Dams:
(100 years young.)

**Troy Lock And Dam Celebrates 100 Years**

By LUCAS WILLARD • 8/5/16, wamc.org

The Troy Lock and Dam, NY opened in 1916. Laborers who built the Panama Canal were contracted to build the dam designed by the U.S. Army Corps of Engineers, Colonel David Caldwell, commander of the Corps’ New York District, was dressed in full uniform at the ceremony beside the lock. “Troy Lock and Dam is just a phenomenal facility, but really what it marks is all the years of development and commerce and taking care of the local communities and the taxpayer throughout the century,” said Caldwell. Inside the lock, the

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Copy obtained from the National Performance of Dams Program: [http://npdp.stanford.edu](http://npdp.stanford.edu)

"Good wine is a necessity of life." - -Thomas Jefferson

Ron’s wine pick of the week: 2014 Ponzi Pinot Noir “Tavola”

“No nation was ever drunk when wine was cheap.” - - Thomas Jefferson

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**Quote of Note:** "If all you can do is crawl, start crawling." - Rumi
water is raised or lowered to allow boats to pass through. It acts as the eastern gateway to New York’s waterways.

“When the Lock and Dam was really in its heyday, probably 50 years ago, there was a lot more commerce. We’re seeing that pick up now and we’re excited about that. But we also see quite a few recreation craft that come through,” said Caldwell.

Beside the facility, owned by the federal government, is the hydroelectric plant built by Henry Ford in 1920, which at the time, required special permission from Congress. Today, the electric dam is owned by the Green Island Power Authority and provides electricity to the community on the other side of the river. Brian Stratton, Director of the New York State Canal Corporation, says the Lock and Dam, combined with the canal system, supports billions of dollars in economic activity in upstate New York. "Hydropower, commercial navigation, irrigation for farms, drinking water, quarrying, mining is absolutely huge. And that’s statewide. So nearly $400 million in tourism spending and nearly $6.3 billion economic impact for non-tourism uses,” said Stratton.

The Lock and Dam is also an important resource for the City of Troy. Businesses benefit from the visitors coming upriver or down from Canada. Deputy Mayor Monica Kurzejeksi says the city will continue working with the Army Corps of Engineers to make Troy a better place to live and work. "It’s really important not only to drive our economy, but also for the aesthetic view of the city. And we look forward to working with them as we continue to improve our waterfront, expand parkways, be able to make connections and access along the waterways, so I think it’s a great opportunity for a great partnership at the federal, state, and local level," said Kurzejeksi. The Corps is also working to improve the facility. Beginning next year, four new miter gates will be built and installed into the navigation lock.

(Can’t get their act together. Nothing is simple.)

**Despite dam agreement, Klamath battles rage on**

By Damon Arthur of the Redding Record Searchlight, 8/6/16, redding.com

An agreement this past spring to remove four dams on the Klamath River has not brought an end to the legal battles over water in the river. The four dams had long been viewed as obstacles to improving conditions in the river for salmon and other fish. So when governors, a CEO and other political and tribal officials gathered along the Klamath River in April to sign the accord, it was considered a historic pact. But by this summer, threats of litigation — and at least one actual lawsuit — were flying. The Hoopa Valley tribe sued two federal agencies, claiming they did not adequately protect threatened coho salmon that spawn in the river. Other tribes and environmental and fisheries groups have sent letters to federal agencies threatening to sue them for not taking action to improve conditions in the river.

"Water quality issues are not resolved," said Konrad Fisher, executive director of Klamath Riverkeeper, an environmental group that joined with Earthjustice and the Pacific Coast Federation of Fishermen’s Associations in sending 60-day notices of their intent to sue federal agencies. The Yurok and Karuk tribes also sent notices of intent to sue, claiming the National

**FILE - This Aug. 21, 2009 file photo shows the J.C. Boyle Dam diverting water from the Klamath River to a powerhouse downstream near Keno, Ore. The U.S. Department of Interior on Thursday, April 4, 2013, issued a final environmental impact statement recommending this and three other dams be removed from the Klamath River to help struggling wild salmon runs. (AP Photo/Jeff Barnard)**

Copy obtained from the National Performance of Dams Program: [http://npdp.stanford.edu](http://npdp.stanford.edu)
Marine Fisheries Service and U.S. Bureau of Reclamation were not doing enough to protect coho salmon, which are listed as threatened under the federal Endangered Species Act. The groups claim that in 2015 up to 90 percent of the young salmon in the river were being infected by a parasite called ceratonova nova. The groups want the federal agencies to consult with them over the problem and to increase the amount of water coming out Klamath River dams during the winter and spring to eradicate the parasite and prevent spread of the disease.

