10/31/2014

Some Dam – Hydro News™

And Other Stuff

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Quote of Note: *"A quote is a personal possession and you have no right to change it."--Ray Cave*

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"Good wine is a necessity of life." - -Thomas Jefferson
Ron's wine pick of the week: **2011 Dry Creek Vineyard Merlot**
"No nation was ever drunk when wine was cheap." - - Thomas Jefferson

Dams:

(Dam good photo! The dam removal folks are everywhere.)

Historians and Greenfield mayor want Wiley & Russell Dam to stay

By Anita Fritz Recorder Staff, October 19, 2014, recorder.com

Greenfield, MA — Though it doesn't appear a decision will be made in the near future, people are still debating the fate of the 78-year-old timber crib dam that spans the Green River at Meridian Street.

For more than six years, river stewards have advocated for the Wiley & Russell Dam's removal to restore the river closer to what they say will be the naturally flowing river it was more than 200 years ago.

At one time, the town was on board with the Connecticut River Watershed Council, American Rivers, Massachusetts Division of Ecological Restoration, National Oceanic and Atmospheric Administration and U.S. Fish and

Wildlife Service, but now the mayor agrees with historians and wants to see the dam itself restored and repaired so that it can act as an educational anchor along Deerfield Street where the town has plans for a bikeway and walkway. Greenfield Historical Commission Chairman John Passiglia said last week that the Wiley & Russell Dam speaks for tens of thousands of people who have passed by it over the years, as well as the many people who worked in the factories along the river at one time.

"The dam is the history of the town," said Passiglia. "The town should stay true to the mission of its new master plan and develop a scenic byway there with the dam as its centerpiece. People can go by and see it and hear it. It's a great resource." Historians like Passiglia have said they believe the dam would provide great educational opportunities to residents, tourists and area students. Mayor William Martin said those who want to remove the dam have been trying to do so for more than six years and "it's not done yet." Martin said he thinks it is in the best interest of Greenfield to keep the dam. He said removing it would destroy the ecosystem that has established itself there after more than two centuries just to create a new one. Andrea Donlon, a river steward with the local watershed council, has said removing the dam would restore the ability for fish to move up and down the river. The problem, historians and town officials say, is that it has been determined the Mill Street Dam, which was also slated for removal early on and sits a quarter-mile upstream from the Wiley & Russell, cannot be removed because that would expose town sewer and water mains there and it would be too expensive for the town to cover them up.

The town and watershed council could build a fish ladder at the Mill Street Dam, but that would take more time and money. Former Greenfield Conservation Commission Chairman Alex Haro said he doesn't understand why the town wants to spend money repairing and maintaining a dam that serves "no useful function." He said the dam provides limited historic value. Ann Hamilton, head of the Franklin County Chamber of Commerce, said she would like to see the dam stay. "I think it will attract visitors," she said. "The dam presents an opportunity for the town. I don't see any reason to remove it." Timothy Neumann, executive director of Pocumtuck Valley Memorial Association in Deerfield, which is located just a couple of miles from the dam, said it would be of great educational value to young children, who could actually visit it and learn about Greenfield's industrial heritage. "Young kids need concrete identification to learn," said Neumann. "They would love to see the dam." Local green leader Nancy Hazard said she doesn't believe it would be the best use of town funds to maintain the dam. She said instead, the town should work on preserving its waterways and return the river to its natural flow. The Army Corps of Engineers came to town in 2008 with the idea to remove both the Wiley & Russell and the Mill Street dams.
It would cost between $300,000 and $350,000 to remove the dam — most of which would be covered by grants — but may end up costing a lot more to repair and maintain. Some have estimated that it could cost up to $500,000 to repair the Wiley & Russell. Then, there would be a yearly maintenance cost, which has not yet been determined. The Wiley & Russell, as it is today, goes back only about 78 years, but the earlier dams in the same spot could go back as far as the 1830s and maybe even as early as the 1700s, when the cutlery factory opened on the river just upstream, according to Passiglia. The dam powered Russell Cutlery Co. and later powered Wiley & Russell Manufacturing Co. and the Greenfield Tap and Die. "If the dam is removed, the history is gone," said Passiglia. Martin said he is not sure when a decision will be made, but doesn't see that happening any time soon.

