River Crossings

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Most Endangered Rivers in the Mississippi River Basin

Four Mississippi River Basin rivers are included on A*merican Rivers'* 2015 list of *America's Most Endangered Rivers*. They include the Holston River (TN), the Smith River (MT), the Harpeth River (TN), and the Pearl River (LA and MS). *American Rivers*, a Washington, D.C. based advocacy group, compiles the list from rivers nominated by river groups and concerned citizens across the country. The list does not include the nation's "worst" or most polluted rivers, but rather highlights ten rivers that are confronted by critical decisions that will determine their future. The accompanying report presents alternatives to proposals that would damage the rivers, identifies those who make the crucial decisions, and points out opportunities for the public to take action on behalf of each listed river.

Holston River - Number three on *American Rivers'* list, the Holston River, finds its source in the foothills of the Blue Ridge Mountains and flows for 274 miles through Virginia into Tennessee. The river ends at the confluence of the Holston and French Broad rivers to form the Tennessee River. The Holston River is threatened by the release of a chemical explosive, RDX, from the *Holston Army Ammunition Plant* (HAAP). RDX was developed by the U.S. Army in World War II to bolster the explosive power of bombs and other military ordinance. RDX does not occur naturally in the environment, and has been found 143 miles downstream at the confluence of the Holston and French Broad rivers. According to the U.S. EPA, RDX is a possible human carcinogen. EPA has established a RDX lifetime health advisory limit of 2 ug/L for drinking water and 0.61 ug/L for tap water screening. RDX have been found in area drinking water samples at more than double the EPA's 2 ug/L limit.

Even though RDX was discovered in HAAP discharges approximately 10 years ago, the Tennessee Department of Environment and Conservation (TDEC) has done little to stop these discharges. In the past three years, the HAAP has violated its Clean Water Act permit limit for RDX approximately 822 times with exceedances from 130 percent to 843 percent. On November 18, 2014, the *Tennessee Clean Water Network* (TCWN) filed a lawsuit to force the U.S. Army and the HAAP plant operator, *BAE Systems*, to comply with their Clean Water Act permits and to stop the RDX discharges. While this litigation will be resolved through the federal courts, *American Rivers* says "It is important to develop a groundswell of support to force the U.S. Army to stop the continued pollution of the Holston River. *American Rivers* says, "TDEC must be held to task for their important role in the protection of drinking water supplies, and the public must demand stronger enforcement actions in Tennessee to protect the state's waterways. The U.S. Army is supposed to protect Americans from threats, not put their lives at risk. It's time for the Department of Defense to take responsibility for its actions and clean up the mess it is making on the Holston River."

Inside This Issue

Smith River - The Smith River, #4 on *American River's* list, flows for 60 miles through a stunning limestone canyon between the Little Belt and Big Belt Mountains, emptying into the Missouri River just south of Great Falls, Montana. It is home to thriving populations of brown and rainbow trout, with some remnant populations of native westslope cutthroat trout in tributaries such as Tenderfoot Creek. Owing to its smooth flowing water and good road access at either end, the Smith is one of the few multi-day river trips in Montana that provides floaters of all ability levels with opportunities for backcountry solitude, superb fishing, and stellar camping.

South Holston River - Ben Collins, flickerCC Photo

Tintina Resources, Inc. (a Vancouver, B.C.-based mining company controlled by an Australian mining corporation and New York hedge fund managers) is proposing to develop a huge underground copper mine on 12,000 acres of private land adjacent to Sheep Creek, a major headwater stream that produces half of the tributary-spawning trout in the Smith River drainage. The so-called *Black Butte Copper Project* would be located approximately 20 miles north of the community of White Sulphur Springs. The copper deposit to be mined lies in a massive sulfide-ore body, which, when exposed to air and water, can produce acid mine drainage. There is also the likelihood that the mine will leach toxic heavy metals into nearby surface waters; produce discharges of wastewater high in nitrates that result from the use of blasting compounds; and contaminate drinking water sources with arsenic. Finally, groundwater would have to be pumped from the mine, which could end up partially dewatering Sheep Creek or its tributaries, thus drying up trout habitat. *American Rivers* says, "Mining has left a toxic legacy in many of Montana's rivers for over a century, including the Clark Fork, 120 miles of which is designated as the nation's largest Superfund site due to contamination by toxic heavy metals. The cost to clean up the Clark Fork River alone is estimated at over $1 billion and is expected to last 20 years."

Tintina is expected to submit its mining plan to the Montana Department of Environmental Quality (DEQ) toward the end of 2015. That will trigger a permit review as well as an Environmental Impact Analysis that could take at least two years to complete. Before the mine can be built, *Tintina* has to secure several state and federal permits. *American Rivers* says, "Governor Steve Bullock must send a clear signal to *Tintina* that for its Black Butte mine to win state approval, it must be designed using standards never before required of mines in Montana due to the industry's tradition of repeated failures. Any mine approved in the headwaters should ensure with 100 percent certainty that it can eliminate the possibility of drying up or polluting Sheep Creek and the Smith River with acid mine drainage, nitrates, or toxic heavy metals."

Harpeth River - The Harpeth River, #9 on *American Rivers'* list, flows 125 miles from its headwaters in Eagleville, TN to its confluence with the Cumberland River. A portion of the Harpeth is designated a State Scenic River as it flows through the Nashville metro area. The Harpeth River and its tributaries are

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home to a rich freshwater biodiversity, including more than 50 species of fish and 30 species of mussels. Several of these species are classified by Tennessee as rare and in need of management, and two mussel species are protected under the Endangered Species Act. The Harpeth River flows through a rapidly developing area which is impacting the river with increased sewage pollution, increased stormwater runoff, and water withdrawal. As such, the Harpeth River frequently fails to meet water quality standards for fish and aquatic life and recreational use during periods of low summer flow. Nearly 60 percent of the entire length of the main river is impaired, along with 37 percent of its more than 1000 miles of tributary streams.

Smith River - fisheyeguy Photo

Dangerously low levels of dissolved oxygen occur in the river which are driven by high concentrations of nutrients – particularly phosphorus. These fuel oxygen-hungry algal blooms that can lead to toxic conditions. During summer months when the river experiences natural low flows, sewage effluent can dominate the river and significantly contribute to the total nutrient load downstream from the City of Franklin. The pollution problem is exacerbated by the City of Franklin's aging 2 million gallons-a-day drinking water plant that withdraws water from the river not far upstream from its sewage plant. The city wants to replace its plant even though the Harpeth is too small to supply the city with its drinking water needs. The city's primary, and most reliable, source of drinking water is a substantial utility that produces water from the much larger Cumberland River. This utility provides three-fourths of the city's annual demand and up to 100 percent during the summer or when the city's plant is down. This year, the City of Franklin will decide whether to build a new and larger drinking water plant. The State of Tennessee is now reviewing the water withdrawal permit issued to the city in 2007. According to *American Rivers,* "The state needs to tighten the withdrawal limits for the new permit in order to maintain the river flows needed to protect essential habitat and aquatic life....The State and the U.S. Environmental Protection Agency must ensure that state-of-the-art control technology for nutrient pollution is installed (in any new waste treatment facility) in order to reduce harm to the Harpeth and comply with water quality regulations in the Clean Water Act sewer permit that is currently under consideration."

