Oregon Water Coalition
Member Newsletter

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Market-based water quality trading in NW? Pilot projects to begin this year

Water quality agency staff from Idaho, Oregon, and Washington, U.S. EPA Region 10, Willamette Partnership, and The Freshwater Trust released draft recommendations this week on approaches to water quality trading in the Pacific Northwest.

The recommendations are based on the group's evaluation of policies, practices, and programs across the country, which helped to identify some common principles and practices to guide consistent approaches to water quality trading in the region.

Willamette Partnership facilitated the group through a U.S. Dept. of Agriculture Conservation Innovation Grant.

Water quality trading is a market-based approach to achieving water quality goals for pollutants such as nitrogen, phosphorus and temperature.

Through trading, some permitted emitters with high costs of reducing pollution are able to negotiate equal or greater pollution reductions from sources with lower cost. This effort focused specifically around trading between non-point and point sources.

Launched in March 2013, this effort came in response to the growing interest in trading in the region as well as the wide diversity of proposed approaches.

The participants wanted to ensure that water quality trading programs have the quality, credibility, and transparency necessary to be consistent with the Clean Water Act and state water quality laws.

To do this, the workgroup identified the critical components of water quality trading programs and recommended a number of approaches to address these components. These recommended approaches are intended to increase the confidence of participants and observers that trades will produce their intended water quality benefits and will result in compliance with state and federal law.

Establishing a credible water quality trading program is not simple and trading may not be appropriate for many water quality problems, say the participants.

However, when designed well and combined with other tools, the participating states, in a press release, said they "believe that trading programs can help achieve water quality goals in a way that is consistent with the CWA, avoids localized water quality problems, is based in sound science, provides sufficient accountability that water quality benefits are being delivered, and is beneficial for the environment, landowners, and communities."

This week the group released the draft recommendations document, "Regional Recommendations on Water Quality Trading," with an accompanying joint statement of support from the states and letter of support from US EPA Region 10, which are the result of its work.

Beginning in 2014, the participating states have committed to testing their recommendations and are currently working to identify pilot projects.

The states and EPA will then reconvene in late 2014 or early 2015 to discuss their pilot experiences and, if needed, refine the guiding principles and draft recommendations for water quality trading by the fall of 2015.

Since the documents produced from this process are not guidance or policy, the respective state participants that choose to develop trading guidance or rules in the future will do so according to their individual state processes.

To review the documents generated through this process, please click here. http://www.deq.state.or.us/wq/trading/trading.htm

What is water quality trading?

Oregon Department of Environmental Quality says water quality trading "is a program that allows DEQ permittees discharging wastewater to Oregon's waterways to obtain pollutant reduction credits from other pollutant dischargers or pollution-reduction activities within the same geographic area. These permittees typically include sewage treatment plants and industrial wastewater plants. Operators of other types of activities that impact the state's waterways, such as hydroelectric dams, may also participate in trading."

When is trading allowed?

"DEQ only allows trading when it addresses the source or sources of the pollution problem and does not negatively affect the environment. Trading cannot be used to avoid existing federal and state treatment requirements."

Examples of water quality trading:

- Wastewater treatment plants trade between themselves – one plant is allowed to discharge more of a pollutant provided another plant discharges less.

- A wastewater treatment plant offsets its pollution impact with activities that reduce the pollutant of concern but are not located at the plant. For example, a treatment plant discharging warm treated wastewater to a river is allowed to plant trees and other vegetation on the river bank instead of installing wastewater chillers.

"This approach makes sense in areas where instream temperatures are warm enough to be unhealthy for fish and the main cause of warming is the removal of bank vegetation (no shade to block the sun from warming the water) rather than the wastewater discharge," says DEQ.

"Allowing this type of trade also has additional benefits: wildlife habitat is created; the treatment plant saves money because it does not have to purchase and operate wastewater chillers; and greenhouse gas emissions from operation of the chillers are prevented."

