steve Maruszewski, assistant vice president of the Office of Physical Plant (OPP). "It also helps support national renewable energy production." In addition to providing more sustainable energy for the University, the partnership also offers new and exciting educational opportunities for students. After initially approaching Penn State in 2012, Enduring Hydro brought on four interns from programs including engineering and environmental science. The students were involved in areas such as design, management practices, power generation, economics and environmental impact. Enduring Hydro will look to hire up to five interns each year as the project continues.

"This hydroelectric project directly contributes to both in-classroom education via the development of an energy course module and extracurricular education through the creation of up to five annual internships. It's a great example of how to achieve integrated and balanced solutions," said Maruszewski. The Mahoning Creek Dam, located between Redbank Township and Wayne Township in Armstrong County, near Kittanning,



Pennsylvania, was originally built in 1941 as a flood control structure by the U.S. Army Corps of Engineers. While the design included a conduit allowing the dam to be used to produce hydroelectric power, the project was never completed due to World War II. Decades later, Enduring Hydro, LLC was able to follow through with the original plan of a functioning hydroelectric facility at Mahoning Creek Dam. After breaking ground in February 2013, the plant began commercial operations by December of that year. Today the facility is made up of a 50-foot-high intake structure attached to the upstream face of the dam, a 1,090-foot-long, 10-foot-diameter penstock, and a powerhouse containing a 4-megawatt (MW) and a 2-MW vertical-shaft generating unit. It is expected to produce more than 20,000 megawatt hour of electricity annually for at least 50 years. "In addition to its environmental benefits, this purchase will also reduce our anticipated annual energy costs for the next 10 years," said Maruszewski. "I'm proud that Penn State and OPP were supportive of and a part of this project," said Rob Cooper, director of energy and engineering in OPP. "The partnership is good for Penn State because it offers educational opportunities for our students, while providing green power to support our carbon reduction efforts. Beyond that, it provides a competitive energy price point for the University, provides jobs and utilizes existing infrastructure within Pennsylvania." According to Kristina Johnson, chairman and CEO of Enduring Hydro LLC, the Mahoning Creek facility is just one of 45 dams across the state of Pennsylvania with the infrastructure in place to become hydropower facilities. It is estimated these facilities combined could produce 630 MW and create more than 10,000 jobs. "We're grateful to Penn State for the partnership in helping make this project a reality," said Johnson. "The project really speaks to the vision and cooperative spirit of Penn State."



## Water:

(Probably everyone will have a memory lapse now that it's raining.)

### **EDITORIAL: Water bond's \$7.5 billion must be spent wisely**

The Bee Editorial Board, November 30, 2014, fresnobee.com

More than two-thirds of California voters authorized the state to borrow more than \$7 billion to improve a water system strained by more than three years of drought. Now the difficult job of smartly targeting problems and effectively implementing projects is beginning. With that huge amount of money on the table, many government and non-governmental agencies began salivating before the polls opened Nov. 4. The fear of wasting billions of taxpayer dollars unwisely on poorly conceived plans that do not lead to a



more sustainable water system was the most salient argument heard from the nearly 2.3 million Californians who voted against Proposition 1. We hope those fears do not bear out.

One of the challenges will be to direct funds to projects that are coordinated to have the greatest impact on some of the state's most pressing needs. Yes, the list of needs is long and many problems won't be completely addressed, but significant progress can be made on how California approaches its demand for water through treatment facilities, recycling, habitat restoration and storage.

The \$520 million designated for clean drinking water and wastewater treatment has the potential to dramatically improve the lives of disadvantaged California residents, including many in the Valley. It's astonishing that water flowing from the faucets in some communities does not meet safe drinking standards. The water may contain a variety of contaminants such as nitrates, perchlorate and arsenic, to name a few. Water treatment facilities for poor, rural communities that don't have safe water to drink should be high on the list of concerns for legislators returning to Sacramento this week. One question: Out of \$7.5 billion in the bond, is \$520 million enough money to solve all the problems in many communities that don't have adequate public water facilities? The answer is no, of course not. But the bigger question legislators will need to figure out is who will pay for maintaining the new facilities in disadvantaged communities after they are built. There is no money in the bond for continued maintenance. The most controversial and costly aspect of the bond is water storage. There are two distinct camps on how best to invest the \$2.7 billion earmarked for storage. One side wants to build new dams or increase reservoirs of existing dams. The other camp says the state can get more bang for its buck with groundwater storage. We believe that new dams are the smarter choice and that many voters who backed Prop. 1 did so with the expectation that dams would be built. The California Water Commission, made up of nine members appointed by the governor, will decide which projects are the most cost-effective and provide the biggest improvement for the state's water system. It will set criteria for projects and evaluate them over the next 18 to 24 months. The commission should establish a thorough and transparent public process to evaluate proposed storage projects. The decisions on

