

2/27/2015



Some Dam – Hydro News™ And Other Stuff



Quote of Note: "War does not determine who is right - only who is left." - Unknown

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"Good wine is a necessity of life." - Thomas Jefferson
Ron's wine pick of the week: 2011 Chateau Ste Michelle Syrah & Shiraz (Other than French) "Columbia Valley"
"No nation was ever drunk when wine was cheap." - Thomas Jefferson



Dams:

(Yum!)

Photos: Inside the Dam Cafe in Holyoke

By Sarah Platanitis | masslive.com, February 13, 2015

The Dam Cafe in Holyoke is a favorite Elmwood neighborhood spot that serves breakfast and beverages, lunches and lattes, and sweet snacks. The cafe is located in a restored 100 year old brick building. Floor to ceiling windows allow for ample light and brickwork, wood floors and tiles lend character to the space. It's a great, cozy space to settle in to sip and read a book or chat with a colleague or friend. To learn more about the menu and hours of the cafe, visit damcafe.net.



(A reference for your reading.)

World class achievements as dams reach new heights

11 February 2015

Ted Warren provides an update on development of three of the world's largest hydroelectric dams.

<http://www.waterpowermagazine.com/features/featureworld-class-achievements-as-dams-reach-new-heights-4509863/>

(Why does an environmental organization speak on this subject?)

ANDREW MARCHEV: A CAUTIONARY TALE FOR VERMONT

COMMENTARY FEB. 16 2015, vtdigger.org

Editor's note: This commentary is by Andrew Marchev, who is the 2015 legislative intern at the Vermont Natural Resources Council. He lives in Montpelier.

The Vermont chapter of Trout Unlimited recently, and rightly, called attention to the risk posed by the current state of dams in Vermont (Rutland Herald, Dec. 17, 2014). The organization raises a critical and timely issue, as the Vermont Legislature will soon be contemplating an important bill related to the safety of dams, many of which serve no purpose today. Last October, the American Society of Civil Engineers released a report card on Vermont's infrastructure, and gave our dam infrastructure a grade of "C." Many Vermonters might not be troubled by this fact because they believe that we have not had any significant dam failures in the state. However, dams have failed in our state, and the damage these incidents have wrought underscores the need for better dam inspection requirements. One of the most noteworthy dam breaks in our state occurred on June 3, 1947, where the ensuing flood devastated the city of Rutland and town of Chittenden. According to news reports in the Rutland Herald, heavy rain throughout that day brought Chittenden Reservoir, which flows into East Creek, to peak overflow. In the evening a problem with the spillway and gates, parts of the dam that regulates the amount of water in the reservoir, led to the 750-acre reservoir's level decreasing by 10 inches of water in about an hour and a half. This deluge charged downstream ripping the East Pittsford dam in half. Fortunately Central Vermont Public Service, who owned both dams, was able to alert the city, and people were evacuated. The flood and its accumulated debris arrived to wreak havoc on the city of Rutland at 8 p.m., just as residents were rushing to higher ground. According to the Rutland Herald, at one point water rose 3 feet in 20 minutes, reaching 9 feet in many areas. Most of the west side of the city was pummeled, with 20 streets between Meadow and Crescent flooded and about 300 homes, businesses and industrial buildings heavily damaged. There were no fatalities from the flood, though there were injuries and hundreds were left homeless. Infrastructure damage in Rutland was acute. Trees littered the streets and thick mud covered much of the city. According to the June 7 edition of the Rutland Herald, train lines and major roads, including Route 7, were damaged and closed to non-essential traffic. Gas and water mains were ripped apart. Water was restored to many parts of the city two days after the flood, but because it was not drinkable, the U.S. Army had to create and operate water purification stations for citizens. Most of the infrastructure took a week or more to be brought back to fully operational condition. Damage from the dam break was estimated to be \$5 million — approximately \$200 million in today's dollars.

This dam failure may be the most destructive our state has endured but it is not the only dam failure in our history. According to the National Performance of Dams Project, there have been 23 dam failures in Vermont in the last 30 years. Fortunately all of these were much smaller in scale than the failure in 1947, but we may not be so lucky in the future as our dams continue to grow older. All dams have a finite lifespan and many are now approaching the end of their design life. Dams have and will continue to fail in our state, and when they do it damages property and public infrastructure, as well as puts lives at risk. When seen in this context, the "C" grade given to Vermont's dams in the American Society of Civil Engineers report card becomes much more troubling. According to the report, of the 1,150 dams inventoried by the state, over a third of these are not regulated under any program. The report adds that of dams that are inspected, about a third are in poor condition. Our dams are also old, as most dams whose age has been assessed

are over 50 years in age, according to the engineers' group. As a comparison, the East Pittsford dam was only 41 years old when it broke and flooded Rutland (the Chittenden dam was only 28 years when it malfunctioned). Clearly dams constitute a material and present danger in Vermont. The report card continues to say, "The majority of Vermont dams are the responsibility of private landowners that tend to have limited willingness to invest in maintenance and repairs." This is particularly troubling when over half of registered dams in the state are privately owned. Inspections on the part of several agencies have lagged in recent years due in part to the inability of state engineers to access private property in order to assess some dams. This is strange in light of the fact that taxpayers are currently paying for all dam inspections that do occur. When public safety is hindered because a dam owner won't allow a simple inspection to happen, there is a problem.