Harpeth River - Tom Frundle Photo

<u>Pearl River</u> - Number 10 on American Rivers' list, the Pearl River, ranks 4th in freshwater discharge among the rivers draining into the Gulf of Mexico. The Pearl provides drinking water to hundreds of thousands of residents in Metropolitan Jackson, Mississippi. In addition, estuaries in Louisiana and Mississippi at the Pearl's mouth are highly influenced by the river's freshwater flows. Productive oyster reefs in the Mississippi Sound and in Louisiana's Biloxi marshes also need the salinity moderation the river provides. The marshes and oyster reefs in these areas took a direct hit from Hurricane Katrina in 2005, sustaining considerable damage that was later compounded by the *Deepwater Horizon* oil spill in 2010. Oyster reef restoration projects near the mouth of the Pearl River are ongoing in both states. The Pearl River is home to 110 fish species, including two federally-threatened species (Gulf sturgeon and the endemic ringed sawback turtle) and other species of special concern (e.g., pearl darter and frecklebelly madtom).

A proposed Pearl River dam project is of major concern. The Ross Barnett Dam, built in 1963, created a 32,000 acre reservoir for drinking water and recreation north of Jackson, Mississippi. Operation of that dam has changed downstream reaches in two ways. First, banks are unstable, often collapse, and contribute more sediment than the lower river can move efficiently. Second, dam operation coupled with evaporation effects cause water deficits downstream in Louisiana's Honey Island Swamp and at the coast. Furthermore, water releases at the Barnett Dam during storms or hurricanes have, at times, contributed to coastal storm surges, exacerbating flooding along the lower Pearl River. Sea level rise on the coast, coupled with low flows, already cause saltwater intrusion in the lower basin's cypress swamps. Climate change will magnify these impacts. This year, the *Rankin-Hinds Pearl River Flood and Drainage Control District* is sponsoring an Environmental Impact Statement (EIS) and feasibility study for a new dam, which would impound a new reservoir 9 miles downstream of the existing Barnett Dam. This proposed artificial lake is a dredging project to widen, deepen, and straighten 7 miles of the river and place a low-head dam or weir at the downstream end. The project is being advertised as a flood control strategy to decrease flood elevation in urban Jackson, but according to *American Rivers,* the flood control

Pearl River - Bonny Shumaker, On Wings of Care Photo

features of the lake design are unproven. Areas downstream of the new dam will likely feel the negative effects of faster flows and riverside habitat in a state park will be submerged. Ultimately, levees will need to be improved, and more bank collapse, sedimentation, erosion, and rapid evaporation are certain to follow. Further changes to the amount and timing of freshwater discharge threaten coastal fisheries, especially the oyster industry. One Louisiana Parish and the *Mississippi Commission on Marine Resources* have passed resolutions in opposition to the project, and the Louisiana Coastal Protection and Restoration Agency and the Louisiana Wildlife and Fisheries Department are both on record outlining serious concerns about the project.

According to *American Rivers, "*The U.S. Army Corps of Engineers' Vicksburg District must reject the Environmental Impact Statement and feasibility study for this new dam and reservoir on the Pearl River. In addition, the Assistant Secretary of the Army for Civil Works in Washington, D.C., must not approve any flood control projects on the Pearl River that would have a significant adverse impact on the river and downstream and coastal communities'.

Visit the American Rivers web site for information on how you can help protect these endangered rivers. BACK TO TOP

Economic & Community Benefits from Stream Barrier Removal Projects

Dams and culverts exist in abundance across the Mississippi River Basin, and many of these are in poor condition, having outlived their intended design life. Although removing such stream barriers may require considerable up-front costs, their removal may also mitigate flood risks, improve ecosystem function, and relieve long-term financial burdens. Qualitative information on the consequences of such stream barrier removals is relatively available, but few detailed analyses have attempted to evaluate the socioeconomic impacts of these projects. To gain insight into this matter, the Massachusetts Division of Ecological Restoration (MDER) conducted an analysis in 2011 to estimate the regional economic impacts of spending on their restoration projects. The 2011 study found that each $1.0 million dollars spent on its restoration projects (including stream barrier removals, as well as salt marsh restoration) supported 10 to 13 jobs and $1.5 to $1.8 million in regional economic output (2009 dollars). As this study focused on the short-term impacts of spending on these projects (i.e., economic activity precipitated by spending on engineering and construction labor and materials), it represented only a first step in understanding how MDER's projects affect communities.

MDER followed up their 2011 study with a current analysis of six recent stream barrier removal projects intended to improve the understanding of the long-term socioeconomic implications of stream barrier removal in Massachusetts. To describe how projects in Massachusetts have affected, and continue to influence, social and economic conditions in communities following their implementation, MDER scientists evaluated two dimensions of the projects: 1) cost comparisons of implementing the ecological improvements (removing dams and upgrading culverts) versus continuing to repair and maintain existing structures; and 2) evaluating the long term changes in economic activity and the social character of the surrounding communities.

Information included in the current MDER study provides a strong foundation for conservation agencies nationwide to communicate the importance of these actions in terms of the ecological, economic, and social benefits they provide. For each of the six case studies, a financial and ecosystem service benefits comparison was created for scenarios with and without project implementation. These scenarios are the backbone of the analysis. To achieve this, MDER collected and reviewed available cost data for each site, developed engineering estimates of missing data, and conducted interviews with stakeholders familiar with the projects. Study sites included the following:

- Briggsville Dam removal, Clarksburg, MA;
- Bartlett Pond Dam removal, Lancaster, MA;
- Whittenton Mill Pond Dam removal, Taunton, MA;
- Dingle Road culvert upgrade, Worthington, MA;
- Hill Street culvert upgrade, Raynham, MA; and
- Drift Road culvert upgrade, Westport, MA.

MDER scientists concluded that investments in ecologically friendly, sustainable stream barrier removal projects were cost-effective. Furthermore, communities and project owners benefitted from MDER staff project management experience, strong relationships with potential funders, and expertise in guiding projects efficiently and cost-effectively. MDER staff provided technical assistance, grant writing, and permit support that these communities could leverage, along with other public and private funding sources, to minimize their own costs while gaining the full suite of ecological, social, and economic benefits. Specific benefits of Massachusetts stream barrier removal projects were summarized as follows:

Dam Sites

1. Removing the dams was less expensive than repairing and maintaining them. The up-front costs of dam removals were less than or equal to repair estimates. Factoring in estimated future maintenance costs for the structures over 30 years, each of the removals cost considerably less than the counterfactual maintenance and repair scenario. Costs of repair and maintenance ranged from 27 percent greater than removal at Briggsville Dam to more than four times the cost of removal at Whittenton Dam.

2. The dam removals substantially reduced flood risk to surrounding properties. All of the study site dams caused some levels of localized flooding due to storm water accumulation behind the dam or from a downstream surge due to a dam break. Removing the dams reduced the flood risk and, at each site, flooding has not been an issue since the dam was removed.

3. Decreased flood risk reduced costs of flood response and management and potentially increased property values. The reduced risk of area flooding generated a variety of positive social and economic outcomes, including avoided costs of infrastructure damages, avoided travel delays on area roads, avoided costs of emergency response operations and business closures, and potential increases in property value both for private dam owners and neighboring property owners.

4. The dam removals increased the quality and availability of stream habitat. In each case, the dams presented a passage barrier for recreationally or commercially valuable fish species. For example, at Whittenton Dam, the removal increased habitat connectivity for herring and American Eel, two native and sensitive species.