(It was only a matter of time! Fire her. In other countries they'd hang him!)

NOAA Considers Whether to Ax Employee Accused of Breaching Army Dam Files

nextgov.com, 10/23/14

National Weather Service employee Xiafen "Sherry" Chen was arrested Monday at her office in Ohio for allegedly breaching an Army database containing sensitive files on U.S. dams. Now, the National Oceanic and Atmospheric Administration agency says it's reviewing whether to take administrative action against the hydrologist, NOAA officials said Tuesday. Federal charges against Chen include theft of government property and illegally accessing a U.S. government computer database. While working at a Wilmington, Ohio, NWS facility in May 2012, she allegedly "did steal and purloin certain sensitive, restricted and proprietary computerized fields of data involving critical national infrastructure contained in the National Inventory of Dams database maintained by the United States Army Corp of Engineers," court papers state. Chen is accused of having "intentionally exceeded authorized access" to the database, which means she likely did not break into the files, but rather downloaded information she obtained through her work privileges. A two-page indictment unsealed Monday by the U.S. District Court for Southern Ohio does not state for what purposes she intended to use the information.

NOAA "is currently reviewing whether administrative action is warranted," pursuant to applicable laws, rules and regulations," NOAA spokeswoman Ciaran Clayton told Nextgov on Tuesday.
It was NOAA's security team that detected a violation and referred the case to the U.S. attorney's office, the official said. U.S. authorities announced the case at a time when the Justice Department is cracking down on Chinese individuals who allegedly stole confidential data on behalf of China's People's Liberation Army. However, it should be noted, the indictment doesn't state Chen's nationality or link the alleged breach to any previous compromises.
Indictment Short on Details. In fact, what stands out to cybersecurity experts now is what the indictment doesn't say. "If you have an employee simply looking at a database of sensitive information, that's what we call a Tuesday -- it happens all the time," said Mark Rasch, former head of Justice's Computer Crime Unit. He said he expects federal authorities in the future will allege the data breach was carried out on behalf of a foreign power, most likely China.
"They haven't said it," he said. "That's the clear inference." The possibility of cyber espionage calls to mind a compromise of the same database, tied to the Chinese government, that started in January 2013 and continued into April 2013. That event generated fear China was planning to conduct a cyberattack against the U.S. power grid, by disrupting the escalating amount of electricity generated by hydroelectric dams, the Washington Free Beacon reported in May 2013. Dams listed in the registry are ranked by the number of people who would die if the infrastructure fails, according to the Army. Restricted fields of data include the "Nearest City/Town," "Distance to Nearest City/Town" and "Downstream Hazard Potential," among others. "The U.S. Army Corps of Engineers is aware that access to the National Inventory of Dams (NID), to include sensitive fields of information not generally available to the public, was given to an unauthorized individual in January 2013 who was subsequently determined to not have proper level of access for the information," an Army spokesman told the Free Beacon at the time of that breach. When federal officials questioned Chen about her activities in June 2013, she denied logging into restricted areas of the inventory to access data concerning critical national dam infrastructure, the indictment states. Prosecutors said this was an attempt to "willfully make a false representation," according to court documents.

FBI Won't Say if Incidents Are Related

On Tuesday, FBI officials declined to comment on whether Chen's activities are related to the 2013 incident. "We really can't say anything beyond what is contained in the indictment," Todd Lindgren, FBI spokesman for the Cincinnati division, told Nextgov. "More may come out during the court proceedings." The dam database infiltration reported last year might have been part of larger agenda, researchers say. "What we typically see in areas of Chinese espionage is they will

try multiple mechanisms to get in," Rasch said. The doorway could be cracked open by nabbing login credentials with spyware or by persuading an employee with access privileges to share data. The two incidents "may or may not be part of the same concerted effort," he added. "There has been a history of employees at U.S. companies being paid by the Chinese government to obtain information for China," including Chinese researchers in the United States and workers at manufacturing plants. Other private cyber analysts described this latest case as reminiscent of compromises they personally have traced to China. "National dams are a critical infrastructure that our enemies would love to get intelligence on that they could leverage in case of a military conflict," said Dmitri Alperovitch, co-founder and chief technology officer at cyber forensics firm CrowdStrike. While the indictment does not specify her affiliation with a foreign power, "it certainly can't be ruled out," he said. "We've seen cyber intrusions from China going after similar data."