Accountability for dam owners is also reduced by incomplete knowledge about the number of dams in Vermont. Illustrating this fact, an Agency of Natural Resources survey of dams in the White River Basin located 13 dams that were not on the state inventory. Based on that finding, it is estimated that there might be as many as 150 dams unaccounted for in the state. Perhaps even more troubling, we know little about the structural stability of the dams that have been identified. This state of affairs is akin to having uninspected cars on Vermont's roads. Certainly not all cars are dangerous, but we require that all cars be inspected in order to ensure a basic level of safety – brakes in working order, blinkers blinking, and a windshield not laced with cracks. Shouldn't we have some way of certifying a reasonable level of public safety for all dams? We also recognize that it is the responsibility of each car owner as a member of society to pay for his or her own registration and inspection. Why should we treat dam owners any differently? Dam owners should shoulder the cost of ensuring and proving these dams are safe to the general public. This year a bill, H.37, has been introduced in the House. The legislation would require registration and inspection of dams, establishes a process to remove abandoned, unsafe dams and provides additional resources for state engineers to help keep us safe from dam failures. Let's make sure lawmakers know that uninspected dams pose a risk to our safety. Write or call your local legislators asking them to support a strong H.37 to address this safety risk. Tell them that dam registration and inspection is a common sense solution to a public danger paid for by dam owners, not taxpayers.

(Most things this old wear out!)

Highlands lowering lake for major repairs

Written by Jessi Stone, 2/18/15, smokymountainnews.com

Highlands, NC - Lake Sequoyah in Highlands is currently being drained in preparation for completing about \$3 million in repairs to the dam. Town Manager Bob Frye said a valve would be installed at the bottom of the 80-year-old dam, which will enable the town to lower the water in the future if needed. The project also includes installation of a raw water intake and leak repairs. "We don't do a lot of maintenance on the dam, so it's in better shape than we thought it would be, but we have to keep it in good shape," Frye said. He said state loans were paying for about 80 percent of the \$2.8 million project and the town would pay for the rest up front. The project won't be complete until November, but Frye said the water would be back up in May — just in time for summer recreation on the lake.



Planning for the project began four years ago, and construction and engineering contracts were signed in November 2014. The town of Highlands owns the dam and the water, which supplies

most of the town's drinking water, but individual property owners own access points around the lake. The dam was constructed in 1916 and a hydropower plant below the dam served as the town's first electric system. The town took the plant out of service in 1968 and sold the power-generating equipment in the 70s, according to Frye. Even though it's been out of service for more than 40 years, Highlands resident and Realtor Tucker Chambers has been advocating for the town to get the hydropower plant back in commission to supply power for residents. Aside from the exorbitant costs associated with reinstalling a hydropower plant and the tedious process of getting a permit through the federal government, Frye said such a plant on Lake Sequoyah wouldn't come close to meeting the town's power needs. "It wasn't capable of meeting electricity needs of the town and it's not been used for 50 years — there's just a shell of a building," he said. "In 2013, we looked at revitalizing it, but the project was estimated to cost \$5 million and would be a three- to five-year process." He said the former hydropower plant generated only about 1 megawatt of power a month, but the town uses about 10 to 15 megawatts per month. Furthermore, he said, the town no longer owns the property where the hydropower plant was housed because it reverted back to national forest property once it was taken out of service. "Mr. Chambers is convinced we're giving away a valuable resource," Frye said. "We admire his passion, but he's saying opinion as facts." Chambers said having a hydropower plant would allow the town to turn a profit and also be self-sufficient by supplying its own electricity. Frye disagreed. "Electrical rates would probably go up if the town did that," he said. "Add cost of maintenance, and it's a no-win situation for the town."

(Taking credit for an obvious need.)

Casey details new investments for region's locks and dams

Staff and Wire Reports, February 19, 2015, Observer-Reporter, observer-reporter.com

PITTSBURGH, PA – U.S. Sen. Bob Casey, D-Pa., joined by waterways industry leaders at the port of Pittsburgh, Thursday detailed new investments coming to Western Pennsylvania's locks and dams, including \$58 million for ongoing work at Charleroi, as a result of language he secured in legislation enacted into law at the end of last year. In a news release, Casey highlighted what the new investments will mean for the region, and released a new letter to congressional appropriators pushing for a robust investment in this year's budget. He said the recently enacted



legislation is set to provide new funding to the waterways system, which supports 200,000 jobs in the region. Earlier this month, the senator announced the Army Corps will invest \$58 million in major construction that is ongoing at Locks and Dam No. 4 in Charleroi. The money will be added to \$9 million in federal money already approved to create a second locking chamber at the dam. "Our locks and dams play a vital role in creating and sustaining jobs and in supporting economic growth in Southwestern Pennsylvania and throughout the country," Casey said in a statement. "I'm pleased that Congress came together around bipartisan, commonsense solutions to improve our waterways infrastructure throughout the nation."