Until the four dams are removed, the groups want the National Marine Fisheries Service and the bureau to require the dams’ owner, PacifiCorp, to release more water in the winter and spring. Removing Iron gate, Copco No. 1 and 2, and the J.C. Boyle dam should also provide better flows in the river to prevent ceratonova outbreaks, said Craig Tucker, natural resources policy advocate for the Karuk Tribe.

Officials also hope removing the dams help lower the river temperature in the summer, preventing outbreaks of another fish disease called ich, which spreads among adult spawning salmon crowded into pools when the river is running low and warm. Fisher said there are three parts to restoring the lower Klamath — habitat restoration, dam removal and proper river flow levels. "Dam removal in and of itself will not solve the flow problem," Fisher said. Felice Pace, who writes a blog on Klamath Basin environmental issues, said removing the four dams is not a panacea. Water quality will improve in the river after the dams are taken out, but not to the extent needed, he said.

The environmental impact statement on dam removal appears to back that up. Taking them out will eliminate toxic algae blooms in the reservoirs and restore more natural water temperatures. Other water quality goals, though, such as reducing harmful levels of nutrients "would be accelerated but could still require decades to achieve," the report says. "That fact has tended to be overshadowed by the romance of dam removal and the exaggerated claims of its promoters," Pace said in an email. Creating wetlands of tule marshes upstream of the Keno Dam would reduce harmful levels of nutrients in the water and lower the water temperature — both beneficial to fish, he said. All four of the dams will be removed in one year, so the release of sediment behind the dams is not spread out over several years, Tucker said. An estimated 13.1 million cubic yards of sediment is stored behind in the reservoirs, according to the environmental reports. While the sediment is harmful to fish in the river, federal officials say the impact to salmon and other species would be less than two years. Much of the sediment is so fine it would be carried out into the ocean rather deposited in the river, the report says.

(How do you lose something like this? Glad he was smart enough to use the old one.)

Man’s prosthetic leg found in beaver dam, returned after 20 days
USA Today Network by Patrick Thomas and Maggie Angst, Milwaukee Journal Sentinel, August 8, 2016, usatoday.com

MILWAUKEE, WI— In what he calls one of the strangest experiences of his life, Elliot Fuller of Germantown and his friend Jason Franklin stumbled across an unusual sight while canoeing Thursday. They were traveling down a creek that runs between Richardson Lake and Zarling Lake near Wabeno in Forest County when they stumbled upon a prosthetic leg sticking out of a beaver dam. "I was sure we had found a dead body that someone dumped into the creek," Fuller said. "We thought it was real at first until we got a closer look." The two men went online and found that someone had posted on Craigslist 20 days ago looking for a lost prosthetic leg.
Mark Warner, 49, of Green Bay lost his prosthetic leg on a fishing trip when his canoe flipped over on Range Line Lake in Wabeno. He managed to get his fishing gear and cooler, but the prosthetic leg got away from him.

"I wasn't overly worried about it because I use my older model for fishing and hunting," Warner said. "It wasn't my everyday leg, to put it that way." Warner's friend persuaded him to put an ad on Craigslist a few days after he lost it. "I just thought it was gone," Warner said. "I really didn't expect to see it again. On my end, it's pretty amazing and it's pretty bizarre where it ended up." Fuller and Franklin found it about three miles from where Warner had lost it. They contacted Warner and returned the leg Friday in Wabeno. They received a $50 reward for returning the lost limb. "Just did what I thought was right," Franklin said. "I hope that if I lost my leg that someone would return it to me, too."

(Dam removal marches on. They won't be missed.)

**Cook, Lake counties to remove 3 dams along Des Plaines River**

Cook and Lake counties plan to remove three obsolete dams this fall on the Des Plaines River to improve wildlife habitat and water quality.