(Keep them barges moving!)

Army Corp of Engineers Improving Morgantown's Lock and Dam Facility

wboy.com, October 21, 2014, By Jeff Schrock, Randolph, Tucker & Upshur County Reporter/Anchor

Morgantown, WVa - The U.S. Army Corp of Engineers are working to improve Morgantown's Lock and Dam facility. It has brought in its repair fleet from Neville Island, Pa. to the Morgantown Lock and Dam. It's making some maintenance repairs that the Corps said are necessary.
"We were pretty much at the point where we couldn't maintain the level in the lock chamber, without leaving the filling values open while we we're trying to bring vessels down. That would have continued to get worse, it's been getting worse for the last 18-24 months, and eventually we would have not been able to operate the lock," said Richard Lockwood, chief, Army corps of engineers operations division.

The lock and dam is one of nine navigation structures that provide year-round navigation on the Monongahela River between Pittsburgh and Fairmont. Workers will also work to get two of the six dam gates functioning again. The corps said this infrastructure is critical to the inland marine transportation system and national supply chain. "Each one of these facilities is critical in the capability for moving materials, people, and goods to the rest of the world from the rest of the world," Lockwood said. Upper Mon River Association President Barry Palley said the Mon River is essential for commerce and recreation, and that can't be done unless locks like Morgantown are in working order. "What we want to do is increase commerce on the river, we want to increase recreation, and we want to reopen the locks at Opekiska and Hildebrand. The focus here though is the maintenance of these locks and repair that we need to do," said Palley.
The corps said the original plan was to be out in early November. But due to the increase in the scope of work, the corps now looks to be finished before Thanksgiving.

Hydro:

(Pumped Storage is more valuable to power systems when it has operating flexibility.)

Letter: Missing our point

recorder.com, October 16, 2014

Headlines should reflect, not shape the news. Tuesday's Recorder (Oct. 7) reported the motion to intervene by the Franklin Regional Council of Governments (FRCOG) and the Connecticut River Watershed Council in the federal review of a request by FirstLight, owner of the Northfield Mountain Pumped Storage, to increase the generating output of the hydroelectric plant. The headline read "Hydro increase prompts protest: COG, watershed council intervene against proposed power boost." In our filing with the Federal Energy Regulatory Commission, the FRCOG and the Watershed Council chose not to oppose a temporary increase in the generating capacity of Northfield Mountain. Both organizations recognize that there could be an energy shortage in Massachusetts this winter and we appreciate the ability of facilities like Northfield Mountain to generate more power to help meet that need. Our concern, expressed in our joint motion to intervene and accurately described in the article by Richie Davis, is who dictates when the extra generating capacity will be used. Every gallon pumped from and released back into the river has environmental impacts. We believe that decision should rest with ISO-New England, the regional electric system's independent operator, whose primary interest is a reliable energy supply. It should not rest with the owner of Northfield Mountain, whose primary interest is capturing the profit of electricity prices that are projected to rise by as much as 37 percent this winter. The headline should have read "Organizations support temporary hydro increase when called for by regional electricity regulator." *Tom Miner, Chair, Connecticut River Streambank Erosion Committee of the Franklin Regional Planning Board and FRCOG*

(Making the efficient more efficient!)

Magnetek awarded $1M Hoover Dam contract

Oct 17, 2014, By David Schuyler, Digital Producer- Milwaukee Business Journal, bizjournals.com

Magnetek Inc., a Menomonee Falls-based manufacturer of digital power and motion controls systems used in elevators and material handling applications, has been awarded a more than $1 million contract to supply modern controls for four 300-ton power plant cranes for the Hoover Dam. Magnetek (Nasdaq: MAG) said Thursday that it is working with Precision Crane & Hoist Services of Henderson, Nev., on the project, which calls for the installation of Magnetek controls over a seven-month period beginning with the first installation in December. The cranes are used to move and maintain the 17 vertical hydraulic turbines housed in the two wings of the Hoover Dam. Hoover Dam provides hydroelectric power for 1.3 million people in Arizona, Nevada and California.