"In the coming year, we need to maintain this progress and ensure that our locks and dams have adequate resources." "Senator Casey's diligence and commitment to addressing this issue made a substantial difference to our economy," said Allegheny County Executive Rich Fitzgerald. "His success on this issue means jobs and more opportunities for our many companies, which rely on the locks and dams for their day-to-day business. While we know the investments are substantial,

this is great progress towards that end, and I have every confidence that with Senator Casey taking the lead, we will be successful.” Since 2007, Casey has helped to secure more than \$233 million for the Lower Mon Project, which includes existing Locks and Dams 2, 3, and 4. The three navigation facilities are the last of the old and undersized locks on the Monongahela River system and have components that have been in service for more than 100 years. According to Casey, the project is a two-for-three improvement that has replaced the fixed-crest dam at Locks and Dam 2 with a gated dam (Braddock Dam), will remove Locks and Dam 3 in Elizabeth, dredge pool 3, construct two new larger locks at Locks and Dam 4 in Charleroi, and relocate numerous municipally-owned shoreside facilities. According to the Pittsburgh District, fiscal year 2015 funds will be used to begin the river chamber portion of the project.

For fiscal year 2016 (the upcoming fiscal year), Casey said the capability is \$52 million, which would allow the Army Corps to award the next option for the river chamber completion contract. In February 2013, Casey introduced the River Act, which sought to significantly boost the nations’ locks and dams while creating jobs. The majority of the act was included in the final version of the Water Reform and Resource Development Act and enacted into law at the end of last year. Following the passage of the fiscal year 2014 omnibus appropriations bill, Casey sent a letter to Army Corps Assistant Secretary Jo-Ellen Darcy, urging her to prioritize additional funding for the Lower Mon Project, leading to a total of \$74.675 million being allocated to the project, a \$72.5 million increase over the initial allocation. Following the passage of the fiscal year 2015 bill, Casey sent another letter to Darcy urging her to prioritize additional funding for the Lower Mon Project. This led to a total of \$58 million being allocated, a \$49 million increase over the initial allocation.

(Sometimes you gotta leave things to nature.)

The Beautiful and the (Wehr) Dammed

Dan Sheehan, mcall.com, 2/19/15

I spent much of Wednesday indoors, squinting at a long report about Wehr’s Dam. So, on Thursday, I took my boss’ advice and drove out to Covered Bridge Park in South Whitehall to have a look around.

That’s where the dam has resided these past 111 years, though it is long retired from its original purpose — powering a grist mill — and now just spans the Jordan Creek and gives rise to a lovely and soothing rushing sound as water tumbles over it and makes its merry way downstream.



View from right abutment of dam.

William Wehr and his daughter Lori Wehr Young hope to save Wehr’s Dam from its possible removal. They have a Save Wehr’s Dam petition already with eight-hundred signatures to save the one-hundred and ten year old dam. It makes that sound, I should add, when it isn’t covered by a glacier, as it is now. The only sound of water when I visited was a burble along a stretch of the bank where the ice had receded. It was 16 degrees and the wind was up, so I didn’t stay very long, even though I am a fan of wintry landscapes — especially when they include a handsome red covered bridge, as that one does. In spring, summer and fall — even winter, when it isn’t quite so Siberian — that same spot is thick with visitors. And it surely will be even if they tear down the dam. This seems likely given the findings of the report, which lists a lot of up sides to doing so against very few benefits — tangible ones, anyway — in leaving it be. It’s the intangibles, though, that give force to the argument of the people who want to save the dam. There is a generous handful of them in a group called Save Wehr’s Dam, but many thousands more who have signed

petitions on paper and online beseeching the township to fix the dam if necessary but leave it there.

Fixing it is a million-dollar proposition, according to the engineers who wrote the report. Whether the history of the place and its beauty and serenity are worth that much money depends on what value you place on those things. And you have to balance that against the value of removing the dam, which would allow the Jordan to flow freely and expand the habitat of the fish and amphibians and plant life that call it home. The parties in this debate are the Historical Preservationist and the Environmentalist, also known as the immovable object and the irresistible force. They will meet face to face sometime this spring when the township commissioners decide what to do about the dam. The report certainly seems to give the most ammunition to the environmentalist side, but I have seen dam defender William Wehr in action and would not lay money against him. He is a descendant of the dam's namesake and this, along with his absolute refusal to be placated by official assurances, gives his arguments an uncommon weight. But the environmentalists have some trump cards. Behold, if you will, this sampling of fish species the report says would benefit from the removal of the dam: The blacknose dace, the fallfish, the cutlips minnow, the creek chubsucker, the comely shiner, the margined madtom and the johnny darter. Who would not want to extend the best of what the water has to offer to creatures so exquisitely named? Who would deny the pumpkinseed, the redbfin pickerel and the white sucker? And these are just the fish. The Jordan is home to all sorts of insect life, from ephemeroptera (mayflies) to chironomidae (midges). And even if you took all of these away, you would still have to contend with the presence of the swamp doghobble and the winged loosestrife, which are plants. Nature versus history. I would not want to be a township commissioner when the time comes to decide. Indeed, I hope to emerge from the meeting in one piece to tell you what happened.