The Associated Press, AUGUST 8, 2016, bnd.com

**ARLINGTON HEIGHTS, Ill. -** Cook and Lake counties plan to remove three obsolete dams this fall on the Des Plaines River to improve wildlife habitat and water quality. The counties have been working with the Illinois Department of Natural Resources and the U.S. Army Corps of Engineers to continue a program that began several years ago but stalled in part because of state funding issues, the (Arlington Heights) Daily Herald (http://bit.ly/2b7Ttxw) reported. Lake County leaders who tired of waiting for approval for a grant they might never receive have budgeted $690,000 to remove the last two dams on their stretch of the river. The two dams are located at the MacArthur Woods forest preserve near Libertyville and the Captain Daniel Wright Woods forest preserve near Mettawa.

"Everything is in place and now is an excellent time to be working in the Des Plaines River because there's no water," said Jim Anderson, director of natural resources for the Lake County Forest Preserve District. Additionally, Cook County is set to begin removing the Dempster Avenue Dam in Des Plaines in mid-August. Three dams will remain in the county's portion of the Des Plaines River after the dam is completely removed by the end of October, said Eric Otto, an engineer with the Forest Preserve District of Cook County. "We're anticipating removing them whenever funding comes from the state," Otto said. "The projects aren't on hold. We're moving ahead with the permitting and design." The dams were originally built for recreation, sanitary waste purposes, or as farm equipment crossings, but they've become obsolete because of highway bridges and wastewater treatment facilities. They trap silt, pose potential hazards to paddlers and prevent the movement of fish. "Our senior wildlife biologist is always excited by the fish species he sees after the dams are removed," Otto said. Lake County previously removed the dam at Ryerson Woods in Deerfield in 2011.

(Gig saw puzzle.)

**A look at engineering operations in Boone Dam repairs**

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
First impressions aren’t always accurate when dealing with engineering a dam repair, according to a written statement from the Tennessee Valley Authority. “It’s like a puzzle, figuring out which piezometer reacts to which activities,” said Lead Dam Safety Engineer Carol Ford, in the statement. Ford was referring to the water table and water pressure data her team collects 24/7 from more than 100 locations around the dam. “We correlate the times of events according to the drilling and grouting activities,” she said. The instruments automatically issue texts and emails based on water spikes or falls, the statement says.

(As C. K. says, maintain them or drain them.)

**Rocky Mountain National Park To Repair Dam At Popular Lake**

August 9, 2016, by Associated Press, cbslocal.com

ROCKY MOUNTAIN NATIONAL PARK, Colo. (AP) – Crews will repair and upgrade an aging dam at a popular lake in Rocky Mountain National Park next year. The National Park Service said Tuesday the work at Sprague Lake Dam will be done in the fall of 2017, and parts of the trail around the lake will be closed. The half-mile trail is wheelchair-accessible and affords sweeping mountain views. The lake is popular with anglers and picnickers and is open year-round. Repair work will include improvements to the spillway, raising the dam slightly in some areas and reinforcing the lake side of the dam to prevent erosion. The park had 4.1 million visitors last year and is on pace to exceed that this year. The park does not track visitor numbers to Sprague Lake.

**Hydro:**

(It’s about time.)

**An Old Source of Renewable Energy Gets a New Look**

A government report finds that hydropower could supply 35 million homes by 2050—no new dams required.

By Taylor Hill, Associate editor at TakePart, Aug 4, 2016, takepart.com

Shiny solar panels and towering wind turbines grab headlines, but the United States’ original source of renewable energy, hydropower, could make a comeback, according to a new report. The U.S. Department of Energy estimates that the nation could increase its hydroelectric capacity 50 percent by 2050 without building new dams. Rather, the new capacity would come from upgrading existing hydropower facilities with more efficient

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Copy obtained from the National Performance of Dams Program: [http://npdp.stanford.edu](http://npdp.stanford.edu)
technology and by constructing hydropower storage facilities that pump water uphill into reservoirs during off-peak hours when electricity is cheap. When demand and power prices spike, the water is released downhill through turbines to generate electricity. Such a strategy could grow hydropower capacity from 101,000 megawatts to 150,000 megawatts by 2050, according to the report. “If this level of growth is achieved, benefits such as savings of $209 billion from avoided greenhouse gas emissions could be realized, of which $185 billion would be attributable to operation of the existing hydropower fleet,” said a Department of Energy spokesperson. “With this deployment level, more than 35 million average U.S. homes could be powered by hydropower in 2050.” The report is a first-of-its-kind analysis by more than 300 experts to evaluate hydropower’s potential. About 2,000 of the country’s dams produce power, supplying 6 percent of electricity demand.