5. Improved habitat conditions may enhance recreational opportunities and benefit the regional economy. Improved stream habitat for recreationally valuable species, as well as improved conditions for recreational angling (e.g., at the site of the former Briggsville Dam) may attract additional recreational activity at or near these sites. Recreational benefits may also accrue up the food chain due to improved habitat conditions for recreationally valuable terrestrial species that rely on the fish and other riverine species as a food source. Increased recreational activity can stimulate regional economies (e.g., promoting business expansion through trip-related expenditures).

Former site of the Off Billington Street Dam, Plymouth, MA - MDER Photo

6. The socioeconomic benefits were realized while minimizing costs to municipalities and dam owners due to available public and private funding and technical support. Funding and technical support from agencies, such as MDER and private organizations minimized the costs of the project to the property owner while ensuring ecological, social, and economic objectives were realized. All three sites received significant funds from outside sources to support the dam removal projects. Because these funds were from conservation partners, these funds would not have been available for repair and maintenance of the outdated dam structures.

Culverts

1. Culvert upgrades were less expensive than repairing and maintaining the structures at two of three sites. Up-front costs of culvert upgrades were greater than the up-front costs of replacing the structure with a similar "in-kind" structure. As the upgraded culverts resulted in much lower future maintenance costs, however, long-term costs of the upgrade were less than in-kind replacement for both Dingle and Drift Road culverts.

2. The culvert upgrade projects reduced flood risk in surrounding communities. All of the outdated culvert structures resulted in some level of localized flooding. Since the upgrade projects, flooding has not been an issue at any of the sites.

3. Decreased flood risk reduced incidences of interruption to community activities and potentially increased property values. The reduced risk of area flooding generated a variety of positive social and economic outcomes, including avoiding road closures and associated travel delays, and enabling industrial development at one site. In addition, reduced flood risk to area residential properties potentially increases property values.

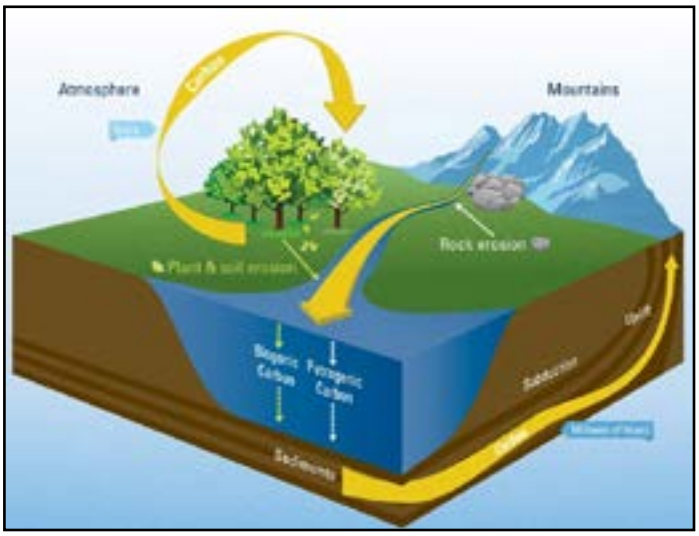
4. Culvert upgrade projects opened up new riverine habitat to native aquatic species. For example, the upgraded culvert at Drift Road greatly enhances fish and wildlife passage to a small upstream pond. This stream supports both American eel (a commercially valuable species) and brook trout (a recreationally valuable species).

5. Improved habitat conditions may enhance recreational opportunities and benefit the regional economy. As described above for dam removals, improved habitat conditions can attract recreational spending in the region, supporting local businesses.

6. Socioeconomic benefits were realized while minimizing cost to municipalities. For the case study projects, the municipalities contributed approximately 14 to 20 percent of total project costs. Funds from conservation partners would likely not have been available for in-kind replacements. Leveraging available funding and technical support, for example from MDER, allowed these projects to achieve the ecological, social, and economic benefits while minimizing costs to the municipalities. BACK TO TOP

The Role of Rivers in Carbon Storage

Rivers transport 200 million tons of carbon to the oceans every year, according to new research that calculates the role of rivers in carbon storage. The study, conducted by researchers at the *Woods Hole Oceanographic Institution*, assessed samples from 43 river systems that put out more than 20 percent of the world's river sediments. Their calculations show that the levels of carbon transported by rivers are equivalent to 0.02 percent of carbon in the atmosphere, but that over thousands of years, this could add up to significant chunks of carbon extracted from the atmosphere. Most carbon in rivers is picked up from plant and rock debris. As the carbon makes its way downstream, some is released back into the atmosphere when it decays, while the rest makes it out to the open ocean. Upon reaching the ocean, a fraction of the sediment sinks to the ocean floor, where it can be stored for millennia in the form of rocks. These rocks eventually make their way back to the surface, but the process is lengthy. "It's a bit of a complicated story because it's a cycle," said Valier Galy, lead author of the new study, published in the journal *Nature*. Understanding the role rivers play in the carbon cycle can help researchers model non-natural (or human-caused) carbon emissions and more accurately assess the impact these emissions have on the atmosphere, he said.



Carbon Cycle - Woods Hole Oceanograpic Institution Sketch

Until recently, researchers couldn't differentiate between sources of carbon, but new technology – namely the Accelerator Mass Spectrometer – allowed researchers to identify which carbon comes from plants and which carbon comes from rocks. Plants absorb CO_2 from the atmosphere and convert it to organic carbon during photosynthesis. Most of the carbon returns to the atmosphere through respiration or when plants are eaten or die, but some washes into rivers. At the same time, particles are worn down from rocks and end up in rivers. As with plants, some carbon is released back into the atmosphere, but some eventually accumulates at the bottom of the ocean. Though these processes are influenced by factors including climate, vegetation and human activity, erosion is the main factor that affects the amount of carbon that ends up in rivers. "The more erosion there is, the more organic matter is being transported to the oceans," Galy said. His study, the first of its kind, offers ways to calculate how much carbon ends up in rivers based on levels of erosion. This could have implications for understanding how much carbon storage might occur from increased rainfall in some parts of the world, added Galy, especially at a time when the world's climate systems are changing rapidly.

Source: Manon Verchot, *ClimateWire*, 5/14/15 BACK TO TOP

Effects of N and P on a Streams' Ability to Support Aquatic Life

Nutrient pollution from nitrogen (N) and phosphorus (P) in streams has long been known to increase carbon production by algae, often causing nuisance and harmful algal blooms. But according to results of a new study, nutrient pollution can also result in the loss of forest-derived carbon – leaves and twigs – from stream ecosystems, reducing the ability of streams to support aquatic life. "Most people think of nitrogen and phosphorus pollution in streams as contributing to algae blooms," said Diane Pataki, program director in the *National Science Foundation's* (NSF) Division of Environmental Biology, which funded the research. "But streams contain a lot of leaf litter, and this study shows that nutrient pollution can also stimulate carbon losses from streams by accelerating the breakdown of that litter. That helps us better understand how fertilizer runoff affects carbon transport and emissions from streams and rivers."

The findings, published on March 10 in the journal *Science*, demonstrate that the in-stream residence time of leaves and twigs, which provide energy to fuel stream food webs, may be cut in half when moderate amounts of nitrogen and phosphorus are added to a stream. "This study shows that excess nutrients reduce stream health in a way that was previously unknown," said Amy Rosemond, an ecologist at the University of Georgia (UGA) and the paper's lead author. "By increasing nutrients, we stimulate decomposition, and that can cause the loss of carbon that stream life depends on." Stream food webs are based on carbon from two main sources. One is algae, which uses photosynthesis to transform CO_2 in water into food. The other is leaves and bits of wood from streamside forests. This forest-derived carbon usually persists year-round, making it a staple food resource for stream organisms. Nitrogen and phosphorus play essential roles in decomposition of carbon by microbes and stream-dwelling insects and other invertebrates, but cause problems when they are present in excess amounts – as they increasingly are.