Columbia Basin Bulletin

Oregon misses key water supply fund deadline

by Mateusz Perkowski

Oregon resource agencies missed an important deadline in configuring a water supply fund because Gov. John Kitzhaber hadn't appointed the task forces needed to develop the program.

In August 2013, Kitzhaber signed legislation aimed at creating a $10 million Water Supply Development Account, which would provide grants and loans for additional storage and other projects.

A key component in establishing the fund is a report about "seasonally varying flows," which will help the Oregon Water Resources Department determine how much water in a stream can be stored without affecting its ecological functioning.

Without that report, which was due July 1, stream flow regulations can't be finalized and the water supply fund cannot issue any money. However, that deadline passed without Kitzhaber appointing a task force to write the report.

Likewise, another task force geared toward resolving uncertainties about the fund's governance also wasn't appointed on July 1, the date its report was due.

Gov. Kitzhaber's natural resources policy director, Richard Whitman said the task forces have since been appointed and will begin meeting on Aug. 15.

However, the delay throws into question the fund's ability to begin dispensing cash in the spring of 2015, as originally intended by legislators, said Steve Shropshire, a water rights attorney. "Is the department going to be ready by then? Probably not, at this point," Shropshire said.

Rep. Cliff Bentz, R-Ontario, supported the bill's passage and is concerned by the delay, but said it's crucial that the "seasonal flows" report devises a reasonable method for allocating water.

"We've got to get that piece right," he said.

Unless storage projects can retain a significant amount of water, it would be economically prohibitive to spend millions of dollars building them, Bentz said.

A previous water supply fund approved by lawmakers proved unworkable due to the onerous environmental requirements involved, he said.

Bentz said he was told by the Kitzhaber's office that a great deal of care was taken to find the best qualified people to serve on the task forces.

"For me, it's about getting it done right rather than getting it done as fast as possible," said April Snell, executive director of the Oregon Water Resources Congress, which represents irrigation districts.

Snell said she's hopeful the regulations can still be implemented by next spring, but it will be tough for water regulators to work on the rules during the next legislative session, as they will have additional obligations related to bills being written.

"It's ambitious but it's not undoable," she said.

Katie Fast, vice president of public policy for the Oregon Farm Bureau, said the task forces would have to move fast for the fund to become available as planned.

After they write up their recommendations, state officials must still formally adopt regulations, she said. "The rule-making process alone takes some time."

Mateusz Perkowski, Capital Press

Warm conditions in Gulf of Alaska may affect Salmon, Steelhead survival

Menacing "El Niño" signs have eased, though not disappeared. But another potential salmon nemesis – an apparent warm phase Pacific Decadal Oscillation – has made an appearance with warmer than average sea surface water conditions from the Gulf of Alaska and the eastern Bering Sea down to the so-called California Current off the coast of Oregon and Washington.

"It should be noted that those Columbia/Snake River spring chinook and steelhead stocks that entered the ocean this spring and traveled to the Gulf of Alaska to feed may experience very poor survival this year due to the exceptionally warm conditions (and likely associated low productivity) in the Gulf of Alaska," according to information provide by NOAA Fisheries' Bill Peterson, a senior scientist and oceanographer with the agency's Northwest Fisheries Science Center.

Peterson and Phil Mote on Tuesday provided the Northwest Power and Conservation Council with an update on patterns of climate variability, such as the El Niño-Southern Oscillation (ENSO) that could affect Northwest weather, the region's precipitation and snowpack accumulation and the ocean food web. Mote is director of the Climate Change Research Center at Oregon State University.

Those environmental conditions within the Northwest and in the Pacific can affect the survival of Columbia River basin salmon stocks, including imperiled species that are listed under the Endangered Species Act.

Water temperatures in the Gulf of Alaska "have never, ever, ever" been as high as they are right now, according to Peterson. The surface water is 2 degrees centigrade higher than the previous recorded high, he told the Council. That temperature data goes back to 1900.