Water:

Similar Patterns Seem to Be the The Cause for The 1934 and The Recent Drought Affecting The State

By Deborah Paulson, dumb-out.net, 10/18/14

One of the worst American catastrophes of the last century was the drought of 1934. This drought might have been caused by the same factors than the drought California is currently experiencing, this according to a new study. The drought of 1934 was so severe that it encompassed seven times as much land than other droughts, during the years of 1000 to 2005. It was worse than the drought of 1580, which is the second most severe drought to affect the American continent. The drought of 1934 was the worse in history, because it was not regional like the one hitting California. The drought of 1934 affected more states of the American Union. The drought of 1934 was not only the worst drought in history, but it also appears to be different from other droughts in history. The difference between the 1934 drought and others in history is found within a very particular atmospheric phenomenon, which is present today.

There is a high pressure ridge that is hovering over the Western Coast of the United States. This "ridge" is an atmospheric phenomenon which blocks and deflects storms. The ridge is keeping storms from passing over the West Coast, keeping clouds carrying rain from the land. This is causing the shortage of water and the current drought. High pressure systems send storms farther North and away from the West Coast. The same kind of high pressure was present from 1933 all the way to 1934 and it was responsible for blocking storms and rainfall. Nobody knows for sure what causes the ridge to hover over the West Coast. It is believed that changes in the ocean's temperature are responsible for this, but there is not enough evidence that supports this theory. These atmospheric patterns have been present during times when droughts have affecting the Western United States. A pattern similar to this was present during the drought of 1976.

(What's the alternative – pray for rain!)

Battle lines drawn over state water bond

Opponents say measure is massive, misguided expense

By Chris Nichols, Oct. 18, 2014, utsandiego.com

Sacramento — California voters will decide this fall whether to approve a $7.5 billion water bond aimed at easing future droughts such as the one that's gripped the state for three years in a row. The measure is on the ballot as Proposition 1, the Water Quality, Supply and Infrastructure Improvement Act of 2014. If approved, it would fund new dams in Central and Northern California; clean up groundwater in Riverside and Los Angeles counties and restore much of the Sacramento-San Joaquin Delta, where the state gets a vast portion of its water supply. Campaigns for and against the measure are in full swing, with supporters describing the bond as critical to ensuring California's future water supply and opponents calling it a massive, misguided use of taxpayer money. A recent poll showed that 58 percent of likely California voters favor the proposition. That high number is likely driven by the state's ongoing drought, said several local political observers, one of whom added that opponents of the measure have "a very uphill battle." "The advantage has to go to the 'Yes' side because, for once, the Legislature and governor got it right in

putting a good, sensible measure on the ballot," said John Dadian, a San Diego-based political consultant. Dadian said of opponents: "They're not offering any alternatives, and everybody knows there's a severe drought going on, especially in San Diego." Below is a look at what the bond would do statewide, what the dueling campaigns are saying about it and how it might affect San Diego County.

Bond proposals

Proposition 1 would set aside $4.2 billion to increase California's water supply. Of that, $2.7 billion would go toward two new dams, likely at Sites Reservoir in Colusa County and another in the Central Valley. The California Water Commission would decide which projects to fund.
Also included is $725 million for water recycling and desalination projects, considered top priorities in arid San Diego County. San Diego's water and political leaders strongly support the bond because of its potential boost regional projects to become more water independent. Efforts such as the city of San Diego's Pure Water project to recycle highly treated wastewater into drinking water could benefit from bond funding. The measure could also spur additional desalination plants like the one under construction in Carlsbad. In addition to funding water supply, the bond would set aside $1.5 billion for watershed protection and restoration, and $1.4 billion for improvements to groundwater and surface water quality.

Too costly?

The "Vote NO on Prop 1" campaign says the measure is too focused on building dams, too favorable to agribusiness and costs too much. Once completed, the two new dams will increase the state's water supply by just one percent, according to the campaign. Ratepayers who benefit from the added water storage, such as large farms in the Central Valley, should pay for the new dams, not taxpayers statewide, opponents argue. They point out that, with interest, the bonds will cost more than $14.4 billion to repay, requiring taxpayer repayment of $360 million per year for 40 years. "We're giving up all this money for unsustainable agriculture. … Prop. 1 ain't going to fix (anything)," Steve Hopcraft, spokesman for the campaign, said on Friday. Marco Gonzalez, a prominent environmental attorney from the San Diego region, said Proposition 1 offers little for the local area. "From a San Diegan's perspective, Proposition 1 ignores the fact that we are at the end of the water pipeline, and among the most precarious regions susceptible to impacts of long term drought," Gonzalez, head of the Coastal Environmental Rights Foundation, wrote in a recent U-T San Diego commentary. "With more than $5 billion allocated to projects on the San Joaquin River, Shasta Lake, and reservoirs in Contra Costa and Merced counties, San Diego and the rest of Southern California are being hung out to dry."

