

9/4/2015



Some Dam – Hydro News™ And Other Stuff



Quote of Note: “Do not let what you cannot do interfere with what you can do.”
-- John Wooden

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“Good wine is a necessity of life.” - -Thomas Jefferson
Ron’s wine pick of the week: 2012 Columbia Crest US Red Blend "H3 Les Chevaux"
“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson



Dams:

(100 and still ticking. Beautiful dam! Not a positive story.)

Todd Shallat’s Terra Idaho history column: Arrowrock at 100

By Todd Shallat, Special to Treasure Magazine, August 22, 2015, idahostatesman.com

The Great Pyramid of the Boise River — the tallest dam on the face of the Earth, staggering and monumental — overshadowed even the feats of the Pharaohs as an icon of human triumph. So said a man named Moses at the 1915 dedication of Arrowrock Dam. Gov. Moses Alexander, a Bavarian-born Jew, tipped his hat to “the strength of the people” and led the faithful in song. “My country ’tis of thee,” he sang in tune with Idaho farmers. Before them the arching Goliath shot streams through cast iron valves. One million tons of concrete. Two hundred sixty rail car loads of



sand and Portland cement. Plugging and pooling the granite canyon for 18 slackwater miles, Arrowrock held enough water for 200,000 settlers on 240,000 sagebrush acres — enough water, said Alexander, to bloom the Garden lost to the fall. Sunday, Oct. 4, 2015, marks 100 years to the day since the epoch of high-rise concrete dawned at Arrowrock Canyon, forever transforming the West. Plenty since that time has been said about dams as engines of progress. Less has been said about the revenge of technological systems — their costs and consequences, and the judo trick through which a system designed for a lofty purpose sometimes flips the results.

The Snake River Plain with its fertile valleys once seemed ideal for irrigation, but to unlatch the purse of Congress, the bombast had to be strong. Engineer Frederick H. Newell, the founder and first director of the U.S. Reclamation Service, saw in the Arrowrock project a masculine future of pulleys, wheels and bearings, a future in which the slide rule would replace the rifle as a means of social control. Manly feats of muscular science framed the local reporting. “It had been a man’s task,” said Boise Capital News after the dam’s dedication. Newell’s colossus, added the Idaho Statesman, was “strong,” “firm” and “robust.” Through Arrowrock, the engineers preached a gospel that Theodore Roosevelt called Bull Moose Progressivism. Its higher purpose, said Newell, was “to bring about a condition whereby that land shall be put into the hands of the small owner, whereby the man with a family can get enough land to support that family.” Settlers responded in a rush to the Boise Valley as the Great War in Europe pumped the demand for Idaho crops. Even when prices fell, when the dream went sour and dust took back the valley, the commissioner of reclamation defended the engineering, calling dams “an unquestioned success.” Today with Anderson Ranch and Lucky Peak plus three big dams on the Payette River, the U.S. Bureau of Reclamation’s Boise-Payette Project claims \$1.2 billion in annual yield from cattle and crops. Add \$13 million from hydroelectricity and \$30 million from beaches and boating. Add \$170 million for allegedly sparing the valley damage from river erosion and floods. Karl Ames of Boise, a bureau engineer and spokesman, seemed perplexed by my request for Arrowrock cost-benefit data. “Imagine the valley’s economy without Reclamation’s infrastructure,” Ames said. Yes, the feds fronted the construction money, but the return on that investment, says Ames, has been one-hundred-fold.

But always there are mirages in deserts. An official history of the Boise Project details the tonnage of concrete. No mention is made of Heartbreak Row, the project’s hard-luck nickname; nothing about the summer of 1917 when the failure of the main canal destroyed Canyon County’s wheat crop; nothing about the boosterism that oversold the amount of available water, or about the defection of Arthur P. Davis, once Arrowrock’s chief engineer, who later denounced his former employer for “blasted hopes” and “misrepresentations.” In 1924, as Davis vented in Salt Lake City, the U.S. Fact Finding Commission presented an audit of the battered bureau. Everywhere below federal dams the commissioner found “shacks instead of houses ... bareness instead of comforts; cold instead of warmth ... mortgages and foreclosures instead of growing bank accounts.” New mega-marvels of mass at Boulder Canyon (Hoover), Grand Coulee and Shasta mostly restored the bureau’s standing. In the Eisenhower years, however, battles at Hells Canyon and Echo Park laid bare the dam economics. Free-market hawks cried foul on the bigger-is-better bias in the bureau’s cost-benefit data. In 1977, President Carter unveiled a hit list of dams to be decommissioned. Public hearings blasted tycoons and cattle barons who posed as threadbare farmers in order to siphon the subsidized water meant for small-acreage farms. In 1982, the Reagan administration renegotiated the quid-pro-quo: Big farms could still get water but the feds would clamp down on their loans.

Gaps, however, remain between the law and its implementation. “Deadbeat Dams” (2015) depicts the bureau as a ham-handed giant, its “nobility” a glutton for pork. “We need to stop catering,” says author Daniel Beard, a Clinton-era commissioner of reclamation. Otherwise, urban populations will suffer. The Boise River, dewatered, will wander like a lazy bayou. Trout streams will stagnate and die. “We set out to tame the rivers,” wrote Marc Reisner in “Cadillac Desert” (1986). “We set out to make the future of the American West secure; what we really did was make ourselves rich and our descendants insecure.” For richer or poorer, the 1915 sensation still

freights a heavy tonnage of hope and fear and scientific conjecture. For Gov. Butch Otter and five irrigation districts, the hope is that the feds will cover the cost of 74 vertical feet added to the aging dam. For the U.S. Army Corps of Engineers, the fear is that failure to raise the dam would endanger housing in the crowded floodplain. For Idaho Rivers United, the conjecture is that riverfront easement would tax the environment less than raising the dam. Arrowrock at 100 remains a beast and a benefactor. Mythic, the structure remains much like Moses saw it: a sublime manifestation of cultural and political values, a pyramid to which all Boiseans contribute a stone. *Todd Shallat, Ph.D., directs the Center for Idaho History and Politics at Boise State University.*

Repairs continue at Cannonsville Dam

Joe Mabel The Cannonsville Reservoir is shown in this 2013 aerial photo., August 26, 2015, thedailystar.com

The second stage of repairs at the Cannonsville Dam was completed Tuesday, according to a media release from the New York City Department of Environmental Protection.