Nutrient pollution is widespread in the United States and worldwide, primarily due to land use changes such as deforestation, agriculture and urbanization. Its effects on algae are well-known and very visible in the form of algal blooms. Little was understood about how nutrient pollution affects forest-derived carbon in stream food webs, so Rosemond and her colleagues devised a set of experi-

ments to find out. Working at the *Coweeta Hydrological Laboratory*, an NSF Long-Term Ecological Research site in North Carolina, they set up a system to continuously add nutrients to several small headwater streams. The first experiment ran for six years in two streams, and the second for three years in five streams, with different combinations of nitrogen and phosphorus to mimic the effects of different land uses. The researchers found that the additional nutrients reduced forest-derived carbon in streams by half. "We were frankly shocked at how quickly leaves disappeared when we added nutrients," said Rosemond. "By summer, the streams looked unnaturally bare." This is comparable to the doubling of carbon from algae that can occur with nutrient pollution, but it's not a zero-sum game. "Increasing one form of carbon and decreasing another does not equate. These resources have unique roles in stream food webs, and nutrients are affecting their relative availability." Many streams lack enough light for algae to grow, making forest-derived carbon their main source of energy.

Leaves and wood provide essential "ecosystem services" to streams; nutrient pollution affects them.

But forest-derived carbon is more than a source of food. "Leaves and twigs, and the microbes that live on them, are also important in taking up pollutants like nitrogen and phosphorus," Rosemond said. "Ironically, by stimulating the loss of these resources with nutrients, we lose a lot of their capacity to reduce the nutrients' effects. That means that more nutrients flow downstream where they can cause problems in lakes and estuaries." Rosemond said she hopes the study's findings will be incorporated into policies aimed at reducing nutrient pollution. "Our results provide a more complete picture of nutrient effects in streams," she said.

Source: *National Science Foundation News Release*, 3/10/15 BACK TO TOP

New Model for Mississippi River Nutrient Pollution

U.S. EPA researchers have built the Coastal General Ecosystem Model (CGEM) to help address one of the nation's biggest water quality challenges: nutrient pollution flowing from the Mississippi River watershed into the Gulf of Mexico. The state-of-the-art CGEM provides a wealth of important information to scientists and stakeholders seeking to better understand the dynamics of nutrient pollution in the Gulf. The model receives nitrogen and phosphorus data collected from the Mississippi River and then predicts how these nutrients trigger eutrophication and hypoxia. Armed with that information, researchers and others can predict the impacts of reducing nitrogen and phosphorus on water quality in the Gulf, including estimating how much nitrogen and phosphorus reduction would be needed to achieve the Mississippi River Gulf of Mexico Watershed Nutrient Task Force's goal of reducing the size of the hypoxic area from its current average size of 15,000 km2 down to 5,000 km2.

John Lehrter, research ecologist developing and working with CGEM notes, "Knowing that the goal is 5,000 km2, we can adjust the nitrogen and phosphorus inputs to the model to estimate a range of reductions required to achieve the goal. Water quality managers and policy makers can then use this and other information to determine how to achieve these reductions." Additionally, a team of federal and academic scientists are using the model in the Coastal and Ocean Modeling Testbed. The Testbed aims to increase the accuracy and reliability of coastal and ocean forecasting products. Overall, the model will help the states in the Mississippi River Basin demonstrate to stakeholders the link between nutrient loading and water quality impairment in the Gulf and show how nutrient reductions result in water quality improvement.

Source: http://blog.epa.gov/science/2015/02/new-model-for-mississippi-nutrient-pollution/ BACK TO TOP

USDA Conservation Programs Have Limited Impact on Waterways

The Agriculture Department must reframe how it implements its voluntary conservation programs to effectively address water quality problems, according to a report released on May 1 by Marc Ribaudo, a senior economist for USDA's Economic Research Service. Ribaudo said that, despite billions of dollars invested in conservation measures, these programs are not enough to address large-scale agricultural pollution, such as runoff in the Mississippi River or the Chesapeake Bay. "While some water quality metrics have improved in some agriculturally influenced watersheds, others have deteriorated and more generally, outcomes have remained short of established water quality goals." Ribaudo's report was published in the latest issue of *Choices*, a publication of the *Agricultural and Applied Economics Association*.

The reasons for this are twofold, he said. For one, non-point-source pollution discharges are unevenly shared among farmers. Ribaudo gives the example of the Chesapeake Bay, where 20 percent of the cropland loses up to 7.5 times the weight of nitrogen per acre

that the remaining 80 percent loses. There are also social factors at play, said Ribaudo. Farmers typically enroll in conservation programs for their own self-interest, rather than for the societal need for clean water. It's not that these "productivists" do not care about the environment, he said, but that values like increasing yields and profits tend to guide decisions on land management. Conservation advocates should tap into these farmers' entrepreneurial character to achieve better results, Ribaudo argued. In order to make voluntary programs, like Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program (CSP), effective, USDA should introduce compliance mechanisms that require a certain level of results to be considered eligible, he said. One of the challenges in implementing these programs is that the link between actions and outcomes is very difficult to see, he added.

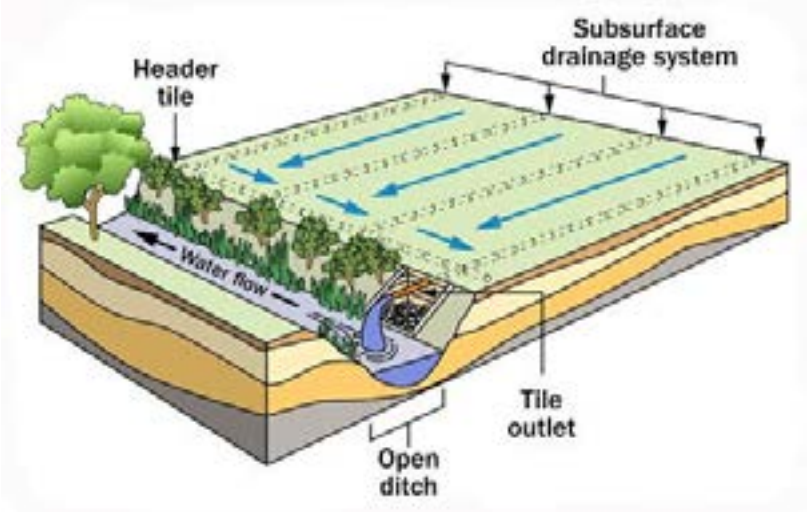
Ribaudo also took issue with linking financial assistance to the programs. "By linking payments to practice costs rather than the provision of environmental outcomes, voluntary financial assistance programs limit the ability of farmers to act entrepreneurially or to introduce innovative ideas into conservation management, things that may be highly valued by productivists," he wrote. A January 2014 Government Accountability Office report found that reliance on voluntary programs to clean up runoff from farms, parking lots and lawns was unlikely to help communities achieve Clean Water Act goals. Voluntary programs are limited in scope for several reasons, said Suzy Friedman, director of agricultural sustainability at the *Environmental Defense Fund*. There's a relatively small pot of money that doesn't necessarily go to the lands where nutrient pollution reductions are best achieved. The paperwork process for the programs can be cumbersome and long. And the majority of agricultural landowners get their advice from private companies, not the federal government. Engaging the private sector "is how ... we are going to get to scale and get to scale in those significant areas," said Friedman. "You need to go through the advisers that they trust." Authorized under the 2014 farm bill, conservation programs like EQIP and CSP would have their budgets dramatically cut in the Obama administration's fiscal 2016 proposal.