"Neither of these conditions are good for salmon, perhaps especially for the types that migrate to the Gulf of Alaska to feed (spring chinook and steelhead; fall chinook and coho to a much lesser extent)," Peterson said of the existence of the warm phase PDO and uncharacteristically warm water temperatures in the Gulf of Alaska. The PDO is a pattern of climate variability in the North Pacific identified by sea surface temperatures. The warm phase has been in evidence since the first of the year. Research has shown that when warm phase PDO settles in "the zooplankton community structure in the northern California Currrent becomes more sub-tropical in nature and becomes dominated by lipid-poor species. This bodes ill for West Coast salmon…," according to a memo.

More lipid-rich species are available to provide fatty nourishment for salmon when water temperatures are cooler. These warm and cool phases result from the direction of winter winds in the North Pacific: winter winds blowing chiefly from the southwest "result in warmer conditions in the northern California Current," according to information posted on the NWFSC web page.

"The CC warms at such times due to onshore transport of warm waters that normally lie offshore. Conversely, when winds blow chiefly from the north, upwelling occurs both in the open ocean and at the coast, leading to cooler conditions in the northern CC," according to the science center.

Either phase can persist for a decade or too according to records, but those cycles seem to have shortened in recent times to about five years, Peterson told the Council.

"The listing of several salmon stocks as threatened or endangered under the U.S. Endangered Species Act coincides with a prolonged period of poor ocean conditions that began in the early 1990s," according to the science center.

The return of El Niño conditions after several years' absence seemed likely according to ocean, wind and rain signals monitored this late spring and early in the western Pacific east of Australia. Warmer than normal sea surface temperatures that persist and spread eastward across the Pacific eventually (after averaging certain levels of divergence for the norm for at least three months in a row) warrant an El Niño declaration.

"In April and May it really looked like this was going to be a humdinger," Mote said of rising sea surface temperatures and other climatic signals being observed in

the equatorial Pacific. But cooling has been witnessed in recent times. "Right now it looks like nature has backed off a little bit on El Niño," Mote said. "All of our indices are trending back toward normal territory."

"Temperatures are actually cooling at the equator, Peterson said, including off the coast of southern Peru and to some degree in the California Current. The California Current moves south along the western coast of North America, beginning off southern British Columbia, flowing southward past Washington, Oregon and California, and ending off southern Baja California.

"During an El Niño event, the normal patterns of wind and warm water are disrupted and shift eastward, affecting climate in the Northwest and other places," according to the July 29 memo from Jim Ruff, manager, Mainstem Passage and River Operations, for the NPCC.

"In the Northwest, the winter and spring climate during El Niño events are typically somewhat warmer and drier than usual, leading to somewhat lower snowpack, streamflow and other changes. The climatic and hydrologic effects of can vary considerably with the strength of the El Niño – and can differ from place to place."

Mote said that during El Niño periods with reduced precipitation and snowpack, average during April-September streamflows "shifts down by about 10 percent."

According to the Aug. 7 Climate Prediction Center's ENSO alert system update, the chance of El Niño during the Northern Hemisphere fall and early winter has decreased to about 65 percent. That's down from an 80 percent assessment made a month earlier by the CPC.

The monthly CPC discussion is a consolidated effort of the National Oceanic and Atmospheric Administration (NOAA), NOAA's National Weather Service, and their "Over the last month, model forecasts have slightly delayed the El Niño onset, with most models now indicating the onset during July-September, with the event continuing into early 2015," the CPC discussion says.

"A strong El Niño is not favored in any of the ensemble averages, and slightly more models call for a weak event rather than a moderate event. At this time, the consensus of forecasters expects El Niño to emerge during August-October and to peak at weak strength during the late fall and early winter (3-month values of the Niño-3.4 index between 0.5°C and 0.9°C)."

According to the July 29 Council memo, "even if there is only a weak to moderate El Niño event in 2014/15, juvenile salmon entering the California Current Ecosystem in 2015 are likely to experience very low survival due in part to the 'warm blob' that occupies the entire Gulf of Alaska as well as waters of the offshore California Current off Washington and Oregon. Other fished species are likely to be affected in a similar manner because the food chain upon which they depend will have lower bioenergetics content."