On Tuesday morning, engineers sealed shut the three boreholes that had allowed cloudy water to discharge into the West Branch Delaware River from July 8 to Aug. 1. The boreholes were created as part of preliminary work to construct a hydroelectric facility at the dam, the DEP announced previously. Testing was underway Wednesday to ensure the repairs were effective.



Meanwhile, DEP is decreasing pumping from a series of relief wells, which were installed to relieve pressures from the underground aquifer that was pushing turbid water into the river. Flow from the relief wells is expected to be stopped by the end of the week, DEP said. "Intensive" monitoring at the site will continue throughout the repair work, DEP said in the release. These efforts include 24-hour observations by on-site staff and surveillance cameras, daily engineering inspections, and near real-time monitoring of turbidity and safety instruments inside Cannonsville Dam.

(Don't think he wants the dam removed.)

Letter: Removal of Scoby Dam is not the right answer

buffalonews.com, Aug 27, 2015

Let me explain why removal of Scoby Dam is a disaster for the environment. The main fish that will enter the Upper Cattaraugus Watershed will be the steelhead trout. These fish are not native to our ecosystem. They are genetically from the Chambers Creek strain – West Coast, Washington State. They are big fish that grow to 30 inches and can weigh 10 pounds. These fish are predatory – like all trout – and feed on smaller bait fish (minnows, chubs, dice, etc.) They don't ask these fish who they are, so they also consume small trout when and where available. Therein lies the problem. The Upper Cattaraugus Watershed and its tributaries – Clear Creek, Elton, Lime Lake Outlet, etc. – are loaded with these small, young trout. It's their home; it's their spawning and growing area. With the dam gone, you can kiss all these fish goodbye.

I attended many of the Scoby Dam meetings. It doesn't take a sportsman long to figure out the real reason for its removal. Crowds will come, motels, restaurants and stores will get increased business. It won't be too many years until these streams are "lease only" fishing areas like in the Salmon River/Pulaski area of New York State. Could somebody please explain to me how this benefits the environment? Let's be logical, the only environment that's benefitting is the

pocketbook, not the fish. New York State's latest concern, and rightfully so, is invasive species. Recently, there have been signs all over our waterways telling us to wash our boat, clean your hip boots and don't put anything in the water. You don't think invasive species aren't going to enter the upper watershed when the dam is adding a passage ramp? The Department of Environmental Conservation might as well put another sign up at the dam saying "invasive species, enter here." Based on what I know and what will happen here, I wish that our conservation personnel would act in the interest of our environment and wildlife and not the revenue at stake. *Dennis Kujawa, East Aurora*



Hydro:

(Doesn't look like a powerhouse, but it is! Hydro and solar!)

Pepperell Hydro uses water, sun to power grid

By Anne O'Connor, nashobapub.com, 08/21/2015

PEPPERELL -- The folks at Pepperell Hydro have been generating power for several years.

This summer, they added another environmentally-friendly power generator. The hydroelectric plant dates from 1921 when it was built to power the paper mill. Now, Pepperell Hydro also sends solar-generated electricity back to the grid, thanks to a new array of solar panels. "Green is green," said Peter B. Clark, president of Swift River Company. Pepperell Hydro is part of a small group of hydroelectric plants in Massachusetts managed and operated by Swift River.



The new array will reduce the plant's operating expenses through the energy credits it will receive, he said. Like the hydropower the plants makes, the solar power is from a renewable source.

"Everything goes up to the grid," said Martha Brennan, director of regulatory affairs at Swift River. The hydropower is sold to the Reading Municipal Light Department. The solar goes on the grid through National Grid. Even though the hydro plant generates huge amounts of electricity, the plant still needs to purchase electricity for day-to-day operations. The transformers must stay warm and the lights need to be kept on even when the plant is not generating electricity, said Quincy Vale, director for business development at MassAmerican Energy. MassAmerican specializes in commercial solar installations, usually 100 kilowatts and larger, Vale said. "This is one of our smaller ones," he said.

The new solar panels on the roof of the red garage beside the bridge on Main Street will generate 13 kilowatts, two to three times the average size of a residential installation. The amount was low enough that Pepperell Hydro was not affected by the net metering cap that put the brakes on a planned solar installation on the capped Pepperell landfill. As long as a commercial array that is connected via a three-phase power connection is under 25 kilowatts, it does not hit the limit, Vale said. The installation in Pepperell presented its own challenges. "We didn't have an easy way to interconnect that hydro facility to the grid," Vale said. The plant has a high-voltage connection to the grid, but the solar needed a normal connection from the street. "We looked at a whole bunch of different things for Pepperell Hydro," Vale said. Rather than run a power line from the bridge along the new penstock to the plant, putting the solar panels on the roof of the garage made better economic sense, he said. The building already had three-phase power. The red garage is used to store materials to maintain the dam, Clark said. The dam regulates the water in Pepperell Pond, Brennan said. The hydro-plant uses a run-of-the-river model, keeping the water level in the

pond at a consistent level. In the earlier days, when the plant was generating power for the paper mill that owned it, the water levels would change, she said. Now, it is more environmentally-friendly. Vale was very enthusiastic about the Pepperell installation. The American-made panels give the best return on investment, he said. Thanks to innovative wiring, they can generate electricity even when only part of the panel is in the shade. Snow will slide off easily because of the steep angles of the panels. Fire is no danger because the system cannot spark or arc, Vale said. A typical commercial installation operates at 600 to 1,000 volts, he said. Pepperell Hydro's installation comes in at 57 volts, not high enough to support an arc. The installation is a good investment for the owners, Vale said. It will cover 50 or more percent of their electricity costs. And, he said, it's good for the environment.

(Pumped storage doing its thing.)

How Edison uses water to store excess power

By IVAN PENN contact the reporter, latimes.com, 8/23/15

BIG CREEK, Calif. — Nestled high in the Sierra mountains among the pine and fir trees, a little-known man-made wonder may help resolve a pressing energy concern: how to store wind and sun power that the grid increasingly can't handle.

For nearly three decades, water has flowed down from the mountains' artificial lakes to spin an electricity generator at the John S. Eastwood Power Station, the crown jewel of Southern California Edison's Big Creek hydroelectric system.