how and where to spend \$2.7 billion for water storage pose the biggest risk due to political influence to waste this huge amount of taxpayer dollars. With \$7.5 billion on the table and the state in the fourth year of drought, it's critical the taxpayers' money is spent wisely.

(Too little water brings problems, too much water brings problems, Can't win!)

## Rain brings hopes, fears to drought-hit California

December 2, 2014, by Sam Gangwer/AP, m.seattlepi.com

Los Angeles (AP) — A Pacific storm moved into drought-stricken California on Tuesday, bringing much-needed moisture but fears of mudflows on wildfire-scarred hillsides. Heavy rain began falling overnight in Northern California, while showers in the southern part of the state started after dawn. The strongest downpours were expected later in the day. Storm watches were issued for a large swath of the Sierra Nevada, where a huge amount of the state's water supply is normally stored as snowpack.



Significant accumulations were predicted but not enough to be a drought buster. Any delight over the prospect of beneficial precipitation was tempered by concerns about the threat of debris flows from the many areas of California where wildfires have burned away vegetation that would keep soil stable. Residents prepared by placing sandbags to protect properties in the foothill city of Glendora northeast of Los Angeles, where some neighborhoods below steep mountains have long lived with concrete barriers lining streets in hopes of keeping debris flows out of homes. Bill Golubics said he would heed warnings and evacuate his home in Camarillo, site of a fire last year that burned nearly 40 square miles of dry brush in Ventura County. "Looks like most of my neighbors have left already," Golubics told KABC-TV, pointing out large rocks sitting on loose soil along on a slope above his home. Voluntary evacuations also were planned in Orange County's rural Silverado Canyon, where officials feared mudflows following a blaze that stripped hillsides bare in September. In some parts of the San Francisco Bay Area, more than an inch of rain fell between 1 a.m. and sunrise, the National Weather Service said. The weather caused flights arriving at San Francisco International Airport to be delayed nearly four hours, the Federal Aviation Administration website reported. The rain comes on the heels of a weak storm Sunday, which was enough to block Pacific Coast Highway west of Malibu with a flow of mud from a section of the steep Santa Monica Mountains denuded by a 44-square-mile fire last year. The muck was cleared but debris basins that overflowed were still full and will keep the highway from reopening anytime soon. "We're going to have to wait until the next storm passes," said Patrick Chandler of the California Department of Transportation.

The back-to-back storms are helping some cities in northwest California reach normal rainfall amounts for the year, or even better, but the reservoirs and Sierra snowpack that provide much of the state's water remain far short of what they should be after three years of intense drought. The state Department of Water Resources reported the Sierra snowpack, which counts most for the state's water supply, was at 24 percent of normal for this time of year. Read Full Article Rain so far, at this early point in California's wet season, has yet to make much of an impact on the state's main reservoirs. Lake Shasta and Lake Oroville have less than 50 percent of their usual water levels for the start of December, while Folsom Lake stands at 59 percent, National Weather Service forecaster Eric Kurth said. "The good news is there's more storms on the way," Kurth said.

(More water problems.)

## More water needs to be allocated for agriculture

heraldandnews.com, December 2, 2014

More water needs to be allocated for agriculture

Klamath River hydropower dams are not “antiquated.” Two of those dams don’t even qualify for Social Security. Eighty percent of Siskiyou County and 77 percent of the Tulelake basin voted no on dam removal. When dams are a Klamath County campaign issue, pro-dam candidates have consistently won.

It’s been recognized part of the reason for averting a fish kill this year was because water stored behind those dams was timely released to help meet minimum flows for migrating salmon and flush disease out of the lower Klamath River that caused the 2002 fish kill.