But hydropower’s growth has stalled because of aging infrastructure, concerns over environmental impacts on rivers and wildlife, and a rise in alternative renewable sources. In 2014, wind and solar provided 7 percent of the country’s electricity—edging out hydropower for the first time. “Typically, to get approval to upgrade existing dams with more efficient technology means they will have to consider the environmental performance at that site as well,” Bradley said. “So if they’re going to be improving them, they’ll be improving the environmental issues as well.”

Bradley also noted that the report doesn’t signal a revival of the hydropower industry. The 50,000-megawatt expansion of hydropower is somewhat dwarfed by the Department of Energy’s plans for wind development. “The department laid out a similar vision report for wind power in 2014 and found that it was feasible to install 340 gigawatts of new capacity in land- and offshore-based wind farms by 2050,” Bradley said. At that rate, wind power would meet 35 percent of the country’s electricity needs.

Still, hydropower could be key to ensuring the power grid operates smoothly as more renewable but intermittent sources of energy come online. Solar and wind power only produce energy when the sun is shining and the wind is blowing. To keep the lights on when solar and wind farms aren’t generating electricity, grid operators rely on carbon-spewing fossil fuel power plants. That’s where pumped storage comes into play: Reservoirs can act as giant batteries, storing energy generated by solar power plants and wind farms. About 21,000 megawatts of pumped storage capacity exist, and the Department of Energy has announced $9.8 million in funding to help build more pumped storage. There has been an increase in requests for pumped storage permits submitted to the Federal Energy Regulatory Commission in recent years, and 21 projects are under review. A majority of the proposed projects are closed-loop systems, in which the project’s water source is not a river but underground reservoirs, aquifers, or even the ocean. Bradley says the closed-loop systems need the same environmental scrutiny that hydropower dams get. “They’re called ‘closed-loop,’ but the water has to come from somewhere, and wherever they’re getting it can have significant environmental impacts in that region,” he said. “We think pumped storage has potential, but there are still a lot of questions about it.”

(A fixer upper.)

**Auburn takes lead on $550,000 repairs to hydroelectric facility along Owasco River**

By Greg Mason, aubumpub.com, 8/5/16

AUBURN, NY — Until Thursday night, one Auburn’s hydroelectric facilities was at something of a crossroads. The Mill Street Hydroelectric Facility, designed to take Owasco River flows and convert them to energy, needs repairs to a leaking penstock and a degrading concrete section. A stop gate also must be installed as per federal energy regulations. In June, city lawmakers budgeted up to $550,000 to cover those costs.
renovations, but without much success to date. Indeed, the contract to repair the facility has gone through two rounds of bidding with local contracting agencies and all offers came in at least $50,000 over the city’s budgeted allotment each time, with three of the five bids received priced between $700,000 and $800,000. Councilors voted to reject the latest set of bids on Thursday. Seth Jensen, director of the city’s municipal utilities, said he considered several options, including paying above budget — which, he noted, city officials do not want to do — or nothing at all, leaving severe flaws in a hydroelectric plant the city has already committed at least $3.9 million to re-ignite the facility in 2014 after 10 years of dormancy.

It's typical practice for the city to hire agencies to act as the prime contractor in projects. Jensen said the city can stay at budget by taking this role and take on some of the work needed with Mill Street, albeit at the cost of increased staff time. He explained his plan Thursday to members of the Auburn City Council, presenting a timeline to have the penstock and concrete section repaired over the next two months and stop gate installed by the end of September. Lower water levels due to the area-wide drought may prove advantageous for construction purposes, Jensen said. Jensen said he plans to hire local contractors for masonry work using Cayuga County bid prices, while reaching out to BVR Construction — the agency tasked with repairs to another hydroelectric facility on North Division Street — to install the stop gate since that's beyond the city's capacity. "We're going to do everything in our power to keep it under $550,000," he said.