Hydro:

(Guess this is news. Couldn't see the article unless a questionnaire was completed, oh well!)
(Excerpts)

Carolinas' Hydroelectric Project Accepted for Analysis

2015-02-13, by HIND SABIR, targetednews.com

WASHINGTON, Feb. 13 -- The hydroelectric application for a major license by Duke Energy Carolinas for its Keowee-Toxaway Hydroelectric Project has been accepted and awaits environmental analysis-----.

(You have to have a glass of wine before you look at this photo!)

Appeals court rules for Enel on Pawtucket Dam

By Grant Welker, lowellsun.com, 02/13/2015

Days could be numbered for flashboards atop the Pawtucket Dam.

LOWELL, MA -- A federal appeals court has rejected an appeal seeking to stop plans for a new style and look to the Pawtucket Dam. The victory for Boott Hydropower, which owns the dam, came Thursday when an appeal from the federal Department of the Interior was thrown out. It was the latest of a series of challenges by those opposed to the plan for replacing the dam's historic wooden flashboard



system. **Boott Hydropower proposes a pneumatic system that would control how much water flows over the dam.**

Opponents have argued the new 'bladder' system would require drilling into the dam and could cause upstream water levels to rise. They also object to replacing the historic system, in which the wooden pieces above the dam bend to allow water to flow over the structure.

Boott has denied those concerns. The federal appeals court judges found that an approval for the new dam system by the Federal Energy Regulatory Commission was "not inconsistent" with the Lowell Act, which prohibits federal approval for projects that negatively affect resources in the Lowell National Historical Park. "At the end of the day, (the Department of the) Interior simply disagreed with FERC's evaluation of the evidence and with FERC's ultimate conclusions," the judges wrote in their decision, "and that is not enough to overturn the agency's orders. For more on this story read Saturday's Sun or click on <http://www.lowellsun.com>

(This is taking forever!)

Hope grows for hydro at falls in Middlebury

February 16, 2015 | By Andy Kirkaldy, addisonindependent.com

MIDDLEBURY, VT — **The Middlebury Selectboard last week took what could be an important step to clear the path for a hydropower plant to someday be established at Middlebury's downtown waterfall.** Board members and Anders Holm, principal of Middlebury Electric LLC, signed a term sheet that outlined a roadmap to build a new hydro facility at the Middlebury falls of the Otter Creek. **Since 2006 the board and Middlebury Electric LLC have engaged in occasionally contentious talks about how such a facility could be built while still protecting the town's interest in preserving the beauty of the falls and the historic integrity of downtown's heart.** Holm's family owns the Holm building that borders the Battell Bridge on the falls' south side in downtown Middlebury. Nine years ago Holm first proposed a project at the falls that could generate between 500 kilowatts and 1 megawatt via a turbine under that building — enough to power about 400 homes. Holm and the Selectboard have not always agreed on how that project should move forward. Holm believed the board did not support the effort firmly enough, and board members hesitated to back it without what they perceived to be adequate assurances on whether the project would be viable in the long term and if the falls and its surroundings would be protected. **But the entire Selectboard and Holm signed the term sheet at the board's Feb. 10 meeting.** Selectboard Chairman Dean George said in a later interview the board is hopeful, **despite what will be a long federal permitting process, for any proposal.** "We've never had a formal term sheet we've agreed on, so this is a good step forward," he said. George acknowledged what he called an occasionally "challenging" relationship between Holm and the selectboard, but said neither side lost sight of the potential benefit of small-scale hydro on Middlebury's central waterfall.

"No one ever disagreed that this is a good idea to pursue," George said. "We also want to make sure this is a viable project." Key sparks in recent talks between Holm and the board are his statement that a larger firm will probably take over the project from Middlebury Electric and move toward making it a net-metering project that would allow the town to offset some of its energy costs. In a Feb. 9 email to Middlebury Town Manager Kathleen Ramsay, Holm wrote that he planned to move to Boston and that "we hope to merge with a large interested party who is interested in the power via net metering. Our goal is a merger which keeps the local flavor of the Middlebury Electric name but backs it with a large and powerful entity with connections and resources to assure the project comes to fruition." **The term sheet, which states that it "reflects the parties' intent to work together to develop a binding agreement to proceed in a mutually beneficial manner," contains 10 provisions, including:**

- Middlebury will support the project, assuming Middlebury Electric complies with the agreement.
- Middlebury Electric will consult with the town during design and address concerns on the project's impact on aesthetics, historic preservation, other property owners, and the waterfall.