Source: Tiffany Stecker, *Greenwire*, 5/1/15 BACK TO TOP

Iowa Water Utility Advances Lawsuit Against State's Agricultural Drainage

The Des Moines (IA) Water Works utility filed its lawsuit (reported on in the January/February/March issue of *River Crossings*) against Iowa's Sac, Buena Vista and Calhoun counties in mid-March alleging that water from the counties' drainage districts "contain high nitrate concentrations that are almost entirely groundwater." The agency contends drainage tiles used to make farmland more productive "short-circuits natural conditions that otherwise keep nitrates from entering streams and rivers" and contributes to high levels of nitrates that make their way into the Raccoon River which is Des Moines primary water supply. The city seeks damages, penalties and other relief in federal court. About 500,000 central Iowa residents rely on the Raccoon River for drinking water.

Chuck Gipp, director of the Iowa Department of Natural Resources, said the northwest Iowa area included in the lawsuit "was once basically a swamp. And now it's among the most productive land in Iowa and the United States." "It reduced the water table (using drainage tile) so you could actually grow things," Gipp said. The lawsuit boils down to whether the water coming from the tile drainage districts is considered groundwater or surface water. If a court decides it is groundwater – and therefore a point-source of pollution – it would require a permit under federal law. That would be difficult to implement, Gipp said. "How do you do that with over 3,300 drainage districts in the state? Would it be the actual outlet that would be regulated, or the individual landowners contributing to the outlet?" Agricultural stormwater discharge, seen as coming from many different sources, is now exempted from the federal Clean Water Act. Gipp said the state permits about 1,600 factories, businesses, livestock facilities and other operations, under the federal Clean Water Act. The permits are issued under the National Pollution Discharge Elimination System program.



Typical Agricultural Field Tile Drainage System - Ontario Ministry of Agriculture, Food and Rural Affairs Sketch.

Gipp said he expects the lawsuit could take up to a decade to be resolved and make its way to the U.S. Supreme Court. "This is a hugely impactful case, no matter where you are on the issue," he said. It could have far reaching affects throughout the basin's agricultural states. Most Iowans support the lawsuit according to a *Des Moines Register Iowa Poll*. The poll, conducted by Des Moines-based *Selzer & Co.*, found sharp divides among party affiliations and between city residents and rural residents, who were more likely to oppose the legal action. The poll of 807 Iowa adults had a 3.5-point margin of error. "There are a lot of farmers who embrace conservation, but there are many who do not," Urbandale, Iowa, resident John Halstead said. "We live in a state where Republicans want less government, fewer laws and fewer regulations. But fewer controls cause damage for people in the long run."

Sources: Donnelle Eller, *Des Moines Register*, 2/26 and 3/17/15 and *Greenwire*, 2/27 and 3/19/15 BACK TO TOP

Federal Project to Create Early Warning System for Algal Blooms

The National Oceanic and Atmospheric Administration (NOAA) announced in early April that it will work with NASA, U.S. EPA and the USGS to create an "early warning system" for toxic and nuisance algal blooms in freshwater lakes and reservoirs. The goal of the project is to both enable local governments to give better public health advisories – such as when a bloom threatens drinking water – and to gather more data on the causes and effects of the blooms. To do that, the $3.6 million five-year project will use data from NASA satellites that detect the color of the sunlit upper layer of the ocean. Agencies will first create a "reliable, standard method" for using that data to identify cyanobacteria blooms, which create toxins that can kill wildlife and contaminate drinking water. Holly Bamford, NOAA's acting assistant secretary for conservation and management, said in a statement that the effort will help public health officials across the country distribute algal bloom information in an "easily understandable fashion." The collaborative effort aligns with Bamford's push to make ecological forecasts more widely available and thus help communities become more resilient.

Harmful algal blooms cost an estimated $64 million each year, thanks to drinking water treatment, loss of recreational water usage and a decline in the value of waterfront real estate, according to NOAA. Such blooms can result from excess nutrients in agricultural runoff. When the project is completed anyone with a smartphone may be able to access information on harmful algal blooms in his or her local lake. Today, only scientists have access to the ocean color satellite data that can help identify algal blooms early. But the project will convert those data into a format that the public can use online and on their phones. Researchers will also look for links between algal blooms and land cover changes. "Observations from space-based instruments are an ideal way to tackle this type of public health hazard because of their global coverage and ability to provide detailed information on material in the water, including algal blooms," said Paula Bontempi, a scientist in NASA's earth science division.

Source: Emily Yehle, *Greenwire*, 4/7/15 BACK TO TOP

WA Dairy Runoff Settlement Seen as Precedent-Setting

Washington state dairies and environmental groups unveiled the details of a settlement agreement in mid-May that will require state dairy farms to take more precautions to protect local water supplies. As part of a series of settlements, a cluster of dairies will be required to line their manure storage lagoons with geosynthetic clay liners, the same type of layer required for landfills. The facilities must also have centrifuge separators or additional technologies to reduce the nitrogen and phosphorus content in the manure, and limit their manure application to fields to keep soil nitrate levels under 25 to 40 parts per million over time. The dairies will also be required to have concrete aprons along the water troughs in the cow pens. These will divert wastewater to the facilities' manure lagoon system. The dairies must also regularly contribute to a clean drinking water project and provide residents with bottled water or a reverse osmosis system. "This is an important precedent holding mega-dairy factories responsible for the environmental and human health impacts of their waste," said Andrew Kimbrell, executive director at the *Center for Food Safety*, one of the organizations that sued the dairies. "They will now have to dispose of their toxic waste in a responsible manner and under stricter EPA supervision."

Example of Dairy Farm Pollution in Maryland - USDA NRCS Photo

Judge Thomas Rice of the U.S. District Court for the Eastern District of Washington held in January that *Cow Palace LLC* and other dairies in the state's Lower Yakima Valley contaminated water supplies with nitrates, which have been linked to cancer and a potentially fatal condition for babies. High nitrate levels also contribute to algae blooms that are harmful to aquatic and human health. The case was hailed by the plaintiffs, the *Center for Food Safety* and the *Community Association for the Restoration of the Environment*, as a precedent for holding improperly managed manure management systems in violation of the Resource Conservation and Recovery Act, or RCRA. The 1976 law is typically used to regulate landfills and hazardous waste storage tanks. U.S. EPA will oversee implementation and enforcement of the consent decree and perform inspections of the facilities. The settlement ties in with a previous administrative order of consent from EPA to undergo regular water quality testing to resolve violations under the Clean Drinking Water Act. By forcing the dairies to change their operations under RCRA, it also allows EPA to hold the facilities accountable for the waste from "the cradle to the grave," said Elisabeth Holmes, the *Center for Food Safety's* counsel in the case. It "allows us to be a little bit more aggressive in addressing the problem," she said.

Agriculture organizations are concerned that the precedent of treating manure as solid waste under RCRA could lead to many more

lawsuits in other parts of the country. Typically, large livestock operations are regulated as concentrated animal feeding operations (CAFOs) under the Clean Water Act. The case could open the possibility for much more litigation against farmers, said John Dillard, an associate attorney with *Olsson Frank Weeda Terman Matz PC*. "I think activist groups are going to try to run with this," he said.