The staff time and variety of projects prevents the city from taking the role as prime contractor with every project, Jensen said. Councilor Terry Cuddy called it "a novel approach." "It's good to see we're not just going the standard route," he said.

(If it will reduce the flow during reservoir filling and alter the flow thereafter. For instance, peak flows will be attenuated.)

Nile mega dam almost ready but faces Egyptian skeptics

World Bulletin / News Desk, worldbulletin.net, 8/5/16

As a huge dam on the River Nile in Ethiopia nears completion World Bulletin has spoken to engineers and journalists who claim fellow Nile state Egypt remains suspicious of the multibillion-dollar project. Guba – more than 900 kilometers (560 miles) northwest of the Ethiopian capital Addis Ababa – will be home to the enormous $4.8 billion Ethiopian Grand Renaissance Dam (GERD). It is situated on the Nile where the wide river, mixed thickly with earth, rumbles towards Sudan through the dam’s gate, joining its natural course to flow across the nearby Sudanese border. However, pervasive thinking in Egypt about the Ethiopian dam is that it could choke Egyptians of their water lifeline. During a recent media event at GERD, Egyptian journalist Haitham El-Tabei said there was fear in Egyptian society about Ethiopia using the Nile. "[Imagine] there is a football team that is very strong and all other teams fear to play it – but they have never played against it or even see it playing. ‘Will the people feel they are ready to play with it or not? No, because they are hearing from everybody that: ‘They are very strong, they will defeat us.’ This is GERD,’” Haitham said. Asked what could be done to dissipate this fear, he said: "My suggestion is to have visits, real visits, by Egyptians [to Ethiopia]. And really explain … to Egyptians that ‘Your brothers in Ethiopia need development.’" Asked now that he saw it for himself what he would be writing when he got back to Egypt, Haitham said: "I will be writing that it is a possible..."
cooperation opportunity that we do not want to waste. But at the same time Ethiopia must be very well committed [to] using it responsibly for the people in Egypt and not against it."

This need for cooperation featured prominently during the five-day Eastern Nile Media tour of the GERD site last week, featuring more than 20 journalists from Sudan, Egypt, Ethiopia and South Sudan.

-Unstoppable river-
GERD Project Manager Simegnew Bekele said the dam was purely a hydro-electric scheme which "cannot stop" the natural flow of the Nile. According to Simegnew, Ethiopia has been transparent about the dam, adding that a team of technical experts drawn from Ethiopia, Egypt and Sudan on the recommendation of Addis Ababa was following up the process. "You cannot stop the flow of a river like that," he said. "Furthermore, it has never been and will never be the intention of Ethiopians to do so." However, Egyptians remain uneasy. Another Egyptian journalist, Manal Agrama, said: "What most people in Egypt think is: ‘The dam will cut the water flow’.

"I would be writing to change that sort of thinking as I have been doing for quite some time now. But you Ethiopian journalists should also put pressure on your government to be more transparent," she said.

-Strategy needed-
According to Kevin Wheeler, an Oxford University doctoral candidate who privately studied the impact of the Nile, the dam has many advantages for downstream countries but they “have to coordinate” a filling strategy. Wheeler recommended two strategies: to allow a constant amount of water both during dry and wet seasons to flow out during the filling period, or to allow more water to be let off during the wet season and to retain more during dry ones until the catchment is filled over an agreed period of time. This remains just a suggestion and it is not clear if the international consultants selected to study the impact of the dam on downstream countries, Artilia and BRL, will come up with recommendations similar to these.

One thing is apparent though: although it is a sure thing that Ethiopia’s hydro dam will be operational soon, the next talking point will be on the water-filling strategy. GERD is designed to form an artificial reservoir, which is twice the size of the widest lake in Ethiopia – Lake Tana in the northwest. The GERD lake will contain 70 billion cubic meters of water. Simegnew said GERD is the largest hydro dam project under construction on the face of the earth.

One Sudanese reporter, who wanted to remain anonymous, said: "What else should alarm Egyptians who, for ages, have been told and believed that Egypt was ‘the bride of the Nile’?

"It is high time Egyptians shook the myth off their backs and see the realities of other nations that share the river and their needs to develop. "The Nile is a shared resource, and should be shared as such in a manner that respects the ‘no-significant-harm’ principle that appears in a much broader Declaration of Principles the leaders of the three countries signed in 2014 in Malabo, capital of Equatorial Guinea."