- Middlebury Electric will “work diligently” to obtain funding and permitting for the project, with a five-year deadline.
- The town will agree to assign necessary water rights to Middlebury Electric.
- Middlebury Electric will offer security to the town in the form of a bond, letter of credit or similar instrument; properly insure the project; and offer the town the first right of refusal if it chooses to sell the project to a third party.

For the project to be built, it requires Federal Energy Regulatory Commission approval. Typically, George said, obtaining a FERC permit can be time-consuming, but he hopes that process can start soon. “Maybe this time it can work. It’s still a long ways to go. The permit process from what I understand is pretty complex,” he said. “But we don’t want to be the ones standing in the way.”

(Can’t help it, that’s the pic that came with the article. It’s what farmer’s do.)

USDA Funding for Rural Energy Efficiency and Renewables

February 16, 2015, By Reid Smith, energyefficiencymarkets.com

Farmers and small business owners can now apply for funds to install rural energy efficiency or renewable energy improvements, offered through the new 2015 Rural Energy for America Program (REAP). REAP allows farmers, ranchers and other small business owners to save money on their energy bills, reduce America’s dependence on foreign oil, support America’s clean energy economy, and cut carbon pollution. **USDA is offering grants for up to 25 percent of total project costs and loan guarantees for up to 75 percent of total efficiency and renewable project costs.** The REAP application window has been expanded. USDA will now accept and review loan and grant applications year-round. Rural energy efficiency improvements eligible for funding include lighting, heating, cooling, ventilation, fans, automated controls and insulation upgrades that reduce energy consumption. **The maximum grant amount is \$250,000, and the maximum loan amount is \$25 million per applicant.**



Eligible renewable energy projects must incorporate commercially available technology. This includes renewable energy from wind, solar, ocean, small hydropower, hydrogen, geothermal and renewable biomass (including anaerobic digesters). The maximum grant amount is \$500,000, and the maximum loan amount is \$25 million per applicant. **USDA is offering a second type of grant to support organizations that help farmers, ranchers and small businesses conduct energy audits and operate renewable energy projects.** Eligible applicants include: units of state, tribal or local governments; colleges, universities and other institutions of higher learning; rural electric cooperatives and public power entities, and conservation and development districts. The maximum grant is \$100,000. Applications for these particular grants have been available since December 29, 2014 year and were due February 12. The REAP program was created in the 2002 Farm Bill. Because of the success of the program, Congress reauthorized it in the 2014 Farm Bill with guaranteed funding of no less than \$50 million in annually for the duration of the five-year bill. The 2014 Farm Bill builds on historic economic gains in rural America over the past six years while achieving meaningful reform and billions of dollars in savings for taxpayers. Since 2009, USDA has awarded \$545 million for more than 8,800 REAP projects nationwide. This includes \$361 million in grants and loans for more than 2,900 renewable energy systems. When fully operational, these systems are expected to generate more than 6 billion kWh annually – enough to power more than 5.5 million homes for a year. **The USDA is making more than \$280 million available to eligible applicants through REAP. Application deadlines vary by project type and the type of assistance requested.**

(Two birds with one stone!)

North Side Canal Installs Hydropower Plant

By MYCHEL MATTHEWS, magicvalley.com, 2/17/15

JEROME, ID • A new hydroelectric power project northeast of town is nearing completion.

On Tuesday, crews were installing control panels and pulling electrical wire through conduit at the construction site on the Main Canal north of the Jerome Butte. The concrete structure, which doubles as a water diversion gate, replaces the original gate installed in the early 20th century. **The canal system supplies irrigation water to 155,000 from Milner to King Hill.**

"After a hundred years, lots of stuff breaks down," said Alan Hansten, manager of the North Side Canal Co. in Jerome. **"The canal system is no different."** Shawn Sauer, assistant manager, said he can sleep a little easier at night. **"We were all surprised at how deteriorated the old gate was,"** Sauer said. Water had crept through cracks in the gate and was undermining the structure.



With a stream flow of 1,600 cubic feet per second and a 20-foot drop, the site on the canal is perfect for powering electricity and will generate 1.28 megawatts, Hansten said. The canal company will sell the electricity generated by the new plant to Idaho Power Co.