Source: Tiffany Stecker, *Greenwire*, 5/12/15 BACK TO TOP

Dairy Farmer Slapped With Home Arrest and Fine for Manure Discharges

The owner of one of North Carolina's largest dairy operations was sentenced on April 30 to four years of probation, including six months of home detention, and received a $15,000 fine for discharging cow manure into the French Broad River (a headwater of the Tennessee River). William "Billy" Franklin Johnston, 62, owner of *Tap Root Dairy LLC* in Fletcher, N.C., was tried in the U.S. District Court for the Western District of North Carolina. The company also was fined $80,000, was placed on probation for four years, and is required to abide by an environmental compliance plan. "Agriculture is an important sector of Western North Carolina's economy but it should not thrive at the expense of public health. Environmental protection laws are in place to ensure appropriate land use and safeguard our communities from potentially harmful pollutants," U.S. Attorney for the District Court Jill Westmoreland Rose said in a statement.

Dairy farmer Johnston is a board member of the North Carolina Department of Agriculture and currently serves as a council member for the town of Mills River, NC. He was charged on Nov. 11, 2013. U.S. EPA Special Agent in Charge Maureen O'Mara, who works in the Criminal Investigation Division in EPA's Atlanta office, and B.W. Collier, acting director of the North Carolina State Bureau of Investigation, made the announcement jointly with Rose. According to EPA's announcement, Johnston allowed his *Operator in Charge Certification* of *Tap Root's* manure to lapse in 2009. Johnston and his employees did not check or maintain the levels of waste in their containment lagoons. This led to the spillover of 11,000 gallons of cow feces into the French Broad River on Dec. 4, 2012. Testing by the North Carolina Department of Environment and Natural Resources found fecal coliform levels at 99,000 parts per million at the site of the incident. *Tap Root* is located on a section of the river considered "impaired" under the Clean Water Act.

Source: Tiffany Stecker, *E&ENews PM*, 5/1/15 BACK TO TOP

Forestry Practices Impact on Stream Temperatures

Rising stream temperatures in Oregon's private vs public forests led to a nine-year study by researchers at the Oregon Department of Forestry (ODF) to figure out if logging activity was in fact warming their streams. Beginning in 2002, researchers measured stream temperatures before and after timber harvest, on both public and private land. Peter Daugherty, head of ODF's Private Forests Division, performed the study, with help from Oregon State University and other research partners. Daugherty said the findings noted that "Private sites, comparing pre- to post-treatment, had a greater frequency of exceedances." And he says streams on private timberland tended to exceed the standard a lot more often than those in state forests. "The probability of exceedances was 40 percent, where in all other categories, the probability of exceedances was about 5 percent." In fact, streams in private forests got as much as four-and-a-half degrees warmer after logging. The average increase was one and a quarter degrees. In state forests, where more streamside trees had been left, there was no increase.

Known as the *RipStream study*, the report has become the basis for calls to require wider buffers along streams. Mary Scurlock, *Oregon Stream Protection Coalition* – a group of environmental and fishing industry organizations – says the *RipStream study* has pushed the Board of Forestry to consider stronger streamside protections. "It provided a pretty clear and irrefutable basis for the finding, that even a board that is dominated by industry interests had to find that we have a problem, on the basis of that study." Federal officials also see the science as pointing toward the need for Oregon to increase buffers to protect fish from warming streams and silt-laden runoff. Will Stelle, regional administrator for the National Marine Fisheries Service (NMFS), said, "What it tells us is that if we put these improvements into place, there's a high likelihood that we will be dealing directly with the temperature and sediment loading issues with a substantial degree of confidence."

But folks in the timber industry say there's no need for wider stream buffers. Jim James, head the *Oregon Small Woodlands Association*, at the Board of Forestry meeting in April, disputed the science behind the state standard that says stream temperatures shouldn't rise by more than half a degree. "There's also science that does indicate very strongly that the minor and temporary increase in temperatures cause no harm to fish species," he said. But Stelle says, "In the end, the scientific case for leaving more trees to keep streams cooler is sound." The Board of Forestry is slated to decide in June whether to require larger streamside buffers or other measures. An adviser to Governor Kate Brown has suggested the governor may be open to some kind of public subsidy to cushion the financial blow to family foresters.

Sources: Liam Moriarty, *InvestigateWest*, 5/13/15; and *Greenwire*, 5/14/15 BACK TO TOP

Court Orders Corps to Rethink Streamlined Permits for Strip Mining

The U.S. Army Corps of Engineers (Corps) has agreed to take another look at the potential impacts of a streamlined permitting scheme for smaller coal strip mines. At issue is the so-called Nationwide Permit 21 (NWP 21) general permit, which the Obama administration blocked from some Appalachian states in 2010 during a crackdown on mountaintop-removal mining, but reissued in 2012 under stricter guidelines. *Black Warrior Riverkeeper* and *Defenders of Wildlife*, represented by the *Southern Environmental Law Center* and *Public Justice*, sued the Corps for allowing activities under the previous system to continue. But last year, Alabama U.S. District Court Judge William Acker rejected the groups' complaint, saying they waited too long to file it. He also said the Corps acted within the law in its review and final decision to reissue NWP 21. However in late March this year, a three-judge panel of the U.S. Court of Appeals for the 11th Circuit said the groups' filing delay "was slight and excused by its need to adequately investigate and prepare its claims in this complex case." The panel's opinion then described how the Corps "admitted that it had underestimated the acreage of waters that would be affected by the projects authorized under Nationwide Permit 21." The judges continued, "The Corps then conceded that the district court's decision must be reversed and the matter remanded to the Corps for further consideration based on a more accurate assessment of the potential impacts of NWP 21. We agree." The appeals court judges thus sent the issue back to district court with instructions to allow the Corps to revisit its review. They assume it will take no more than a year.

Judges Stanley Marcus and Frank Hull, both appointed by President Clinton, decided the case along with U.S. District Court Judge Amy Totenberg, sitting by designation. Even though they all agreed on key points of the litigation, they differed on whether NWP 21 could continue functioning in its current form. Marcus and Hull disagreed with scrapping the permitting scheme pending new scrutiny. The *Alabama Coal Association*, which intervened in the case, fought hard against such a step. "In circumstances like these, where it is not at all clear that the agency's error incurably tainted the agency's decision making process, the remedy of remand without vacatur is surely appropriate," the majority opinion said. Totenberg dissented. "The Corps' own assertions illustrate why the issuance of NWP 21 based on its faulty minimal impacts analysis is arbitrary, capricious and unlawful," she wrote. Responding to the coal association's claims, she said, "Contrary to the Intervenors' doomsday assertions, suspension or vacatur of NWP 21 would not result in the halting of all mining operations in the Black Warrior River watershed."

Attorney Eva Dillard, who helped represent the groups, said, "We are pleased that the appeals court agreed with us that the Corps' impacts analysis for the issuance of the 2012 NWP 21 was flawed and inadequate." And even though the groups were disappointed that judges didn't do away with NWP 21, Dillard said they would "work hard to ensure that when the Corps goes back to fix its errors, the agency finally acknowledges that the use of the grandfather provision contained in the 2012 permit has more than minimal impacts in the Black Warrior Basin."