Columbia Basin Bulletin

Technology turns manure into clean water

by Carol Ryan Dumas

Technology aimed at increasing the quality of water extracted from manure — at a rate of 50 gallons of clean, reusable water from 100 gallons of liquid manure — will soon be available for use on dairy farms.

The system, rooted in Michigan State University research, couples an anaerobic digester with an ultrafiltration, air stripping and reverse osmosis system. The result is water clean enough for livestock to drink. The goal is to increase the rate of clean water recovery to 65 gallons per 100 gallons of liquid manure.

At some point, the ability to reuse water from the manure on the dairy for watering cows becomes the Holy Grail, particularly in arid regions, said Steve Safferman, associate professor of biosystems and ag engineering at Michigan State University, which initiated the research about nine years ago.

In addition to water recovery, the separation system extracts nutrients from the manure that can be applied to land as fertilizer, he said.

The initial goals of the research were to improve anaerobic digestion and improve the quality of water exiting the system. Researchers found there wasn't a direct benefit on microbial activity without other technological components, but they did find the system could improve water quality and extract nutrients, he said.

The beauty of the system, he said, is able to separate and concentrate nutrients while producing clean water.

Environmental engineer Jim Wallace, who worked on the project and earned his doctorate from MSU, has continued development and commercialization of the system with McLanahan Corp. of Hollidaysburg, Pa.

The McLanahan Nutrient Separation System begins with a pre-treatment tank, an anaerobic digester that generates biogas and energy and separates out solids, he said.

From there, the water stream moves to an ultrafiltration membrane that separates by particle size, removing phosphorous and organic nitrogen. The water moves downstream to an air stripping system that removes ammonia and combines it with water and sulfuric acid to capture the ammonia as ammonium sulfate, which is a substitute for commercial fertilizer.

The water is then treated by reverse osmosis, a process that separates based on molecular size, producing potassium and clean water. That clean water is suitable for direct discharge or other uses such as irrigation, Wallace said.

Manure has always been used as a resource, but increasing consolidation of animal agriculture makes it more challenging for farmers to manage the resource, he said.

"It really comes down to how nutrients are managed on the farm by segregating and concentrating nutrients so they can be used where and when they're needed. As well as adding value to water, in a sense we improve the cost structure of dairy farming," he said.

Cost of the system is hard to pin down because of all the variables in farm operations, but a reasonable ballpark figure would be in the range of $500 per cow, Wallace said. The cost of simply moving liquid manure from storage to land application runs 1 to 2 cents per gallon, and cows generate 35 gallons of liquid manure a day, he said.

Doing the math, a 3,500-cow dairy would generate nearly 45 million gallons of liquid manure a year. Multiplied by 1.5 cents per gallon, it would cost nearly $671,000 per year to move that manure. At $500 per cow, the separation technology would cost $1.75 million.

The take away is that the capital and operating costs of the system can potentially be offset by savings from moving the manure, electricity generation, capturing ammonia that would otherwise be lost to the atmosphere, and enhanced nutrient use, Wallace said.

For a 3,500- cow operation, the system would require a 60 foot by 80 foot building to house the ultrafiltration, air stripping and reverse osmosis system. An anaerobic digester would be housed outside, Wallace said

The first commercial push will be with McLanahan's dairy clients, but there is also application in the hog industry, he said.

Tying the separation system to anaerobic digestion makes a lot of sense, creates a synergy in manure management, but McLanahan is also evaluating how a non-digester stream would perform, he said.

"I do think that's conceivable … we're still a few months from that answer," he said.

Carol Ryan Dumas, Capital Press

Forecasters say El Niño too weak to end drought

by Tim Hearden

Climate forecasters are issuing fresh warnings that much-anticipated El Niño conditions won't be enough this winter to bring California out of its historic drought.

The federal Climate Prediction Center is continuing to watch for El Niño, but its forecasters say the chance of it developing in the Northern Hemisphere this fall and early winter is only 65 percent.

Earlier this summer, the agency had said there was an 80 percent chance an atmospheric pattern would develop that is often marked by strong storms pelting southern and central California.