The \$8 million power plant is a dwarf compared with the four other plants on the Main Canal. This one, however, will pay for itself in 20 years. **"This project's been on the fast track — two years from concept to completion,"** Hansten said. Barring any unforeseen delays, the plant will be ready when the canal system is charged in early April. **"Two weeks ago the guys were mired in mud,"** he said, but recent dry weather has aided the completion of the plant. Work began at the end of the growing season in 2013, with canal company employees doing the earth work. This winter, concrete structures were poured. McAlvain Construction and Record Steel and Construction Inc., both of Boise, were contracted to do the work that North Side employees couldn't. **"We're at the electrical installation stage now,"** Hansten explained. Eight turbines have been installed and crews are waiting for generators to arrive.

(Are they going to name it the Creepy Hydro Project?)

Hydropower Project Could Harness Mpls. History to Power Future

By: Stephen Tellier, 02/19/2015, KSTP.com

A northeast Minneapolis development could soon breathe new life into one of the area's oldest landmarks. The A-Mill Artist Lofts are currently under construction at the old Pillsbury A-Mill building, one of the most historic in Minneapolis. And on Thursday, FIVE EYEWITNESS NEWS descended into the depths of the building's subterranean infrastructure, which, today, sits damp, dark and dormant, but now seems destined to return to its glory days.



Beneath the A-Mill lies a tunnel, first constructed in 1881. It's part of the reason that Minneapolis was, for a time, known as the flour milling capital of the world. The tunnel is 16 feet wide and 25 feet high, and a wall of water used to flow furiously through it, providing power to the flour mill

above. Now, that torrent is merely a trickle, cut off by a massive bulkhead, which has sealed off the tunnel since the 1950's. But that may soon change.

"The flow of the water will spin the turbine and power a generator that will then transfer the power back to our building," said Patrick Ostrom, a development associate with Dominion, the developer of A-Mill. Dominion is spearheading a hydropower project that may be the only one of its kind in the country. The proposal would refurbish and repurpose the tunnel to provide power to the low-income apartments and artist lofts currently under construction in the old mill space.

"Right now, we're expecting it to produce about 70 percent of the electricity needs for our building," Ostrom said. "We just thought this was a great opportunity to keep part of the history of the Pillsbury A-Mill alive." "We looked at it as a really great opportunity to create renewable energy by using the same resources and infrastructure that Pillsbury did over 100 years ago," Ostrom said. So in a matter of months, the relic could come roaring back -- a harnessing of the past to power the future. The hydropower project is still working its way through the regulatory process, but Dominion's goal is to complete construction on the on it by the end of this year. Meanwhile, the City of Minneapolis not only supports the project, but has floated the idea of the public being able to get tours of that underground area.



Environment:

(This ugly guy is getting a lot of attention lately. Expensive gamble, but what the hey, it's only money!)

Model proves Yellowstone bypass should help sturgeon swim around dam

By BRETT FRENCH Billings Gazette, 2/14/15, missoulian.com

BILLINGS, MT – A miniaturized replica of a portion of the Yellowstone River flowed through a Colorado warehouse last year.

The 1:16 scale model was built by Bureau of Reclamation engineers. The replica was used to test whether a side channel that the Army Corps of Engineers has proposed building would give endangered pallid sturgeon and other native fish a way around Intake Dam, which is between Glendive and Sidney. "It's truly a one-of-a-kind experiment," said Mike Backes,

fisheries manager for Montana Fish,

Wildlife and Parks in Miles City. "And it will be a while before we know if it works." It's hoped that a passage around the dam will give the pallids the ability to spawn farther upstream. That would provide more distance for the fish's larvae to drift once they hatch, which is crucial to the fish's survival.



Only 150 adult pallid sturgeon are estimated to still live in the upper Yellowstone and Missouri Rivers – some of them are 60 years old. But there's no evidence they have successfully reproduced in the wild since large dams were built on the rivers. A recent Montana State University study showed that the larvae of pallid sturgeon that spawn in the Missouri River above Fort Peck Reservoir die when they drift into an oxygen-starved environment at the lake's bottom. Because of their diminishing population and apparent inability to successfully reproduce, pallid sturgeon are listed as an endangered species. To prop up the population, eggs gathered from wild

pallids have been raised in hatcheries and the fish transplanted to the rivers. Whether those hatchery fish will successfully reproduce in the river is still unknown.

Educated guesswork

The staff of several state and federal agencies is hoping that the bypass channel will once again allow pallid sturgeon to move upstream. But everyone involved is working with limited information because nothing like this – at this scale on such a big wild river – has ever been done before. “There’s very little research out there for this species,” Backes said. “It took a long time to come up with these numbers.” Fisheries biologists with FWP, along with the U.S. Fish and Wildlife Service and U.S. Geological Survey, made up the Biological Review Team that devised the numbers that the Bureau of Reclamation engineers worked with – things like water velocities and stream depth – to create their models. “A lot of effort was put into that model,” said Gerald Benock, manager of planning and project development for the Bureau of Reclamation’s Montana Area Office. Included in that effort was a great deal of mathematical modeling before the replica was even built, Benock said. The calculations were meant to figure out how to design a manmade channel with slow enough flows that the large fish could swim upstream and also to create a design so that the water isn’t too turbulent where the side channel and main river meet below the dam. “It looked like (the model) would reflect the real world pretty closely,” Benock said.