Strong backing

Chris Crotty, a San Diego-based political consultant, said opponents of the water bond will score some points. "I think (the opposition) will certainly draw voters away from the measure. But given the resources that Prop 1 has, I don't think the environmental organizations will be able to match it," Crotty said. Some of those resources come from state firefighting organizations and the campaign for Gov. Jerry Brown. Crotty said a TV commercial featuring a state fire official supporting both Proposition 1 and Proposition 2, which would create a rainy day fund, could resonate strongly in fire prone San Diego County. "Props 1 and 2 protect the water and the fire services we need," the official says, as the commercial shows images of firefighters battling wildfires. On the water bond's campaign website, paid for by a coalition including the governor, supporters described the measure as "a no-frills investment in critical projects that doesn't break the bank." "California is in a severe, multi-year drought and has an aging water infrastructure," the website says. "That is why Republicans and Democrats and leaders from all over California came together in nearly unanimous fashion to place this fiscally responsible measure on the ballot."

(There's a whole lot of water out there if you can afford it.)

Could desalination solve California's water problem?

By Matt Weiser, sacbee.com,10/18/2014

Carlsbad, CA - Along this patch of the Pacific Ocean, welders and pipefitters nearly outnumber the surfers and sunbathers. Within sight of the crashing waves, the laborers are assembling what

some hope will make water scarcity a thing of the past. They are building the Carlsbad Desalination Project, which will convert as much as 56 million gallons of seawater each day into drinking water for San Diego County residents. The project, with a price tag of $1 billion, is emerging from the sand like an industrial miracle. In California's highly regulated coastal zone, it took nearly 15 years to move from concept to construction, surviving 14 legal challenges along the way.

The desalination plant is being built by Poseidon Water, a private company, and will be paid for in large part by rate increases on San Diego County water customers. On the surface, the plant resembles any other major construction project: Construction cranes scrape the sky as concrete foundations are poured; the giant new blocky building could be any warehouse or parts factory.
Inside, the truth of the project is revealed. The building will house more than 16,000 reverse-osmosis membranes – salt filters, essentially – that will convert the Pacific Ocean into drinking water suitable for making coffee and watering lawns.

"It's effectively where the magic happens," said Peter MacLaggan, a Poseidon vice president, as he surveyed racks upon racks of the tubular membranes. Reverse-osmosis desalination was invented in California in the 1950s. But other nations with fewer natural freshwater supplies – Israel, Australia, Saudi Arabia and others – embraced the technology first and built dozens of projects over the past few decades. When the Carlsbad plant begins operating in 2016, it will be the largest desalination project ever built in the Americas. Desalination on this scale is so new, said MacLaggan, that Carlsbad will be operated initially by an Israeli subcontractor, which will help train a staff of California workers. The eyes of a thirsty state are trained on this project: It is a crucial test for an industry eager to expand in California, where residents are famously protective of their coastline and also accustomed to relatively cheap water. In short, the Carlsbad project is challenging California's status quo while also offering the tantalizing prospect of relief from drought. "This plant can't come online fast enough," said Bob Yamada, water resources manager at the San Diego County Water Authority, which serves 3.1 million people and is buying all of the plant's freshwater production. "It's drought proof. That's one of the most important attributes. It will be the most reliable water source we have." The water authority's 30-year contract with Poseidon illustrates both the promise and peril of this water source. San Diego County agreed to pay for 48,000 acre-feet of water from the plant every year – whether it needs the water or not – to ensure a guaranteed supply. The water will cost $2,257 per acre-foot, about double the price of the authority's most expensive current supply, which is water imported from the Sacramento-San Joaquin Delta more than 400 miles away. Under this so-called "take-or-pay" contract, the water authority can purchase an additional 8,000 acre-feet each year if necessary, which reduces the price slightly, to about $2,000 per acre-foot. One acre-foot is enough to serve two average homes for a year. At a total output of 56,000 acre-feet, the plant will meet 7 percent of San Diego County's annual water demand. Another way to look at it, said Conner Everts, co-chair of the Desal Response Group, a coalition of conservation groups critical of desalination, is that the Carlsbad project puts a $108 million burden on San Diego County water ratepayers every year, drought or not.