The underground powerhouse — sheltered in a cavern blasted from granite bedrock — has produced cheap and reliable electricity. And when windmills, solar panels and other sources generated more power than Californians needed, the excess electricity would spin the generator in reverse to pump the water back up the mountain to a reservoir to hold for later; called "pump storage," it's a way of stockpiling electricity.

Then four years of relentless drought took its toll. This year, for the first time, Southern California Edison probably will get no electricity out of its prized Eastwood facility. The water has fallen so low at a key source, Shaver Lake, that giant granite boulders are visible along the shoreline.

"The last three or four years are probably the worst I've seen in my life," said 60-year-old Joel Preheim, Edison's production manager at Big Creek, who first moved to this town the locals call the "Camp" when he was 3. The Eastwood pump station's idleness comes at a tricky time.

Solar and wind power production is exploding as the state pushes ambitious renewable energy goals. To help manage and store that electricity — created only when the sun shines and the wind blows — California energy officials have begun studying large-scale pump operations, according to a letter sent to regulators last month by the head of the agency that handles long-distance transmission for most of the state. The entire energy industry is racing to unlock the mysteries of affordable energy storage. Billionaire Elon Musk is investing heavily in developing better batteries. Others are looking at unusual approaches, including using solar energy to produce hydrogen gas, which can be saved for when its needed. Some hope to rely on the kind of hydro pump storage provided by Eastwood. State regulators in October 2013 set a target for utilities to bring 1,325 megawatts of new storage online by 2024. It would take more than six times Eastwood's 200 megawatts of hydro storage to meet that goal.

"The vast majority of existing electricity storage is pumped hydro," said Lucas Davis, an economics professor at UC Berkeley. "But it makes me nervous when we start talking about hydro being needed," Davis said. "During drought years, that's a killer." The heart of the \$277-million Eastwood power plant lies behind a towering security gate. The trip down a long cave to the

turbine that spins 200 feet beneath Shaver Lake feels like a scene from "Journey to the Center of the Earth." At the end of the trip is the generator, surrounded by a trough where water flows, causing the turbine to spin. The ability to recycle water through the pump station is what has made it such an attractive concept. "That's the nice thing about hydro," Preheim said. "You can use it over and over and over." Edison began to draw water to feed the first of Big Creek's nine power houses about 100 years ago. The first power lines — then the world's longest — reached Los Angeles from Big Creek in 1913. "Most technologies don't last 100 years," Preheim said. At one time, Big Creek served as Edison's third-largest source of electricity generation, behind the San Onofre nuclear plant and Mohave coal power station. Big Creek has outlived them both. Now, second to Edison's 1,054-megawatt Mountainview natural gas plant, Big Creek accounts for 5% of the utility's electricity generation. Unlike natural gas and nuclear plants, Eastwood and other hydro facilities can ramp up in as little as six minutes. "Hydro is a very important resource," said Andrew McMillan, Big Creek's manager of dispatch operations. "We're a life boat." But hydro is vulnerable to the vagaries of mother nature. "The water level," McMillan said of Big Creek's lakes, "is down 33.7 feet." That adds another wrinkle to the complexity of a state electricity system that already is facing unprecedented change. State regulators were warned in late July that managing wind and solar power will soon get much more complicated. The warning came from Steve Berberich, chief executive of the California Independent System Operator Corp., which is responsible for making sure that supply and demand are always perfectly balanced on the transmission system serving about 80% of the state.

At times, solar and wind create excess generation that Berberich's office must figure out how to manage. Just as insufficient electricity causes problems — power reductions and blackouts — too many electrons can damage the power grid and anything connected to it. "Energy storage, with its unique ability to both consume excess renewable energy, and to quickly inject clean energy back onto the grid to meet ramping and peak demand needs, has the potential to be a cornerstone of the new electric network," Berberich wrote to the California Public Utilities Commission. But capturing, and later releasing, extra electricity in large amounts at an affordable price requires technology that is still being developed. The fact that pump storage already exists makes it an attractive option when water is plentiful, leading Berberich to alert the utility regulators that his operation will be studying the benefits of deploying pump storage on a large scale.

When too much electricity is being produced, "we just can't turn resources on and off to fix the oversupply," said Steven Greenlee, a spokesman for the California Independent System Operator, which doesn't own the power sources. The first tool currently available is to find electricity generators to submit bids to reduce their output, Greenlee said. If that doesn't work, then there's an effort to export the electricity elsewhere — often at negative prices, which means power generators pay someone to take their electricity. In an emergency, the system operator has authority to order any power source to cease production and disconnect from the grid. "But this is a last resort and not something we want to do," Greenlee said. The preference is to capture the excess generation. The urgency to do so is growing with more utility-scale wind and solar projects coming online and with more homeowners and businesses setting up rooftop solar installations. In spring 2014, Berberich's office recorded four instances in which solar and wind generation had to be cut, for a total of about six hours, because too much power was produced. The combined reduction was more than 1,700 megawatts. In such cases, Berberich sees pump storage facilities such as Eastwood as helping prevent loss of the excess electricity.

But relying on hydro storage as a significant part of the answer concerns some experts such as Davis, the UC Berkeley professor. He said the drought has shown that hydro needs serious review, as do other energy storage methods when it comes to cost and efficiency. "I don't think we know yet," Davis said of the focus on hydro storage, "if this is good public policy or not."

(Big bucks for a small town.)

Judge sides with Vermont town in hydro station dispute

By - Associated Press - August 25, 2015, washingtontimes.com

BELLOWS FALLS, Vt. (AP) - A judge has ruled in favor of a Vermont town in a dispute with energy giant TransCanada over the tax assessment of a hydroelectric station. The Rutland Herald

reports (<http://bit.ly/1KgCTJR>) a Superior Court judge set the value of the Bellow Falls hydro station in Rockingham at \$108.5 million. TransCanada Hydro Northeast thought it was worth about 40 percent less. The station is viewed as one of the most efficient and productive on the Connecticut River. Officials say it brings in \$11 million to \$13 million annually. The issue at stake was millions of dollars in annual taxes. TransCanada pays municipal taxes to the village of Bellows Falls and the town of Rockingham. Rockingham officials estimated that if they lost the case they'd owe the company \$3.6 million for three years of overpaid taxes.