As a benefit to basin agriculture, the Bureau of Reclamation’s Aug. 8 press release stated that the water released from behind the lower dams would “assist Reclamation by extending the Klamath Project’s available water supplies from Upper Klamath Lake to help close the irrigation season.” With the dams in place, we are seeing record runs of Klamath River salmon. Tearing out existing hydropower dams that have proven benefits for fish, Basin agriculture, and this past summer’s firefighting efforts is no solution. The answer you get on whether dam removal agreements, if enacted by Congress, would guarantee water for Basin agriculture depends on who is advocating the agreements. The Karuk Tribe’s negotiator for the Klamath Basin Restoration Agreement told a crowd, “What’s capped in this agreement is agricultural water use,” saying that there are no guarantees of water for farms in the agreement (Eureka, Times-Standard July 15, 2010). There are obviously different interpretations between KBRA signatories over what the flawed agreements truly mean. Actual scientific studies prove one of the best years for suckers occurred in 1991, when lake levels were lower than average. Inflating the lake level is actually harming suckers. We need to release more water for agriculture, which studies have proven reduces phosphorous loading before it is pumped back into the river for migrating salmon.

*Brandon Criss, Siskiyou County Supervisor, District 1*

## Hoover Dam Low Water Could Double SoCal Water Prices

by Chriss W. Street, 2 Dec 2014 21, Breitbart.com

Despite Southern California catching its first good rainstorm since last winter this week, the odds of this year being a torrential El Niño weather event have fallen to 58% from 80% early this spring, according to the National Weather Service's Climate Prediction Center. Prolonged drought affects may still cause the water prices to double if the water level behind Hoover Dam falls below 1,000 feet, and the hydroelectric turbines that power the Colorado River Aqueduct stop spinning for the first time since it opened in 1936. The Hoover Dam was built to generate electricity, manage the Colorado River water supply for cities in the Southwest



and to irrigate the region’s farmland. The dam has reliably produced cheap power for 77 years and currently generates 2,080 megawatts (MW) from 17 commercial generators.

Yet that reliability assumes that the dam reservoir retains a minimum of 1,000 feet high retention to allow water to drop down huge pipes and force the generators to spin that fund dam operations. For the first time in history this year, Glen Canyon Dam and Lake Powell in Northern Arizona had to reduce the amount of water released to Lake Mead from 8.23 million acre-feet to 7.48 million acre-feet. That has caused the water elevation behind Hoover Dam to drop about 130 feet to 1083.57, the lowest level since the reservoir behind the dam was first being filled in May 1936.

The Scripps Institute of Oceanography is estimating that there still is a 50% chance that Hoover Dam's water level will drop below 1,000 feet. The dam has only fallen briefly to the current level twice during sustained past droughts. In November 2010 the level touched 1,082 feet, and in April 1956 the level dropped to 1,083 feet. That compares to the highest level of 1,296 feet in 1998. Hoover Dam's hydro-electric power drives five giant pumping stations along the Colorado River Aqueduct to convey water from the water to Southern California. The dam's electricity is sold by the U.S. Bureau of Reclamation to the Metropolitan Water District of Southern California at a wholesale rate of \$20 per megawatt-hour. The price is so cheap because federal projects are only allowed to recover operating costs. Wholesale electric "spot market" sells power at a profit and is priced about twice as high, at \$40 and \$42.5 per megawatt-hour. California residential customers actually pay almost 1,000 times more at \$18.02 per kilowatt-hour. Any fall-off cheap hydro-power will force the Metropolitan Water District to pay spot prices to keep the 1,200,000 acre-feet of Colorado River Aqueduct flowing; enough water for 7.2 million people a year. The current rainstorm is expected to drop over an inch of rain on Los Angeles, San Diego, San Francisco, Sacramento, and Fresno, with some locations receiving 4 inches by Wednesday night. The greatest amount of rain will fall on the west- and southwest-facing slopes of the coastal ranges. **With California still parched, the soil will absorb water runoff quickly and little is expected to reach Hoover Dam's reservoir. If there is not another storm soon, the water level behind the dam could fall and Southern Californians' water cost will double.**

## California rainfall totals

Storms this week pushed the rainfall totals in most California communities above seasonal normal levels to date. But the state has a long way to go before the drought is over.