At any rate, models suggest the El Niño pattern will be weak, National Weather Service warning coordinator Michelle Mead observed in a weather bulletin she sent out via email. "Remember, El Niño is a poor predictor of winter rainfall across Northern California," she wrote.

"Only strong El Niño events are tied to a potential for a wet winter, but that is for Southern California. Drought conditions are likely to continue in our area and there is not an expectation that El Niño will alleviate or end the drought conditions at this time."

El Niño is an atmospheric change marked by the warming of surface waters in the Pacific. Typically a strong El Niño means more rain than usual in California and less in the Northwest, but a weaker system could leave much of northern and central California in a dry belt.

El Niño helped California emerge from a three-year drought in the winter of 2009-2010, bringing a persistent

parade of rain clouds and cool temperatures that filled reservoirs and broke precipitation records in many areas.

However, Mead has cautioned that El Niño conditions don't always mean copious amounts of rain and snow, especially in northern areas where the rain is needed to replenish reservoirs. California's historic drought year of 1976-77 was an El Niño year, she has said.

Ocean-surface temperatures have been increasing in the equatorial region this summer, which has enhanced tropical rainfall and prompted weather prognosticators to predict that an El Niño of some strength will persist this winter. Many farmers have held out hope that a developing El Niño atmospheric pattern in the Pacific Ocean will mean a wet winter.

But "the atmospheric connection to that has yet to develop," Mead said in an interview this week. Nonetheless, forecasters believe El Niño should peak at weak strength during the late fall and early winter, she said in the bulletin.

Tim Hearden, Capital Press

New conservation funding program favors NW, California

by Eric Mortenson

The Columbia River Basin shared by Oregon, Washington and Idaho is one of eight regions nationally selected for special conservation project funding under a new program announced by U.S. Agriculture Secretary Tom Vilsack.

The Regional Conservation Partnership Program, or RCPP, combines four older programs into a new initiative. Funding contained in the 2014 Farm Bill, up to $1.2 billion over five years, will be used to improve water and soil health, wildlife habitat and watersheds.

The difference from previous programs, Vilsack said during an appearance in Portland Thursday, is an emphasis on collaboration between producers, private land owners, environmental groups, state and local agencies and federal regulators. Expanding the number of conservation partners can leverage federal money, Vilsack said.

Grants, starting with about $400 million in 2014-15, will be awarded in three ways. Eight regions, including the Columbia River Basin and a long swath of Central California defined as the California Bay Delta, will receive 35 percent of the money.

Forty percent of the funding will go to nationwide or multi-state projects, and 25 percent will go to state projects. Projects will be funded in a competitive process. Ron Alvarado, director of the Oregon office of the Natural Resources Conservation Service, said his office has received 11 project applications that could be considered for funding. The program fosters a "landscape approach" to conservation problems, capable of crossing county or ownership lines, he said.

Vilsack, the ag secretary, said Oregon was an apt place to announce the program.

"It's great to be back in a state that truly values conservation and understands the power it has to change landscapes and change lives," he said.

In Portland, Vilsack toured OSU's Food Innovation Center, which helps entrepreneurs take food ideas to market. Vilsack said he tasted a seaweed product. "It's an acquired taste for a Midwest guy," he said.

During a brief news conference, Vilsack said he expects a report on the GMO wheat found in Eastern Oregon last year in the "very near term" but cautioned it may contain some question marks. "I'm not sure we're going to have every answer," Vilsack said.

Vilsack said the USDA is working in the meantime to foster coexistence between growers of conventional and genetically engineered crops. Vilsack revived the department's Advisory Committee on Biotechnology and 21st Century Agriculture for that purpose.