(Making hydro better.)

Avoiding Outages with Hydropower Microgrid…More Renewables in the North American Energy Mix…

August 5, 2016, by Cara Goman, microgridknowledge.com

A hydropower microgrid to avoid outages

Following its second major outage in three years, the city of Idaho Falls is evaluating a hydroelectric microgrid plan with Idaho National Laboratory (INL). As reported by PostRegister.com, the microgrid would be powered by Idaho Falls’ four hydroelectric plants on the Snake River can power as much as half of the city’s demand at any one time. Photo: idahofallsidaho.gov
plants on the Snake River, which can power as much as half of the city’s demand at any one time. During a widespread outage, the microgrid would allow the city to disconnect from the larger grid and maintain critical facilities with power from the hydro plants. Large batteries would help counteract variability in demand on the microgrid. **INL and several other federal research partners have a grant to conduct more research on a microgrid for the city. INL will use its own microgrid at the Energy Systems Laboratory to model how a city-wide version would work.**

(How about this contraption?)

**Homemade hydroelectric generator uses plastic bottles as water wheel**

By Derek Markham, August 8, 2016, treehugger.com

OK, so perhaps you wouldn't ever be caught away from the grid with all the necessary parts, and have running water nearby, and have cell service but a dying phone battery, but in case you'd like to MacGyver together a working hydroelectric generator just for fun (and free electricity) or for a child's science project, YouTuber Thomas Kim has you covered. Kim, a power plant operator and science enthusiast, shows us how it's done in this short video, which is short on technical details but long on showing the viability of a small-scale DIY hydro generator for charging a smartphone and/or LED lights:

According to the video description, Kim's hydroelectric generator employs plastic bottles and 'disposable platters' for the waterwheel, which then turns a shaft in a 3-phase stepping motor, generating electricity that then flows through a rectifier circuit (which converts the AC current into the DC current needed for charging a mobile device). Although not specifically mentioned, it appears that he also integrated a voltage regulator (and USB connector) to keep the output from damaging the phone, which would seem to be an important factor. From the video, the output on Kim's device looks to be about 10V, and he's able to get a smartphone charging and light up a small LED device with this setup. For those with easy access to running water, this type of micro-hydro project could be a fun and useful way to harness some carbon-free renewable energy and use it to power small lighting systems or charge battery banks, and probably at a minimal cost as well. If you’re interested in other DIY small hydro projects, here’s one made in part with used CDs, and a decidedly larger one built to power an off-grid homestead.

(Hydro gets screwed.)

**Hydro dam project using ancient technology set to begin in Meriden**

By Mary Ellen Godin Record-Journal staff, August 8, 2016, myrecordjournal.com

MERIDEN, CT — Project leaders for a first-of-its kind hydroelectric dam in North America are finalizing details with state and federal agencies before construction begins at Hanover Pond. "We're working very carefully with (the Federal Energy Regulatory Commission). We expect by the end of next week to have a better schedule. We want to make sure all the research is completed," said Christopher Conover, spokesman for New England Hydropower Co.

The project will harness ancient Greek technology to generate electric power at Hanover Pond. Although widely used in Europe, it is the first hydro project of its kind in North America, Conover said. The dam project received FERC approval a year ago and New England Hydropower has been working closely with the state Department of Energy and Environmental Protection. Work involves installing a large screw underground next to the Hanover Pond dam. Water will be
diverted into the screw at the top of the dam and will force the screw to slowly spin, creating electricity. A small shed, about 15 feet by 15 feet, will be installed alongside the dam next to the underground screw. The shed will house a generator and will be surrounded by natural screening and fencing. Wildlife and river advocates have raised questions about the project, particularly its timetable. Steve Sola, who photographs birds in the area, questioned whether project managers have made accommodations to protect the wildlife, particularly if there is a drawdown of the pond.

“What impact will there be if one day the water was automatically gone?” Sola asked. Sola is concerned about two swan families on opposite ends of the pond. The fledgling swans are about seven to eight months old and can’t fly. He recalls a similar situation last year when a pond was drained on Research Parkway and rescuers had to move the swans and turtles to North Farms Reservoir. He’s not too worried about the birds that can fly or the fish that can travel to the Quinnipiac River, just the swans. “It may be better to wait until the birds can fly,” Sola said.