"If you look at our choices based on costs and (environmental) impacts, desal should always be at the bottom of that list," Everts said. "It's kind of an engineer's dream, but there's a lot of challenges to it." One of the big challenges is energy demand. Desalination requires more electricity than nearly any other water source, because water must be forced through reverse-osmosis membranes by high-pressure pumps. The San Diego County Water Authority committed

to the Carlsbad project partly because it anticipates imported water will become more expensive over time and eventually reach parity with desalination.

Electricity is a major cost

Others view that equation differently. Four years ago, the city of Long Beach abandoned its desalination plans because of the energy cost. “The primary driver of the cost of imported water is the same as desalination: It’s the price of electricity,” said Kevin Wattier, general manager of the Long Beach Water Department. “It’s just way more expensive than imported water, and we have other options we would consider before that, such as recycled water or groundwater storage.”

Other communities have also recently dropped desalination projects. The city of Santa Cruz, with no imported water to shore up its supplies, rejected desalination after an uproar from residents concerned about the cost and environmental risks. Since then, residents have cut their water consumption to one of the lowest levels in the state – 62 gallons per person per day – and succeeded in prolonging local reservoir storage. The Marin Municipal Water District also decided for similar reasons in 2010 not to pursue desalination, and it boosted conservation efforts instead. “That is the least expensive and most immediate way to add reliability to our water supply, so that’s what we’ve been doing,” said Libby Pischel, a spokeswoman for the district.

The state has more than a dozen permitted desalination plants, but they are all small. When Carlsbad begins operating, it will produce about 25 times more drinking water than all of them combined. About a dozen new desalination projects are in various planning stages throughout the state. Only a few are as large as Carlsbad. The nearest to construction is another Poseidon project, proposed in Huntington Beach. A final permit from the state Coastal Commission comes up for a vote late in 2015. Anticipating more proposals, the State Water Resources Control Board is drafting new regulations to govern desalination. The rules focus primarily on two crucial operating features: seawater intakes and outfalls. Desalination plants operate by drawing in seawater. Unless that intake is carefully designed, it can harm marine life. Reverse-osmosis filters are so fine that they allow only water molecules to pass. Everything else entering the desalination plant is killed. One solution is fish screens, similar to those widely used at water-treatment plants along California rivers. Carlsbad, for example, will use fish screens with openings just 1 mm wide – about the thickness of a credit card. These will strain out at least 95 percent of juvenile fish, but only 20 percent of all organisms, MacLaggan said. The remaining 80 percent – including tiny zooplankton and fish eggs – will be sucked into the desal plant and killed.

“Those small things form the basis of the food web,” said Victoria Whitney, deputy director for water quality at the state water board.

Help with cleaning

The desalination industry worldwide largely favors screened intakes, because they are cheaper and easier to build than the subsurface intakes favored by the water board in its draft regulations. Subsurface intakes operate much like a septic tank leach field, but in reverse. Ocean water is drawn through perforated pipes buried in the seafloor. The overlying mud and sand act as a fine filter to screen out nearly all organisms. Such intakes are far more expensive to build, and may require periodic cleaning. One of the first large subsurface intakes at a major desalination plant, in Fukuoka, Japan, has shown no need for maintenance at all. Tom Missimer, a geology professor at Florida Gulf Coast University and a longtime consultant in the desalination industry, suspects a natural cleaning process is at work. Tiny worms and other organisms in the seabed eat sediments, algae and other material that could clog the intakes, he said. Then those feeders excrete hard pellets that become a new filter material. After eight years, the seabed filter system at Fukuoka seems to be self-sustaining, Missimer said. “If something wasn’t cleaning it, it would have clogged a long time ago,” said Missimer, who was a consultant on the Fukuoka plant.