(Canoeing up stream without a paddle.)

Proposal for turbines at St. Anthony Falls is already generating plenty of opposition

By Peter Callaghan | 08/25/15, minnpost.com

The Minneapolis Park & Recreation Board and the Minneapolis City Council are concerned the project threatens the continued redevelopment of the area for parks and historic interpretation on the west bank of the river. A Minneapolis-based company thinks its proposal for a new hydroelectric facility at St. Anthony Falls is exactly what the region is seeking: renewable and sustainable energy that could replace electricity now being generated by fossil fuels. At the spot where the city's industrial founders used water power to make Minneapolis the flour milling capital of the world, Crown Hydro has proposed "to provide clean energy for generations to come," by redirecting Mississippi River flows to new turbines located near the now-mothballed navigation lock, the company states in promotional materials touting the project. So what's not to like? When an initial version of the plan was first introduced nearly 25 years ago, said Crown Hydro CEO William Hawks, "it was balloons and hot dogs." But that was two-plus decades and at least two iterations of the project ago. Now, at least according to some local governments and some residents, there's quite a bit not to like.

The Minneapolis Park & Recreation Board and the Minneapolis City Council said last week that they have major concerns with the plan. For one, the project threatens the continued redevelopment of the area for parks and historic interpretation on the west bank of the river. Another concern: that construction of the underground water channels and installation of two 1.7 megawatt turbines could damage the sandstone and limestone foundations of the shoreline, including that under the Stone Arch Bridge. A Minneapolis City Council member even raised the specter of the project causing "the total decimation of water flow over the falls. "It would make the falls dry for certain periods of the year," said Council Member Jacob Frey at a meeting of the council's Intergovernmental Relations Committee earlier this month. The water-flow issue is in dispute. Crown Hydro proposes operating the turbines only during periods of average or above-average flows and shutting down during low-flow periods; it is a signatory to the Mississippi River System-Wide Low Flow Management Plan [PDF]. But raising the possibility of dry falls and a damaged Stone Arch Bridge is a fast way to counter Crown's talking points, which include reducing carbon footprints and renewable energy.

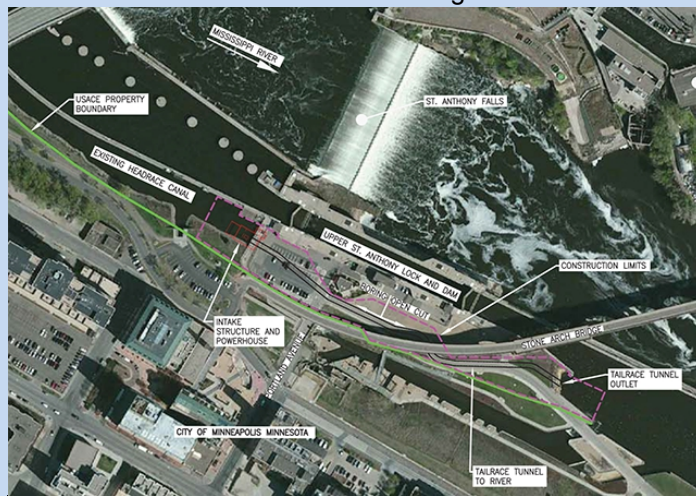
A long history

The full City Council agreed with the Intergovernmental Affairs Committee recommendation to submit its concerns to the Federal Energy Regulatory Commission (FERC), which decides to approve or deny applications such as Crown's. "Generally speaking, there needs to be more clarity regarding the full range of impacts to this historic area including noise, vibration, visual, structural and accessibility, among others," the resolution stated. "This is a vital natural and historic resource area and this project is potentially disruptive to it — both during construction and operation."

The Minneapolis Park and Recreation board also voted Wednesday to submit its concerns to FERC — and to file a formal complaint over the way Crown Hydro's application has been processed. The proposal has taken a long and winding path to even get this far in the FERC process. Technically, Crown's application is an amendment to a previous license application. In 1999, Crown was granted exclusive rights to develop a hydropower facility in the Mill Ruins area of the river. Initially the turbines and generators were to be installed in the basement of the historic

Crown Roller Mill Building, adjacent to the upper falls. Once considered one of Minneapolis' finest mills, Crown Roller Mill stopped using water to power the mill in 1933 and stopped production in 1953. After a 1983 fire, the building was saved from demolition and renovated, complete with a reconstructed copper mansard roof. It's now an office building.

When a deal couldn't be reached with current owners of the building, though, Crown Hydro amended its plan — with Park Board encouragement — to locate the turbines on land owned by the Park Board near the former Fuji-Ya Restaurant. After FERC ruled that eminent domain powers that are sometimes available to help power projects could not be used against parkland (and after negotiations between Crown and the park board failed), that request was denied by FERC in 2005.



Proposed site of the hydroelectric facility at St. Anthony Falls.

The current proposal would place the turbine and powerhouse underground on Army Corps of Engineers property adjacent to the lock control building. An intake structure would be located on the riverbank side of the guide wall at the lock facility. After passing through the turbines, 40 feet below ground, water would flow through a new 16-foot diameter conduit that would snake beneath the Corps property and the approaches to the Stone Arch Bridge before being discharged back into the river.

Hawks said he doesn't fault the Park Board for not agreeing to the earlier plan, saying it lacks staff expertise that would have increased its comfort with overseeing a hydro project. "It's the opposite with the Corps," Hawks said. "They've done this all over the country. That's why we feel good about it." Hawks said that once built, visitors to the area "won't even notice" the facility. The turbines are vibration free and can't be heard over the flow of the water. Crown has an agreement to sell the power generated — enough to power more than 2,000 homes — to Xcel Energy, which operates a generating facility on the east bank of the falls. Hawks said he is prepared to answer the questions raised by commenters and FERC. "That's as it should be," Hawks said. "But I can't imagine there's anything that would be a show-stopper." If FERC gives approval, the \$10 million project could be completed in six months. The turbine and generators have already been purchased, he said.