New England Hydropower is working closely with DEEP on fish migration, water quality and wildlife protection. Initial plans had called for a six-foot drawdown of the pond, which would impact the rim, but the current drought means it will likely be less than that, Conover said. “The drawdown plan was never to take it all the way to zero but to take it to a place where you can do the channel work,” he said. “With the drought it’s not likely to have much of an impact.” The company has completed a thorough fish assessment with DEEP and devised a first-time fish monitoring program with cameras, Conover said. Getting details right is a priority. “This is not the only project like this we want to do,” he said. “This is a really important project.” Steven Montemurro, chairman of the city’s Energy Task Force, said the generator noise shouldn’t be disruptive to neighbors. The electricity would be fed into the Eversource Energy power grid. The city would then buy the electricity back with vouchers expected to save $298,000 over 20 years. Over the same 20 years the property taxes are expected to total $110,000. Although it depends on the cost of electricity, the city can expect to see roughly $20,000 per year for the next 20 years in electricity savings. “For a piece of property that wasn’t generating anything, $20,000 a year is pretty good,” Montemurro said.

State issues Water Quality Certification for Morrisville hydroelectric project
vermontbiz.com, 08/09/2016, Vermont Business Magazine

The Vermont Agency of Natural Resources today issued a final Water Quality Certification for local hydroelectric company Morrisville Water and Light. The certification includes conditions that the company must follow in order to meet current Vermont Water Quality Standards. Morrisville Water and Light is at the end of the Federal Energy Regulatory Commission (FERC) relicensing process for their hydroelectric project, which includes generating stations in Cadys Falls, Morrisville, Green River, and Lake Elmore. The new FERC license will be issued for a term of thirty to fifty years. To receive the license, Morrisville Water and Light must receive a certification.

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
from the State that the project will be operated in a manner that does not violate Vermont Water Quality Standards.

“The last time Morrisville Water and Light received licensure to operate was more than thirty years ago. The most basic criteria for what constitutes healthy aquatic habitat—such as minimum bypass flows to sustain vegetation, insects, and native fish—have evolved greatly in those thirty years,” states Agency Secretary Deb Markowitz. “Today’s certification reflects those major changes.” Vermont’s water quality standards ensure that the streams and rivers of the state support the many uses of waters by the public, which include maintaining and protecting the ecological health of waters, fisheries resources, aesthetics, and recreation. The federal Clean Water Act requires the State to review and update its standards every three years. The Agency’s final water quality certification issued today is the result of a robust public process and environmental review intended to ensure compliance with the Clean Water Act and the Vermont Water Quality Standards. The Clean Water Act and Vermont Water Quality Standards generally do not allow the Agency to consider economic impacts, though the FERC may consider economic and social impacts during the relicensing process. Several of the waters affected by the hydroelectric project currently do not support Vermont Water Quality Standards due to outdated water flow regimes. The most significant changes to operations at Morrisville Water and Light facilities contained in the new certification are:

- Increased minimum flows for reaches of river below the dams at Cadys Falls and Morrisville. Outflow rates from these dams must be consistent with inflow rates to provide true “run of river” conditions.
- Green River must mimic naturally occurring water flows more closely by increasing daily bypass flows and limiting high-volume releases.
- Green River must limit the magnitude of water level management at the Reservoir from 120 inches to 18 inches.
- A plan must be created to increase dissolved oxygen levels downstream of the Green River facility.
- The company must also develop a plan to ensure that recreational use and access to the waters associated with all Morrisville Water and Light facilities is maintained over the federal license term.

For a full copy of the final water quality certification and the Agency’s full response to public comments, go to: [http://dec.vermont.gov/watershed/permits/public-notices/401](http://dec.vermont.gov/watershed/permits/public-notices/401)

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**Environment:**
(Fish gotta swim.)