Subsurface intakes provide another benefit. Because they screen out so much material, numerous prefiltering steps are not required before water reaches the reverse-osmosis membranes. At Carlsbad, for instance, water will first pass through gravel and sand filters, then charcoal, then a fine filter screen – all before undergoing reverse osmosis. Each avoided step saves money, because it means less equipment purchased up front, less electricity consumed and less maintenance. “You apply that to a 30-year economic analysis, and you start to see suddenly there are some very good reasons for using subsurface intakes,” Missimer said.

It remains to be seen if similar results can be achieved in California, because every patch of seafloor is different. But one project suggests it might work. The city of Long Beach started a small desalination plant in 2006, as a test project, using a subsurface intake in the surf zone. The city stopped operating the plant in 2010 and dropped plans to pursue desalination, but the intake continues pumping water in a loop to test the technology, Wattier said. After eight years, the intake required maintenance just one time, when a pipe broke. "It's held up just fine," Wattier said. "Ours is cleaned by just the very gentle surf action we have in Long Beach." The second major environmental concern is discharge water. Most desalination plants take in two times more seawater than the fresh water they produce. To produce 50 million gallons per day of fresh water, Carlsbad will draw in 100 million gallons of seawater. The difference is returned to the ocean as discharge water, but with its salinity doubled. The discharge water is so salty that it doesn't dissolve well in the ocean. "It's like oil and vinegar – they stay separate," Whitney said. "You end up with these very large dead zones … where you have really salty water just sitting on the ocean bottom." Carlsbad will deal with this problem by mixing the salty water with cooling water discharged from the neighboring NRG Encina power plant (also the source of its intake water). As a result, the discharge water will be only about 20 percent saltier than the ocean. Another approach is to disperse the discharge water under the ocean surface using spray nozzles. This encourages mixing of the salty discharge and is one recommendation in the state's draft regulations. The water board expects to adopt the new regulations early in 2015. But MacLaggan said the velocity from such sprayers is so great that it can kill some sea life. "We think we've struck the right balance with the project we've put forward," he said. Everts, of the Desal Response Group, feels differently. "They've been pretty insistent on doing this the old-fashioned way," he said. "We don't want that plant to define everything else."

Water agencies are wary

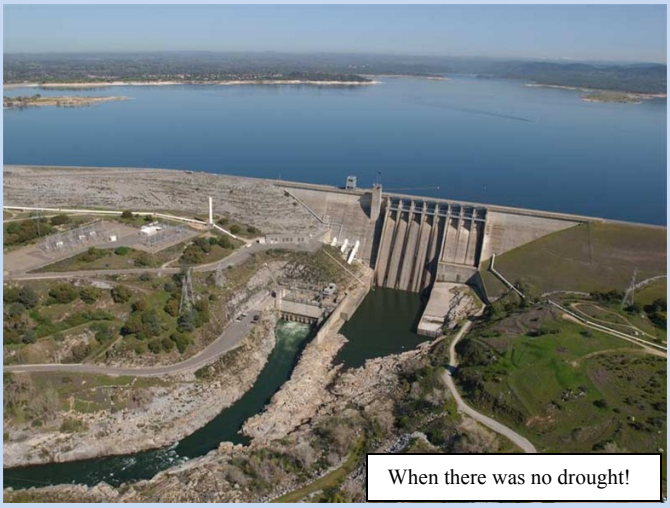
Will desalination emerge as a major new tool to deliver California from water shortages? That seems unlikely, at least in the near future, given the small number of new projects now in the works. Also, some very big players don't seem interested. Customers in the city of San Diego will help pay for the Carlsbad plant through their water bills, which could increase as much as $5 a month. But they aren't expected to receive any of the plant's desalinated water, said Brent Eidson, a spokesman for the city utilities department, because most of their water comes from the city's treatment system, not the county's. While the city supports the Carlsbad project, it does not plan to build its own desalination facility. Instead, the city plans to pursue wastewater recycling. The proposal will treat city sewage to drinking-water standards and use it to refill reservoirs. It is expected to deliver nearly twice as much fresh water as the Carlsbad plant – enough to meet one-third of the city's total demand – at about 20 percent cheaper than desalination. The project has been embraced by environmental groups. In Los Angeles, Mayor Eric Garcetti on Tuesday announced an aggressive program to expand water conservation. He also directed city staff to cut the city's reliance on imported water in half by 2024. His directive named almost every potential option to reach that goal, including stormwater capture, water recycling, groundwater treatment and even new storage facilities. Desalination was noticeably missing from the list.