Side channel details

Under the \$58.9 million project, the Corps of Engineers is proposing to excavate a winding side channel that would hold water year-round by diverting 10 to 17 percent of the main river’s flow. The entrance to the channel from downstream would be carved just below the dam through what’s known as Joe’s Island. Biologists believe building the downstream entrance closer to the dam would make it more appealing to fish moving upstream. The bed of the bypass channel would be 40 feet wide, flaring out at the top to 150 to 250 feet wide. The slope of the channel bed would closely mimic the existing river. On the upstream end of the channel, the Corps is proposing the construction of a 6-foot thick concrete sill measuring 60 feet wide and 30 feet long to protect the inlet from erosion and ice damage. Just to armor the bends in the side channel from erosion will require 65,000 tons of riprap. Another 64,000 tons of gravel 9 inches deep would be used to grade the channel’s slope to design requirements. “It looks like, based on the mathematical model and the physical model, we have the criteria to meet this particular situation,” Benock said. The bypass channel is a second choice for the Corps, which had originally proposed dumping rock in the river at the dam to make the grade downstream gentle enough for pallid sturgeon to swim up the main channel. But concerns about ice jams tearing out the rock and the inability to find slow enough flows that the fish could navigate ruled out that option.

\$58.9 million question

Despite all of the ground work by engineers, important, unanswered questions still hang over the project: If the Corps builds the channel, will the pallid sturgeon swim up the stream? And even if they do swim up the channel, will they find spawning habitat? “I can’t guarantee you with any certainty the fish will use it,” Backes said. But he did say that last year, five pallids swam up the natural side channel around Joe’s Island in June during high water – a female followed by four males – giving Backes hope that the artificial channel might work. “So that demonstrates that these fish, if there is a bypass, there is a stimulus to go on,” Backes said. For now, Benock said the Bureau of Reclamation is generating more information and performing additional mathematical modeling. Meanwhile, the Corps is in the process of finalizing its design for the project based on the results of the modeling.

(Always did like rice with my fish.)

Editorial: After ‘progress’ fails fish, science steps up

02/17/15, chicoer.com

Humankind didn’t do fish and wildlife any favors when it went on a dam-building spree a half-century ago. Now science is trying to help with a small bit of payback. The impacts the massive structures would have on fish and critters were barely considered in the name of progress as

society sought modern solutions to the problems of supplying water and electricity for a growing population. It only took a few years to figure out the stunning negative impact dams would have on rivers that contained spawning anadromous fish, however. With hundreds of miles of spawning tributaries cut off by structures like Shasta Dam, Oroville Dam, Trinity Dam and the many dams on the Klamath River, salmon and steelhead populations on the rivers plummeted.

Though the Klamath River dams may be removed, it's not realistic to expect the same thing at Shasta and Oroville, two big cogs in the state water system. The best we can do is make the current system work. Fish hatcheries for salmon and steelhead were originally proposed as the solution, but they alone cannot replace all the habitat that was lost. Not even close.

Worse yet, hatchery salmon and steelhead don't have the innate survival sense needed to get downriver and out to sea safely, then return in three or four years. Dumb fish get eaten by smarter fish — and birds and sea lions — rather quickly. So fisheries biologists are constantly tinkering with the system, trying to figure out a better way to do things. For example, is it better to release juvenile salmon in the river when they are fingerlings or yearlings? In the winter or the spring? Is it better to release them from the hatchery or drive them down to the delta, then release them? Is it beneficial to release a bunch of water from the dams when the juvenile salmon are migrating downriver in an attempt to flush them out to sea?

These are all things biologists and water managers experiment with in an effort to give both wild and hatchery salmon better chances of survival. That tinkering has resulted in a fascinating experiment in the Yolo Bypass, on the lower Sacramento River near Woodland. It's called the Nigiri Project, apparently named by someone who loves salmon sushi. Instead of using concrete ponds to rear hatchery fish, scientists are trying to raise young salmon in rice fields after the harvest. The shallow fields are flooded and tens of thousands of newly hatched fish are added. Biologists are stunned at how quickly the fish grow. The shallow rice fields serve as an incubator for algae and plankton. Biologists say the plankton are like "floating filet mignon" and the young salmon double in weight every week. When the salmon get large enough, they'll be released to the river. Jacob Katz, a CalTrout employee who gave reporters a tour of the Nigiri Project last week, said the Yolo Bypass has deep canals, which is opposite of what the river system used to be, before dams. "We are spreading water out, slowing it down to mimic how the river used to be," he said. The project is in its fourth year and shows great promise. The rice industry, already a well-documented provider of habitat for waterfowl and other birds, now can add fish habitat provider to its dossier. "The fish we collect grow faster and survive better," said Louise Conrad, a program manager with the state Department of Water Resources. Whether wild salmon will ever use this more natural incubator is the ultimate goal and a large hurdle, but the experiments with hatchery fish are certainly a good start. There's a reason more dams aren't being built on rivers with anadromous fish. We learned a hard lesson. But we are glad scientists are trying to make the most of what we have.