**Fish could clear another Bend dam**
Bend planning commission approves ladder on city’s north side
By Hilary Corrigan / The Bulletin, Aug 9, 2016, bendbulletin.com

A large stainless steel fish ladder could extend from North Canal Diversion Dam in Bend by October. The Bend Planning Commission voted unanimously Monday to approve construction of a fish ladder at the dam located west of NE Division Street and south of the Riverhouse on the Deschutes’ convention center. “We’re just excited to see it happen,” Deschutes Watershed Council Executive Director Ryan Houston said before the meeting. “It’s been in the planning...
The structure — a rectangular, prefabricated steel ladder measuring about 5 feet wide, 5 feet tall and 300 feet long — would stretch in a U-shape on pilings from the top of the dam to the bottom. "I think this is seriously cool," planning commission member Karon Johnson told the applicants. The project aims partly to let long-separated groups of fish meet up once again. The fish have historically moved through the Deschutes River from the Cascades to Terrebonne. But four dams in Bend have blocked that full route, and various organizations have long sought to secure fish passage at all of those dams. The dam’s segment fish populations, limiting the genetic diversity that helps strengthen the general health of populations and makes them more resilient to disease, drought and impacts from pollution. They also block fish from reaching better habitat and water temperatures at different times. The main concern lies with the redband trout, a type of rainbow trout that is native to the area.

Out of the four dams, North Canal Dam and the hydroelectric Mirror Pond dam off Newport Avenue lack fish passages. The other two are at SW Colorado Avenue — the southern-most dam and furthest upstream — and at Portland Avenue. The former got fish passage as part of a project funded through a 2012 bond measure and the latter has long had fish passage connected to it. The North Canal Diversion Dam is Bend’s northern-most dam, the furthest downstream. It diverts water for the Central Oregon, Swalley and North Unit irrigation districts. In 2010, the districts and the Oregon Department of Fish and Wildlife agreed to partner in providing fish passage after the districts planned to use water in their canals for hydroelectric purposes, triggering requirements to install fish passage at the dam that marks the point of diversion for their water.

Project proponents expect that by helping fish populations, the new ladder will help fishing, too, since people visit Bend specifically to catch the redband trout that are born and grow in the river without the use of hatcheries. The project’s approximately $1.6 million total cost consists of $400,000 from the districts, $600,000 from ODFW and a $689,000 grant that the Upper Deschutes Watershed Council got from the Oregon Watershed Enhancement Board, a state agency that provides grants for waterways and wetlands. The districts and dam owner Steidl Dam Co. Inc. have already secured federal and state permits for the project. The city planning commission approval marked the final approval needed. Project leaders aim to finish much of the work by October, because of limits on the window of time to do such work in waterways. The proposal has garnered no objections so far, according to the city. The project will proceed unless the planning commission’s decision is appealed.

Other Stuff:
(If you go hiking and have a smartphone with you, this is the backpack for you.)

HP made a backpack that can recharge your laptop
The HP Powerup Backpack
By Micah Singleton, August 7, 2016, theverge.com

Copy obtained from the National Performance of Dams Program: http://npdp.stanford.edu
HP’s new Powerup Backpack may look like a standard backpack, but this thing can recharge a full-size laptop thanks to a massive 22,400mAh battery. With that much juice you could recharge your smartphone 10 times. The canvas bag features ventilated pockets and heat sensor monitors and regulators to keep it from getting too hot.

FAA regulations state that any battery over 100 watt-hours is prohibited in checked or carry-on luggage, but exceptions can be made “with airline approval.” The battery in the HP Powerup Backpack is rated at 84 watt-hours, so there shouldn’t be any issues. As the owner of a suitcase with a built-in battery, however, I can tell you different countries have different rules when it comes to high-capacity batteries, and it can raise some time-consuming issues. While flying internationally with the bag may not be an issue for everyone, it’s definitely something to consider if you’re planning on dropping $200 on a backpack. The HP Powerup Backpack will be available on October 1st, and is available for preorder on Amazon today.

(For people who like to eat.)

5 Best US Cities for Foodies
You’ll want to wear your stretchy pants in New Orleans
By Arden Dier, Newser Staff, Aug 8, 2016, news.com

(NEWSER) – Who’s up for a foodie road trip? Travel and Leisure knows just where you should stop for gumbo and crawfish: New Orleans is the ultimate destination, according to the magazine’s ranking of the 10 best US cities for food, based on readers’ votes. The top five:
1. New Orleans
2. Charleston
3. New York City
4. San Francisco
5. Chicago
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