"We believe in being innovative and open-minded when it comes to tackling the water crisis," mayoral spokeswoman Marie Lloyd said via email. "At the same time, we do understand that desalination is quite expensive today." On the other hand, the Metropolitan Water District of Southern California, the largest wholesale supplier in the region, on Tuesday approved a new program offering local agencies as much as $340 per acre-foot to subsidize desalination projects. Missimer said proceeding cautiously is one thing. But it would be unwise to exclude desalination, he said, either because of ideology or burdensome regulations. He recently returned to the U.S. after living in Saudi Arabia for four years, where he taught at King Abdullah University of Science and Technology and worked as a desalination consultant. Conditions there are very different from California, he said, because Saudi Arabia has few water sources other than the ocean: no mountain runoff, very little rainfall and severely depleted groundwater. On second thought, he said, California may not be so different. "Under global climate-change scenarios, you're going to have more extreme droughts," he said. "Also, if you look at your current situation, if it doesn't rain very soon you've got one whale of a problem. Do you really want to take the chance of having to evacuate Southern California if it doesn't rain?"

(Ya got to be kidding! And, if there were no dams, what would do?)

Study: 181 California Dams Key For Fish Survival

By Ed Joyce, October 22, 2014 | Sacramento, CA | capradio.org



When there was no drought!

UC Davis researchers have identified "high priority" dams for fish survival in California. In a study, the scientists evaluated 753 large dams in the state. Researchers said 25 percent, or 181 California dams, may need to increase water flows to protect native fish downstream. Lead study author Ted Grantham said providing more water for fish during the drought may not be popular, but a strategy is needed to keep rivers flowing below dams. Otherwise, he said flows will be too low to sustain health fish populations for the dams on the "high priority" list. He said those include the Folsom Dam on the American River, the Trinity Dam on the Trinity River and the New Melones Dam on the Stanislaus River.

A 2013 UC Davis study showed that salmon and other native freshwater fish in California will likely become extinct within the next century due to climate change if current trends continue. Grantham said how dams are managed will determine the survival rate of many native fish species. “It is unpopular in many circles to talk about providing more water for fish during this drought, but to the extent we care about not driving native fish to extinction, we need a strategy to keep our rivers flowing below dams,” said Grantham, a postdoctoral researcher at UC Davis during the study and currently a research scientist with the U.S. Geological Survey. “The drought will have a major impact on the aquatic environment.” The study received funding from the Natural Resources Defense Council, California Trout, Trout Unlimited, the S.D. Bechtel Jr. Foundation, and the California Energy Commission Public Interest Energy Research Program.

Other Stuff:

(Not much power but it uses no land area. Don’t imagine it’s much use many places because of wave action/)

UK gets its first floating solar power project

September 30, 201, by Dorothy Davis Ballard, Content Director

The UK's first floating solar energy project has been installed on a water reservoir at Sheepland's Farm in Berkshire, England, according to the Telegraph . The project consists of 800 solar panels mounted on plastic floats that are attached together to span roughly an acre on the water surface and provide 200 kW of capacity. The Hydrelio Floating Solar System was developed by French company Ciel el Terre and will be distributed in the UK by

the newly-formed Floating Solar UK and installed by renewable energy specialists The Greener Group.

"The launch of our new installation signals what we hope is a revolutionary new alternative for owners of large used, and unused, bodies of water who are wanting to generate both renewable energy and sustainable income," said Floating Solar U.K. CEO Mark Bennett. Bennett believes the floating panels offer a more economical option than land-based solar energy projects, which take up valuable agricultural space. The floating panels also have a lower cost to install because there's no excavation work, according to the Telegraph, and have the potential to generate more energy because the cooling effect of the water may boost energy conversion. Other benefits of the Hydrelio technology, according to a promotional sheet from The Green Group, are a reduction of water evaporation by up to 33 percent and reduced algae growth because of the shading the floating panels provide. The Sheeplands Farm development was installed at a cost of £250,000 (US$405,000) and is eligible for rate-payer funded renewable power subsidies, which Bennett anticipates will provide a return of approximately £20,500 (US$33,000) annually over the next 20 years.

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