Source: Manuel Quiñones, *Greenwire*, 3/24/15 BACK TO TOP

EPA Releases Analysis of Fracking Ingredients

Kerosene, methanol and hydrochloric acid are the three most widely used additives in hydraulic fracturing for oil and gas, according to a U.S. EPA analysis released on April 1. EPA analyzed data on about 39,000 wells given to it in March 2013 by the *Ground Water Protection Council* (GWPC), which manages the *FracFocus* site. However, more than 1 in 10 ingredients were withheld from *FracFocus* reports as trade secrets, and reports on more than 70 percent of wells had at least one chemical ingredient withheld. The study identified 692 unique ingredients reported for additives, base fluids and proppants. Kerosene, methanol and hydrochloric acid were listed in the highest number of well reports. Kerosene is used as a friction reducer, gelling agent and crosslinker, according to the study. Kerosene was listed as "hydrotreated light petroleum distillates." But chemical data at the *Centers for Disease Control and Prevention* website list its unique identifying number as "deodorized kerosene." Methanol is used as a corrosion inhibitor, surfactant, non-emulsifier, scale inhibitor, biocide and crosslinker. Hydrochloric acid is used as an acidizer, solvent and scale dissolver and for perforation breakdown.

The EPA analysis is part of the agency's study of the safety of hydraulic fracturing, slated for release this spring. When the data was released to EPA in 2013, *FracFocus* had been running for nearly two years and many states had already required or allowed disclosure through the site. *FracFocus*, however, has come under fire because the Obama administration decided to use the registry for disclosure of fracturing chemicals used in wells on public lands. Environmental and government transparency groups say the privately run site is error-prone and needlessly difficult to use. GWPC has promised changes to address the criticism. The fracking study, which aims to assess the effect of fracking on water, was commissioned by House Democrats in 2010. It immediately became a point of contention between supporters and opponents of expanded domestic oil and gas production. The final draft is to synthesize research and sampling from the past several years and then be open for public comment and peer review. The study also reportedly looked at how much water was used for "frack jobs." The amounts ranged from 30,000 to 7.2 million gallons, with a median of 1.5 million gallons per job. Meanwhile, just three of 36 states with active oil and gas wells offer public access to data on spills and legal violations, according to a new report from the *Natural Resources Defense Council* and *FracTracker Alliance*.

Source: Mike Soraghan, *EnergyWire*, 4/1/15; and Pamela King, *EnergyWire*, 4/2/15 BACK TO TOP

Oil and Gas Activity Linked to Rash of Midwest Earthquakes

Regulators in Kansas, in mid-March, imposed sharp restrictions on oil and gas activity in two southern counties in response to increased earthquakes in the area. The *Kansas Corporation Commission* cited an "immediate danger" to public safety as the reason for limiting the pressure that can be used to inject wastewater into disposal wells and the volumes that can be injected. "Because individual earthquakes cannot be linked to individual injection wells, this order reduces injection volumes in areas experiencing increased seismic activity," commission officials stated in their March 19 order. "The Commission finds damage may result if immediate action is not taken. The increased number of recorded earthquakes in Kansas coincides with an increase in the number of injection wells and the amounts of injected saltwater in Harper and Sumner counties," the order states. Kansas had 127 earthquakes last year, according to the commission order, and more than 50 this year by mid-March. From 1981 to 2010, Kansas had 31 quakes. In 2010, the two counties had 97 injection wells that injected 800 million gallons of fluid. In 2013, according to the order, that number rose to 150 wells injecting 2.6 billion barrels. Kansas officials are also requiring companies to show they have not drilled deeper than the *Arbuckle Formation*, beneath which in most places is "basement" rock. Oil and gas officials say that injecting into basement rock creates a greater risk of causing earthquakes than injecting into shallower layers.

Oklahoma regulators followed Kansas' lead in late April when the Oklahoma Geological Survey (OGS) announced that it is "very likely" that earthquakes have been caused by oil and gas activity. The statement resolved contradictory statements made earlier by OGS scientists, and came as OGS, part of the University of Oklahoma, seeks to show that a leading donor did not sway its science. Earlier, Oklahoma regulators had been reluctant to recognize any link between earthquakes and oil and gas activity. Oklahoma had 585 earthquakes of magnitude 3 or greater last year, and is on track to have more than 800 this year. Before 2009, it averaged one to three a year. OGS said the state is now averaging 2.5 such quakes each day. "The OGS considers it very likely that the majority of recent earthquakes, particularly those in central and north-central Oklahoma are triggered by the injection of produced water in disposal wells," the agency's statement said. In response, the *Oklahoma Independent Petroleum Association* (OIPA) conceded a "possible relationship" between earthquakes and the industry. A statement from State Seismologist Austin Holland and interim OGS Director Richard Andrews was careful to stress that it is not attributing the surge in shaking to hydraulic fracturing, or "fracking." "The primary suspected source of triggered seismicity is not from hydraulic fracturing, but from the injection, disposal of water associated with oil and gas production," the statement said. Fracking can be a source of wastewater, the statement said, but "this volume represents a small percentage of the total volume of wastewater injected in disposal wells in Oklahoma."

Interestingly, the University of Oklahoma (OU), located at Norman, has decided to close its remote earthquake monitoring facility (*Leonard Geophysical Observatory*) near Tulsa. The closure, which according to published reports will likely lead to the departure of two staffers, comes in the wake of reported attempts by *Continental Resources Inc.* founder Harold Hamm to get university employees fired. *Bloomberg News* reported in mid-May that Hamm wanted "certain scientists" at the OGS "dismissed" for their reporting on earthquakes. University officials say, however, that the closure is simply a cost-cutting move. But State Rep. Jason Murphey (R/Guthrie) told *EnergyWire* that, "These types of decisions need to be made in an atmosphere where there isn't any question about the motives of those making them." Murphey, whose district lies in the heart of the area where many of the earthquakes are occurring, has suggested splitting OGS from the university because of the conflict of interest he sees with OU President David Boren serving on *Continental's* board of directors. Hamm is also a major donor to the school.

Meanwhile, according to a recent *American Geophysical Union* report, recently reactivated ancient fault lines in Oklahoma could lead to a devastating earthquake that could shake up structures unprepared to handle major seismic activity. Authored by several U.S. Geological Survey researchers, the report warned that the state, which has seen hundreds of seismic activity events over the past five years, has "a high degree of potential earthquake hazards." "The majority of the recent earthquakes in central Oklahoma define reactivated ancient faults at shallow depths in the crust" of less than 3.7 miles, the report said. Daniel McNamara, an author and a USGS research geophysicist, said that several dormant 300-million-year-old subsurface faults are suspected to have contributed to the recent rash of earthquakes. "Any one of these fault zones that are producing magnitude-3 or -4 earthquakes could rupture into a larger earthquake. There are as many as 12 different fault zones that are capable of producing a large, 5-to-6-magnitude earthquake," McNamara said.