Other projects also proposed

Another proposal to use water power for electricity is coming from the redeveloper of the Pillsbury A Mill, this one using the power generated to provide electricity to the new artists lofts being completed there. Another proposal to put turbines inside the lock, which closed to navigation in June, has been rejected by FERC but applicant Symphony Hydro is reapplying. The Crown project has the support of the Minneapolis Regional Labor Federation, according to Crown's website, and has attracted kind words from some environmentalists. Opponents, however, have both procedural and substantive objections. Doug Verdier, of Minneapolis Park Watch, wrote that the project has changed so much since 1999 that Crown should be required to start with a new application and not be allowed to amend that earlier license. "It clearly is a new project and, as FERC has pointed out repeatedly, it should be submitted as a new project," Verdier wrote on the Park Watch website. "An amendment of the existing license is not appropriate."

The Park Board wrote in 2013 that "Crown's latest attempt to style a completely new project as a license 'amendment' is disingenuous at best. Crown has proposed a completely new project on a new site that requires a new headrace, tunnel and tailrace and it should be considered as such."

The Downtown Minneapolis Neighborhood Association is also opposed the project, partly because Crown's existing license allows much larger diversions of river water than the company

is now proposing. In a letter to FERC, the group also expresses worries about damage to the Stone Arch Bridge from tunneling through the sandstone and limestone. Both a dry falls and a damaged bridge could threaten one of the city's tourist attractions, which has undergone massive and expensive renovation and restoration since the original license was granted, the neighborhood group states. Given that the group thinks there should be a new license application, plus its belief that Crown hasn't been meeting FERC requirements and deadlines "and taking into account the actual and potential negative impact on the #1 tourist attraction in Minneapolis, the public good would be best served by terminating the existing Crown Hydro License," wrote association board chair Chad DiDonato in November.

(Hydro – every bit helps.)

TWO WINDHAM COUNTY HYDROELECTRIC PROJECTS COULD BE ONLINE BY FALL

MIKE FAHER AUG. 26 2015, vtdigger.org

BRATTLEBORO, VT — Two long-delayed Windham County hydroelectric stations are well underway and may begin producing power by fall, the developer said Wednesday. New Jersey-based Eagle Creek Renewable Energy LLC is building hydro projects at U.S. Army Corps of Engineers dams in Townshend and Jamaica. While the West River turbines are relatively small – they will produce 3.1 megawatts combined – they have required years of development and permitting work.

"It feels very good," said Bud Cherry, Eagle Creek's chief executive officer. "It was a long journey. There were a number of challenges that came up along the way." Army Corps

officials say they are working well with Eagle Creek and said the dam sites remain open to the public for visitation and recreation in spite of the construction activity. "We have to make sure [the work] is done consistently and with good quality, and thus far we've been pleased with the quality of the work," said Frank Fedele, an engineer who is operations division chief for the Army Corps New England District.



Eagle Creek is pursuing the projects at Townshend Dam and Ball Mountain Dam under the corporate name Blue Heron Hydro LLC. The company acquired the projects in summer 2012. Before that acquisition, the hydro projects already had received 50-year licenses from the Federal Energy Regulatory Commission. There also have been long-term power-purchase agreements in place via Vermont's Sustainably Priced Energy Enterprise Development program. But it had been difficult for Blue Heron to get the projects moving. The state in 2009 had set a three-year commissioning deadline, then granted an extension to the end of 2013. In April 2013, the Vermont Public Service Board granted a second extension through Oct. 31, 2014, at Blue Heron's request. Last summer, a third extension set a new deadline of Dec. 31, 2015.

In the final stages of development, company administrators said they were waiting for Army Corps permits, citing a backlog at the agency. Those permits eventually were granted, and work began a few months ago. "We're in construction. Things are moving along expeditiously at both sites, and we expect to be in service in the fall, well ahead of the end of the permit deadline," Cherry said. He said the hydroelectric facilities "should come together relatively quickly" for a variety of reasons. For instance, he noted that the company is working with existing dam infrastructure maintained by the Army Corps. Also, some utility infrastructure was put in place before Blue Heron began construction. Additionally, "we had a lot of the equipment ordered, and a lot of it was sitting in warehouses in the region just waiting for it to move to the site," Cherry said. "And little by

little, that's happening." Site work includes new access roads, removal of old concrete and installation of new concrete to support the turbines, which were fabricated by a Colorado company. Overall, Cherry said, "we're pleased with where we are." The company has not released a price tag for the projects, and Cherry again declined to estimate the cost Wednesday.

Fedele said hydro contractors have been "a constant presence" at the dam sites. "They're typically working six days a week, 10 hours a day," Fedele said. "Right now, they're in the process of constructing two control buildings – one at each site." Fedele said local Army Corps staff have been working closely with Blue Heron and its contractors, and that includes drawing down water levels to allow for the work to proceed. For example, Fedele said Ball Mountain's summer "pool" depth typically is about 65 feet, but it's been maintained this summer at 35 feet – usually the maximum pool depth in the winter. "We've had a relatively dry summer, which has worked out well," Fedele said. Eagle Creek is not paying the Army Corps any money, and there is no lease agreement, Fedele said. Rather, in addition to the permits the Corps has issued, the agency developed a construction memorandum of understanding with the developer, and there eventually will be an agreement governing operations and maintenance. Though the Army Corps is not making any money from the hydro projects, Fedele sees the new turbines as compatible with the agency's work. "We have a pool there that we keep for flood-risk management and recreation, and they're using that pool for another mission," Fedele said, adding that the hydroelectric stations are "consistent with our mission and goals." Cherry said the turbines also fit into Eagle Creek's portfolio. The company owns and operates 43 hydroelectric facilities in seven states, and Eagle Creek last week announced the acquisition of the 1.5 megawatt Newfound Hydro site in Bristol, N.H. The turbines at Townshend and Ball Mountain will be Eagle Creek's first two facilities in Vermont. "There are a lot of existing dams ... that are suitable for adding generation, and this is a purposefully small step into that space for us to see how the total permitting system worked for us," Cherry said. "We're going to be continuing to look for similar opportunities and potentially larger facilities. We've grown substantially over our four years of life, and we're very pleased with being able to maintain that growth."



Water:

(Ya gotta do what ya gotta do!)