City	Rainfall level			
	July 1- Nov. 27	Nov. 27- Thursday	Seasonal total	% of normal
San Jose	1.27 in.	3.79 in.	5.06 in.	169%
San Francisco	2.46 in.	4.43 in.	6.89 in.	136%
Oakland	2.41 in.	3.01 in.	5.42 in.	127%
Concord	1.56 in.	2.73 in.	4.29 in.	n/a
Outside the Bay Area				
Los Angeles	0.48 in.	1.82 in.	2.30 in.	105%
Fresno	1.08 in.	0.43 in.	1.51 in.	75%
Monterey	3.11 in.	1.33 in.	4.44 in.	n/a

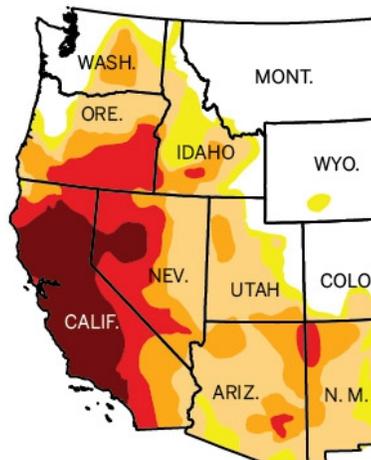
### State still in drought

The majority of the state remains in "exceptional drought" — the worst condition, according to the federal government.

#### Drought intensity

- Exceptional
- Extreme
- Severe
- Moderate
- Abnormally dry

As of Dec. 2



Source: National Weather Service, National Drought Mitigation Center and NOAA  
BAY AREA NEWS GROUP



## ***Environment:***

### **Montana electric co-ops opposed to EPA rules**

By Brent McRae, 12/1/14, helenair.com

Recently, eight people served by electric cooperatives in Montana issued a joint letter -- published in this newspaper -- urging electric cooperatives' support for actions by the EPA to reduce carbon emissions. Among these eight individuals was the former chairman of the Northern Plains Resource Council, a fairly aggressive Montana environmental organization. **These individuals wrongly assert the electric co-ops oppose a modest effort to reducing carbon emissions. We would not do so. However, Montana Electric Cooperatives' Association, which represents 24 electric cooperatives providing power to more than 400,000 Montanans, strongly believes the EPA's proposed greenhouse gas rule for existing power plants is anything but modest.** Our position of concern is shared by consumer-elected co-op board members from across the state. In addition, in the past few months more than 4,000 Montanans have sent in comments to the EPA on behalf of the co-ops, expressing their concerns about the agency's carbon proposal.

Why do we assert this proposal is not modest? **Most importantly, this proposed rule does little to deal with global carbon emissions, which are slated to rise by 55 percent by 2035 even if every coal plant in the U.S. shuts down tomorrow, according to the International Energy Agency.** Instead of unilaterally leading the world in cutting carbon emissions, the U.S. needs to lead in developing technology to affordably capture carbon emissions. But because the EPA proposal fails to address global carbon emissions, it will result in severe economic pain with little or no environmental gain. **EPA itself has acknowledged that its proposal will lead to widespread shutdown of low-cost power plants across the country.** Shutting down plants producing reliable two-cent to three-cent power and replacing it with a combination of wind and natural gas at a cost close to double of that amount is of great concern to co-op members concerned with affordability of their power. When it comes to renewable energy, co-ops love renewables -- when they're affordable. **Most co-ops in Montana currently purchase a considerable amount of clean, green, carbon-free, renewable hydropower. For co-ops in western Montana, this low-cost resource comprises about 95 percent of their energy-purchase portfolio. For most co-ops east of the Continental Divide, the hydropower percentage accounts for closer to half their energy purchases and significant amounts of wind energy have been blended into their needs above this hydropower. Regarding wind energy, the letter accuses western Montana co-ops of opposing wind energy development. They don't. They are, however, aware of limitations in the Pacific Northwest to absorb additional wind energy.** Co-ops in Montana and around the nation have been leaders in all of the areas EPA calls on utilities to use for carbon-emissions reduction. This includes installation of renewable energy and investments in energy efficiency, two key components of the EPA plan. **EPA's proposal, however, ignores affordability, ignores power reliability and would establish an entirely new national energy policy without fully understanding the ramifications. Why would co-ops subject their consumer-owners to that level of risk?**



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