Eric Mortenson, Capital Press

Hells Canyon survey finds big one: 75 years old, 10 feet long, 470 pounds

Idaho Power Company biologists recently captured one of the largest fish it has encountered during a three-year survey of the white sturgeon fish population in the lower Snake River. The big fish hooked in the Hells Canyon downstream of Hells Canyon Dam measured nearly 10 feet long and weighed an estimated 470 pounds. The female sturgeon is estimated to be more than 75 years old. She was measured, outfitted with an electronic tag and released unharmed moments after her capture. Hells Canyon frames a section of the Idaho-Oregon border on

the lower Snake River. The capture took place as part of a 3-year survey aimed at assessing status of sturgeon populations below Hells Canyon Dam in the lower Snake.

Largely restricted by hydro electric development, only two of the nine of the Snake River reaches that once held white sturgeon along the border and in southern Idaho now support viable populations characterized by self-sustaining natural recruitment. These reaches are Bliss Dam to C.J. Strike Reservoir on the middle Snake River and Hells Canyon Dam to Lower Granite Reservoir on the lower Snake. Reaches other than these two show little or no detectable reproduction.

The survey is part of Idaho Power's effort to preserve and protect white sturgeon in the Snake River, a requirement under federal licenses to operate its hydroelectric projects, which include the company's Hells Canyon Complex – Hells Canyon, Brownlee and Oxbow dams.

As part of the survey, fish are captured and scanned for the presence of an electronic tag, given a tag if none is present, weighed, measured and released after genetic information is collected.

Idaho Power biologists are conducting the survey with the help of Nez Perce Tribe biologists. Most of the fish captured have been in the mainstem lower Snake River.

"There's a few sturgeon in the lower Salmon, but not very many," said IPC biologist Brandon Bentz. The Salmon River flows out of central Idaho's high country and into the Snake just upstream of Lower Granite Dam's reservoir.

Preliminary estimates stemming from work done over the past three years indicate that the lower Snake white sturgeon population has held its own. The last assessment conducted in 2000 by IPC and the Nez Perce Tribe indicated that about 4,000 white sturgeon of at least 70 centimeters (a little over 2 feet) in length lived in that 140-mile stretch of river, with about 70 percent being 2 feet long or longer.

The researchers have two or three months yet to complete the three-year study, but data collected so far indicates that the population now is about 3,800. About 40 percent of those fish are 3 feet long or shorter, 30 percent are from 3 to 6 feet long and the other 30 percent are 6 feet long or longer.

"It appears that it's stable," Bentz said of the lower Snake white sturgeon population.

A bit perplexing for researchers is the fact that sturgeon in the lower Snake reaches grow at a slower rate as youngsters than fish elsewhere, such as in the Mid-Snake. They also don't reach first maturity – the ability to reproduce – until about age 30, which is older than the average in the middle Snake River of southern Idaho.

Recruitment – the advancement of fish into the reproductive age – does seem to be self-sustaining, Bentz said.

White sturgeon, commonly known as Pacific sturgeon, Oregon sturgeon or Columbia sturgeon, is a primitive, bottom-dwelling species.

Sturgeon are the largest freshwater fish in North America and can weigh as much as 1,500 pounds and reach lengths of more than 12 feet.

Over the past century, the effects of overharvest and habitat alteration through river regulation have significantly reduced population numbers throughout the range of white sturgeon, according to IPC.

Today, many populations are land-locked because of the presence of dams. Dams have negatively impacted sturgeon by altering large river habitats and creating migration barriers, often blocking access to critical habitats such as spawning areas.

In the Snake River, dam construction also has fragmented what was once a contiguous large population of white sturgeon into several smaller populations between dams resulting in isolated sections of river without all of the necessary habitats to support a reproducing population.

Idaho Power's three-year survey (2012-2014) of white sturgeon includes the Snake River between the Hells Canyon and southeast Washington's Lower Granite Dam, and a portion of the lower Salmon River, an Idaho tributary to the lower Snake. That reach includes about 140 miles of the Snake River.

This survey is part of Idaho Power's white sturgeon plan, which provides for periodic monitoring of sturgeon populations associated with the company's hydroelectric projects at about 10-year intervals. The most recent survey was completed in 2000. White sturgeon in the Hells Canyon reach are considered a "Core Conservation" population by the Idaho Department of Fish and Game and represent an important population for Snake River white sturgeon.

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