A local operative in the water wars

Aubrey Bettencourt heads up Hanford-based California Water Alliance

Seth Nidever Staff Reporter, 8/22/15, hanfordsentinel.com

Aubrey Bettencourt had no idea she'd end up as a front-line operative in the state's water debate. As a history major at Westmont College, she planned to work in federal law enforcement or national security. But her family's local farming roots exerted a powerful pull that brought her back to Kings County and got her involved as a full-time advocate for agriculture, the importance of water to grow crops and the significance of preserving the state's \$46-billion-a-year agriculture industry. The impetus was a 2008 federal ruling called a "biological opinion" that put restrictions on agricultural pumping to protect the Delta smelt, a small fish considered a measure of the health of the Sacramento-San Joaquin River delta but derided by farmers who felt the smelt were being prioritized over people. According to Bettencourt, young adults who had gone to college were coming back to their agriculture-related family businesses and wondering how they were going to survive amid all the competing demands for water in California. "They wanted a voice for their

generation,” she said. She said a group of them got together in 2009 and formed the California Water Alliance out of concerns over water, as well as perceptions that the value of agriculture was being lost in an increasingly urbanized, coastal California. Bettencourt offered to volunteer with the alliance. Six months later, she got hired as the executive director – the position she holds today. Bettencourt and administrative assistant Lauren Droogh operate quietly out of borrowed space at the Carl Nelson Insurance office in Hanford. They don’t have their own office building yet, but they aim to have a strong Internet presence via news alerts, press releases and education efforts.

The nonprofit group’s funding comes mostly from agricultural donors. The alliance doesn’t publicize a donor list or reveal the amounts donated. But one of its main goals is no secret: To get more dams built to increase California’s water capture potential in wet years and hopefully help the state provide more water to urban areas, farmers and the environment in future droughts. Bettencourt likes to cite the following California Department of Water Resources statistic: Of the water controlled by dams in California, 50 percent goes to environmental purposes, 41 percent goes to farms and 9 percent goes to urban users. Bettencourt argues that environmental commitments are a relative latecomer to the equation that is stressing out a system not intended to supply urban, agricultural and environmental purposes. “We stopped growing our [water storage] system in the 1970s,” she said.

As a related goal, the organization seeks changes in the state’s environmental policies that set aside flows for fish and other environmental purposes. Bettencourt talks about an idea she calls “environmental accountability.” By that she means the question of whether environmental flows are actually achieving the intended results. Those two goals — more dams and more flexibility in environmental regulations — sail the alliance straight into state policy winds that are blowing strongly in the opposite direction. The focus among state water officials and leaders has moved away from dams and toward smaller projects, recycling, reclamation, reuse and groundwater banking. Influential environmental organizations like the Natural Resources Defense Council and the Sierra Club argue that these smaller-scale projects pencil out better than major new dams. The two groups also argue that climate change is going to reduce overall precipitation. As a result, they don’t think the additional water will be there to fill new dams. “We’re in a new era,” said Kathryn Phillips, California director of the Sierra Club. “There isn’t going to be enough water to fill existing reservoirs.” Phillips, who said she’s not unsympathetic to farmers, argued that there’s still room for water efficiency improvements in agriculture. “What we need is smarter management of the water we have,” she said. Bettencourt acknowledges the anti-dam sentiment in California. She hopes to overcome it, at least enough to get a few more water storage projects built such as Sites Reservoir, Temperance Flat and raising Shasta dam. “We have to be looking at it all,” Bettencourt said.

Bettencourt said she’s working to find common ground with organizations across the board, including some environmental organizations in the state. She’s also working with other western states at the federal level that believe in and want new water storage. Bettencourt said she’s not opposed to smaller water projects, but she thinks big new water storage proposals need to be on the table for consideration. She said they can be used for multiple purposes, including supporting the environment. “It’s a non-partisan issue,” she said. “We have to be looking at it all.” The alliance supports a drought bill introduced by Rep. David Valadao, R-Hanford, in June that would, in part, increase the water supply for western states by changing the way the Endangered Species Act is interpreted. The bill has been derided by environmentalists but praised by farming groups. Bettencourt believes there’s still enough support out there to add a few more dams built in California. At the very least, she aims to keep her voice in the fight. “I talk to people all day long,” she said. “Water will always be something we struggle over.”

(Guess this was a bad idea. Common sense went out the window!)

LA 'black ball' reservoir rollout potential 'disaster' in the making, say experts

By Hollie McKay, August 20, 2015, FoxNews.com

LA's scheme to cover a reservoir under 96 million "shade balls" may not be all it is touted to be, experts told FoxNews.com, with some critics going so far as to refer to the plan as a "potential disaster." The city made national headlines last week when Mayor Eric Garcetti and Department of Water officials dumped \$34.5 million worth of the tiny, black plastic balls into the city's 175-acre Van Norman Complex reservoir in the Sylmar section. Garcetti said the balls would create a surface layer that would block 300 million gallons



from evaporating amid the state's crippling drought and save taxpayers \$250 million. Experts differed over the best color for the tiny plastic balls, with one telling FoxNews.com they should have been white and another saying a chrome color would be optimal. But all agreed that the worst color for the job is the one LA chose. "Black spheres resting in the hot sun will form a thermal blanket speeding evaporation as well as providing a huge amount of new surface area for the hot water to breed bacteria," said Matt MacLeod, founder of the California biotech firm Modest Moon Farms. "Disaster. It's going to be a bacterial nightmare."

"It's going to be a bacterial nightmare." - Matt MacLeod, Modern Moon Farms Any color covering will help stop wind-driven evaporation, said Robert Shibatani, principal hydrologist for the Sacramento-based environmental consultant The Shibitani Group. But when it comes to the hot summer sun sucking water out of the reservoir, color is everything, he said. "Ideally you would want a chrome surface," he said. "The worst would be matte black, which has a reflectivity close to zero." Biologist Nathan Krekula, a professor of health science at Bryant & Stratton College in Milwaukee, said black balls will absorb heat, transfer it to the water and cause evaporation. And he agreed with MacLeod that the heat will prove hospitable to bacteria. Los Angeles City Councilman Mitch Englander, Mayor Eric Garcetti (wearing a yellow tie) and LADWP workers deposit the final installment of 96 million shade balls into the Los Angeles Reservoir. (Art Mochizuki, LADWP). "Bacteria required a few things to grow a dark, warm and moist environment," he said. "The balls will give them the perfect environment to live in. "What works in backyard fish pond does not always transfer to large scale system such as this, Krekula added." Keeping the balls clean when covered in bacteria and mold slime will be a monumental task." Dennis Santiago, a risk analyst for Torrance-based Total Bank Solutions, suspects the real goal for the black-ball cover is to avoid steep Environmental Protection Agency fines.