(Celebrating triumph!)

Elwha River Restoration At Olympic National Park Offers Scientists Front-Row Seat To Nature At Work

Submitted by NPT Staff on February 19, 2015 - nationalparkstraveler.com

While cranes and other heavy equipment were the most visible tools used to dismantle dams holding back Olympic National Park's Elwha River, nature itself has proved to be a mighty force in aiding restoration of the rivershed from mountains to ocean.

For instance, since the Elwha and Glines Canyon dams were first breached two years ago, the Elwha River has moved the equivalent of roughly 3,000 Olympic swimming pools full of sediment that had been piled up behind the dams and pushed it all the way down to the Strait of Juan de Fuca. This sediment release -- which occurred even though river flows were relatively moderate, compared to historic flows -- altered the river's clarity and reshaped the river channel while adding new habitats in the river and at the coast, according to the U.S. Geological Survey. In fact, the vast majority of the new sediment was discharged into the coastal waters of the Strait of Juan de Fuca, where the river mouth delta expanded seaward by hundreds of feet, the agency said in a release.

“The expansion of the river mouth delta is very exciting, because we are seeing the rebuilding of an estuary and coast that were rapidly eroding prior to dam removal,” said USGS research scientist and lead author of the synthesis paper, Dr. Jonathan Warrick. Overall, the effects of dam removal are better known as a result of several new studies released this week by government, tribal and university researchers. The scientists worked together to characterize the effects of the largest dam removal project in U.S. history occurring on the Elwha River.

New findings suggest that dam removal can change landscape features of river and coasts, which have ecological implications downstream of former dam sites, the USGS said. “These studies not only give us a better understanding of the effects of dam removal, but show the importance of collaborative science across disciplines and institutions,” said Suzette Kimball, acting director of the U.S. Geological Survey. Five peer-reviewed papers, with authors from the U.S. Geological Survey, Reclamation, National Park Service, Washington Sea Grant, NOAA Fisheries, the Lower Elwha Klallam Tribe, and the University of



Aerial photos of the Elwha River mouth before and during dam removal. Photos show (A) the river mouth wetlands before dam removal, (B) the turbid coastal plume that occurred during much of the dam removal project, and (C) the expansion of the river mouth delta by sediment deposition/Photos provided by Ian Miller of Washington Sea Grant, Jonathan Felis of USGS, and Neal and Linda Chism of LightHawk

Washington, provide detailed observations and insights about the changes in the river’s landforms, waters and coastal zone during the first two years of dam removal. Although the primary goal of the dam removal project is to recover spawning salmon runs to the pristine upper reaches of the Elwha River within Olympic National Park, the studies suggest that dam removal can also have ecological implications downstream of the former dam sites. These implications include a renewal of the sand, gravel and wood supplies to the river and to the coast, restoring critical processes for maintaining salmon habitat to river, estuarine and coastal ecosystems, USGS said. “These changes to sediment and wood supplies are important to understand because they affect the river channel form, and the channel form provides important habitat to numerous species of the region,” said USGS research scientist and river study lead author, Dr. Amy East. The final stages of dam removal occurred during the summer of 2014. Some sediment erosion from the former reservoirs will likely continue. The Elwha Project and research teams are continuing to monitor how quickly the river returns to its long-term restored condition. **The five papers can be found in Elsevier’s peer-reviewed journal, *Geomorphology*, and they focus on the following topics of the large-scale dam removal on the Elwha River:**

- * Erosion of reservoir sediment
- * Fluvial sediment load
- * River channel and floodplain geomorphic change
- * Coastal geomorphic change
- * Source-to-sink sediment budget and synthesis



Other Stuff:

(It’s always best in Feb. Click on the website address below.)

SEE IT: Niagara Falls freezes over

By MEG WAGNER 2/18/15, m.nydailynews.com



<http://m.nydailynews.com/news/national/niagara-falls-freezes-article-1.2119843>

Even Niagara Falls has frozen over. Frigid temperatures in the north have turned the famous waterfalls into an icy wonderland. Visitors snapped photos of the partially frozen falls and the snow-covered railings Monday and Tuesday. The water isn't frozen solid but sheets of ice built up on the Canada-U.S. border falls' surface when temperatures plummeted early this week. Monday saw a low of -13 degrees.

In case you wondered, the falls completely froze over more than 100 years ago in 1911. Here's a photo:



**THIS PICTURE WAS TAKEN
WHEN NIAGARA FALLS WAS COMPLETELY FROZEN IN THE YEAR 1911.
A VERY RARE PHOTO.**

I've read of this but never saw the photo before. Makes you wonder just HOW COLD and HOW LONG it was that cold!!



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