The federal agency's "Long-Term 2 Enhanced Surface Water Treatment Rule," announced in 2006, would require public and private water utilities to spend billions to cover open-air reservoirs that hold treated water to prevent contamination. Officials in several districts around the nation have balked at the EPA mandate, notably in New York, where lawmakers are fighting to block a \$1.6 billion concrete cover the EPA has ordered built over a Yonkers reservoir.

"This is not about evaporation," Santiago said. "The water savings spin is purely political. What the black balls are really about is that [Los Angeles] needs to stay in-compliance with an EPA requirement to place a physical cover over potable water reservoirs." Garcetti's office did note that the ball covering provides a "cost-effective investment that brings the LA Reservoir into compliance with new federal water quality mandates," but its emphasis on blocking evaporation was the clear focus at the event. Los Angeles Department of Water spokesman Albert Rodriguez told FoxNews.com the city has plenty of time to get in compliance with the EPA. While this latest shade ball initiative continues to generate publicity, it is not the first time Los Angeles utilized the concept. After high levels of bromate, a potentially carcinogenic chemical, were found in the Silver

Lake and Ivanhoe reservoirs in 2008, the Department of Water deployed the balls. Sydney Chase, president of XavierC, one of the shade ball supply companies behind the project, said the color is a result of pure black carbon being added to the high density polyethylene plastic to take in ultra-violet rays and subsequently stop sunlight from penetrating the plastic. Any other color would have required dyes, said Rodriguez, which could have then leached into the water while the carbon black does not.



Environment:

(Fish story with many questions.)

Maine Voices: Future of Presumpscot River at stake

The Friends group says creating an optimal fish passage at the Saccarappa Dam will be best for the entire waterway and all its communities.

BY MICHAEL SHAUGHNESSY AND AARON FREDERICK, SPECIAL TO THE PRESS HERALD, pressherald.com

SOUTH WINDHAM — As recently noted on the Press Herald editorial pages (“Maine Voices: Time to remove the Kessler, Dane Perkins and Twine Mills dams,” July 17), many are seeking to mitigate the impact of dams on our rivers. The Friends of the Presumpscot River are, and have been for nearly 15 years, seeking to restore the native fishery on that waterway through a combination of river protections, awareness, fish passage and dam removals. With all but one of the dams owned and operated by Sappi Fine Paper, it has been a challenging legal and scientific effort. However, if successful, this restoration will be something we can all look to with pride.

The Friends of the Presumpscot participated in the same Federal Energy Regulatory Commission process that is now occurring on other rivers. It is complex and intense. This was done simultaneously for five consecutive dams on the Presumpscot River: Saccarappa, Malison, Little Falls, Gambo and Dundee. The Friends of the Presumpscot advocated as lead interveners, seeking a combination dam removal and fish ladder installation that would have opened up habitat for salmon, shad and alewives and still retained over 70 percent of the hydro production on the river. FERC denied removals and demanded instead that fish passages be installed on all of them. This was challenged by Sappi at every judicial level up to and including the U.S. Supreme Court, where Sappi challenged a Clean Water Act provision pertaining to states’ rights to license hydropower facilities. With our legal counsel, Ron Kreisman, and then-Maine Attorney General Steve Rowe arguing, we prevailed in a unanimous decision.

These FERC orders, however, could be enacted only if a fish passage were installed at the Cumberland Mills Dam, just beneath Sappi’s Westbrook Mill, which was not under FERC jurisdiction. This was a hard-fought, never-before-used process that was finally ordered by the state in 2009. It was operational in 2013. Sappi owns the next dam, at Saccarappa, where the fish passage installation was ordered by FERC. The number of fish that are able to pass at Saccarappa will determine the requirement for Sappi to install passage at the next upriver dams. This will not be cheap, but Sappi has gained considerably from the hydroelectric production along this river. The company has done so without any consideration of or investment in the restoration of the fishery until forced to by the Friends of the Presumpscot and its allies. Saccarappa is a complex site, unlike many places where a dam removed will mean the return of the natural river. At Saccarappa, the river has been extensively blasted and altered. Historical images are often different. And where images do not tell the whole story, historical documents do. They describe a river flush with sea-run fish well beyond Westbrook from Casco Bay to Sebago and even Bridgton.

The Friends of the Presumpscot believes that what is best for the entire river, and all its communities, is to achieve the best possible fish passage at Saccarappa and have its operations

and maintenance fiscally secured in perpetuity. This is the responsibility of the private entities that have harnessed and profited from this river for so long. This is the time for public voices to be raised. A public hearing has been called by Sappi for at 7 p.m. Wednesday at Westbrook High School, Room 114. A representative of Sappi will present two potential designs. Each has issues and raises questions. One, a western channel design by Acheron Engineering, is favored by Sappi; the other, a two-channel design by Princeton Hydro, is favored by the Friends of the Presumpscot. **It is a complicated site.** There are multiple potential routes and much reconstructive work to be done. It is hard to predict what the fish will do. With the best habitat all above Saccarappa, we are now at a point where the future of the Presumpscot is at stake. Will it be a river again choked by human desire and motivations for profit, or will fish move freely through its waters, over falls and through the rips and riffles to spawn and return again? Will it be a place where humans can fish amid rolling waters and watch bald eagles and osprey? **As the largest freshwater input to Casco Bay, may it once again support our ocean fishery with an abundance of critical feedstock? Will communities embrace healthy waters as a profound part of their identity and future appeal?** The Presumpscot River runs through the most densely populated part of the Maine. Future generations will understand and love all our rivers through touching its waters.

ABOUT THE AUTHORS

Michael Shaughnessy is president of the Friends of the Presumpscot River, and Aaron Frederick is the group's executive director.

(It didn't create the problem, it just gets the blame.)

Dam not only thing blocking fish resurgence [Editorial]

By Editorial from The Aegis / Baltimore Sun, 8/23/15, baltimoresun.com

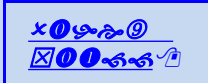


The recent move by the U.S. Fish and Wildlife Service to require an upgrade in the fish passage facilities at **Conowingo Dam** is the latest step in a series of efforts to restore migratory fish runs to the Susquehanna River that goes back more than a century. **The requirement is being pursued as part of a relicensing process for the hydroelectric dam.** Established in the aftermath of the Civil War, the Pennsylvania Fish Commission's first mission was to restore the once prolific run of American shad to the river. The agency has long since seen its jurisdiction expand to involve primarily the management of the Keystone State's waterways for recreational uses (it is now known as the Fish and Boat Commission). Still, its original goal of invigorating the economically important shad and herring runs into the Wyoming Valley around Wilkes-Barre remains unfulfilled. **Conowingo Dam is but one of a series of problems facing efforts to restore economically important fish runs (to also include runs of American eels).** The timing of the Pennsylvania Fish Commission's founding relative to the construction of the dam are evidence of this reality. The dam was completed in 1928, decades after the fish commission was assigned to revive the American shad run. **The dam didn't create the problem,** but it did prevent shad from getting any farther upriver until the 1990s when the facility's owners were required to install the fish lift at the

center of the dam structure.

Though initially the fish lift showed promise, the number of American shad to pass the dam each year peaked at 193,000 in 2001; this year, it was reported to be 8,341 fish. The goal of having 5 million American shad pass the dam has never been approached. It may well be that a more robust fish passage facility at Conowingo Dam would help with the restoration effort. Moreover, now is the time to pursue such an upgrade as once the dam's owner secures the federal license

that is up for renewal, it will be harder to compel a fish lift upgrade for the decades-long life of the license. The relative success of the fish lift in 2001 compared to this past spring, however, stands as evidence that more issues are at play. Until those other issues are identified and addressed, there may be upticks in shad numbers from year to year, but reaching the target of 5 million fish a year is likely to be little more than one that got away.



Other Stuff:

(Might as well, it doesn't seem to want to rain.)

Hydropower Agency Dives Into 210 MW Solar Energy Buy For US Navy

August 22nd, 2015 by Tina Casey, cleantechnica.com

Crazy, right? Last week the US Navy announced that it will be hooking up with a massive new 210 megawatt solar energy buy, the largest ever of its kind by any federal agency, but that's not what caught our eye. Here's what caught our eye: the new agreement is apparently the first ever to tap into the solar energy purchasing potential of something called the Western Area Power Administration, which is the federal agency historically responsible for marketing more than 10,000 megawatts of hydropower to 15 western states. Not for nothing but that hand in the photo above belongs to solar fan and Navy Secretary Ray Maybus, also known for his no-holds-barred advocacy for biofuels, marine energy, and climate change action, who highlighted last week's presser by signing a solar panel.



US Navy Solar Energy And Three-Dimensional Chess

To get a grasp of the significance of the new project, consider that last year the Obama Administration provided the Department of the Navy with new and creative ways to get its hands on biofuel, despite opposition from the snowball guy and all the other usual suspects in Congress (okay so Republicans in Congress). The new Navy solar energy buy looks like it's coming from the same strategic place, only applied to solar. You can also check out the US Army's new Office of Energy Initiatives for another angle on how the Obama Administration is circling around obstructionists to deliver more solar energy to military installations. Where were we? Oh, right. As far as we know this is the first time ever that Western has ever hooked up with another federal agency for a solar energy project, which is a significant — and logical — step in a new direction for federally administered power projects. Think hydro projects compared to solar projects in drought-stricken California and elsewhere in the US, and we're thinking this is just the first of many more Western-enabled solar projects to come. This one is no demo project — as we mentioned up front, at 210 megawatts the new facility will be the largest ever purchase of solar energy by any federal agency.

(Used to ride a similar ride at Kennywood Park in W. Mifflin, PA)

Ye Old Mill marks 100 years at state fair

By Alex Lodner, Aug. 24 2015, parkbugle.org

When Jim Keenan's great grandfather built Ye Old Mill with the help of the Philadelphia Toboggan Co. 100 years ago, he probably didn't know he was building a legacy. But five generations later, the ride is as popular with Minnesota State Fair visitors as it was back in 1915. The ride is one of, if not the,



oldest rides designed by the company still in operation in the United States. "It is definitely the oldest Tunnel of Love operated by the same family," Keenan said proudly, standing on the grassy area behind the ride earlier this summer.

Few things have changed since that first ride in 1915. Some of the vignettes have been updated over the years and a new scene or two have been added to enhance the ride experience. But Keenan, fourth generation operator of the ride, quickly points out that even when the scenes are tweaked or improved, he keeps the old gnomes and tiny statues that folks have grown to love. "There are some elves that have been in there since the '50s," he said. "If we change anything, we always keep those little guys in there. People love the tradition of it."

Perhaps most impressive is the fact that the original 40-horse electric 1911 engine still spins the paddlewheel that gently propels the handmade boats on the 971-foot ride. "The engine was built to run 365 days a year, 24 hours a day for years," Keenan explained. "We were told we have another 80 years on that thing, at least." There are 11 boats that each hold four adults for the approximately 4-minute ride. In most parts of the tunnel, riders float in complete darkness. "You can't see your hand in front of your face," Keenan said. Hence the Tunnel of Love moniker, evidently. Keenan and his three brothers grew up working the ride during the fair, selling tickets, assisting riders in and out of the wobbly boats, and learning to maintain the mechanics. His brothers have since moved away, but they all come back to work the ride for the duration of the fair. Starting in April, Keenan takes two days a week off from his mental health practice and, along with his father, John, and his young son, begins the tedious work of bringing the ride back to life after a long winter's slumber. Will the next generation pick up the torch? Keenan hopes so. He wants the ride to live on for his children to enjoy, even if they choose not to work it the way he and his brothers had. "I would hope that this continues, but we are always nervous about it. We all have year-to-year contracts here at the fair," he explained. "You always wonder, does the fair see it and love it like we do?" For the 100-year celebration, the fair is allowing Ye Old Mill to sell t-shirts commemorating the event. A few news organizations will be onsite to highlight the anniversary, and there may be a simple opening day ceremony. Other than that, the family does not plan any elaborate festivities. "We've asked the governor to ceremoniously declare Sept. 6 'Ye Old Mill Day,' but other than that, we'll just sail on in to it," Keenan said.



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