Sources: *EnergyWire*, 3/6 and 3/19/15; Jon Herskovitz, *Reuters*, 3/17/15; Mike Soraghan, *EnergyWire*, 4/1/15 and 5/20/15; and Mike Soraghan, *Greenwire*, 4/21/14 BACK TO TOP

Nebraska - Kansas Water Wars Settlement

The Supreme Court in late February ruled that Nebraska "recklessly gambled" in taking more water from the Republican River than it was allowed. A majority of the justices held that Nebraska knowingly violated an interstate compact governing the river, depriving Kansas of water that should have flowed over the states' border. The court's ruling, which is limited in scope, means Nebraska must

pay Kansas $3.7 million, the value of the 70,000 acre-feet it unlawfully deprived Kansas of, plus a $1.8 million penalty. But, in a win for Nebraska, the court also amended the compact's accounting procedures so "imported water" – that not originally from the Republican River – won't count against Nebraska's allotment. The dispute between Kansas and Nebraska over the Republican River Compact has dragged on for decades. Rising in Colorado, the 430-mile river crosses the northwest tip of Kansas before crossing into Nebraska. It later re-enters Kansas, traveling a sparsely populated area. The nearly 25,000-square-mile watershed is largely used to irrigate 1.8 million acres where mostly corn and wheat are grown. An interstate compact among the three states was ratified by Congress in 1943. It allocates about 49 percent of the river's flows to Nebraska, 40 percent to Kansas and 11 percent to Colorado.

Kansas has long claimed Nebraska is taking too much water through groundwater pumping. It has asked the Supreme Court to resolve its claims twice, and in the current litigation, the high court appointed a special master to review the claims. The master – a federal judge – in November 2013 recommended penalties and reform of the accounting procedures of the compact. Both Kansas and Nebraska objected to aspects of the master's conclusions. Kansas wanted an injunction to stop Nebraska's increased water use and opposed changing the accounting procedures because they would benefit Nebraska. Nebraska contends some of its water is coming from the Platte River basin. Nebraska also challenged the conclusion that it knowingly violated the compact, as well as the $1.8 million penalty. The Supreme Court upheld all the recommendations of the master's report.

Writing for the majority, Justice Elena Kagan said, "Nebraska recklessly gambled with Kansas's rights, consciously disregarding a substantial probability that its action would deprive Kansas of the water to which it was entitled." Kagan particularly criticized Nebraska's claims that it could not have anticipated breaching the contract when it took 17 percent more than it was allowed in 2005 and 2006. "[T]hat argument does not hold water. ... Nebraska failed to put in place adequate mechanisms for staying within its allotment in the face of known substantial risk that it would otherwise violate Kansas's water rights," Kagan wrote. Further, Nebraska's "efforts to reduce its use of Republican River water came at a snail-like pace," she wrote. Kagan also said updating the accounting procedures of the compact was appropriate. "The procedures make water from the Platte subject to the Compact, in contravention of its scope," she wrote, "or conversely stated, they expand the Compact's prescribed scope to cover water from the Platte. That is not within the States' authority." Four justices joined Kagan in upholding all of the special master's recommendations – the court's other three liberal justices and Justice Anthony Kennedy. Chief Justice John Roberts concurred with most of it, but disagreed that the court could reform the original compact by changing the accounting procedures. Other conservative justices – Antonin Scalia, Samuel Alito and Clarence Thomas – agreed with the conclusion but would have gone further. Writing for those three, Thomas also would not have forced Nebraska to pay a $1.8 million penalty.

There are 25 interstate water compacts in the country, largely in the West. The court has heard several cases on compact disputes, leading to rulings that typically don't establish broad precedents because they usually only deal with facts that are specific to the river and states in the case.

Source: Jeremy P. Jacobs, *Greenwire*, 2/24/15 BACK TO TOP

Modernizing Infrastructure in the Ohio River Basin

The U.S. Army Corps of Engineers (Corps), *The Nature Conservancy* (TNC) and the states within the Ohio River Basin are in the midst of working to inventory and assess the basin's water resources infrastructure, with a focus on the more than 80 federal dams across the basin. The first version of this basin-scale infrastructure database, completed in September 2014, includes important engineering, social and environmental factors that influence or are affected by operation of the infrastructure. The database also identifies a range of management alternatives for addressing environmental degradation caused by the infrastructure. "We will use the information to help secure public and private funding and direct that funding toward projects that will deliver the greatest return on investment for people and nature," said Andy Warner, TNC's deputy director for Water Infrastructure. "We are particularly interested in determining how this infrastructure can be managed to restore water quality and fish and wildlife habitat, while improving other social benefits like flood protection and recreation. And we see excellent opportunity to improve sustainability and resilience by integrating infrastructure management with the management of natural areas, like floodplains and wetlands."

Water infrastructure across the U.S. is aging. The average Corps' dam is more than 60 years old, and few water-control plans that guide the operations of large, federal dams have been revised since being developed decades ago. "There is a real opportunity now to change the way we build, upgrade and operate our water resources infrastructure to account for and benefit from the role nature can play in these large river systems," Warner said. "For instance, we can modernize the operations of dams so that water is released to more closely mimic natural river flows or to promote fish passage while also maintaining flood control, shipping channels and water supplies." The Corps and TNC share the goal of modernizing water infrastructure design and operation to create a new model for 21st century water management that is both sustainable and resilient, an idea that is central to an editorial co-authored by the partners called, "A Call to Enhance the Resiliency of the Nation's Water Management."

Meanwhile, the Corps is recommending that Ohio's state-owned Buckeye Lake be drained completely in order to prevent a dam there

from failing. In a report released in mid-March, the Corps said the "likelihood of dam failure is high" and that the structure "poses a significant risk to the public." The 177-year-old dam has been compromised by the more than 370 homes built directly into its earthen structure. The report was sent to the Ohio Department of Natural Resources, which owns the lake, and made recommendations for how to deal with the potential for "catastrophic failure." While a new dam could be built, the Corps wrote, "The safest solution for eliminating the risk of flooding due to dam failure is to drain the lake permanently."

The Corps conducted on-site examinations and structural testing of the Buckeye Lake dam and reviewed all previous studies dating back to the 1960s. The homes, which the state allowed to be built into the back side of the dam beginning in the early 20th century, as well as docks sunk into the lake side of the dam, have "displaced or disrupted large portions of the embankment." Of those structures, the Corps reported that 15 percent show misalignment of walls and retaining features, indicating that the earthen dam is sliding, leading the Corps to conclude that the embankment "does not meet current dam-safety requirements." Mike Spoor, engineer with the Huntington District of the Corps said the conditions of the Buckeye Lake dam are as poor as any dam in Huntington District Corps' inventory and "unprecedented" for the number of problems created by manmade structures built into the embankment. State Sen. Jay Hottinger, a Republican from Newark, said that fixing the dam will become an immediate priority for the state. He guessed that a final solution could be four to five years, and hundreds of millions of dollars, away.

Source: *The Nature Conservancy, Great Rivers Partnership*, 2/24/15; and *Greenwire*, 3/12/15 BACK TO TOP

EPA Expands Areas Approved for use of Dow's *Enlist Duo* herbicide

The U.S. EPA in late March more than doubled the number of U.S. states where *Dow AgroSciences'* controversial new herbicide can be used. The EPA approved *Enlist Duo* on Oct. 15 with a series of restrictions aimed at addressing potential environmental and health hazards for use in Illinois, Indiana, Iowa, Ohio, South Dakota and Wisconsin. Now the regulatory agency has added nine more, all key farming states: Arkansas, Kansas, Louisiana, Minnesota, Mississippi, Missouri, Nebraska, North Dakota and Oklahoma. *Enlist Duo* was developed by *Dow AgroSciences*, a unit of *Dow Chemical*, as an answer to severe weed resistance problems that are limiting crop production around the country. More than 84 million acres of farmland are infested with glyphosate-resistant weeds, and the problem continues to climb each year, *Dow's* U.S. crop protection commercial leader, Susanne Wasson, said in a statement.

Enlist Duo is designed to be used with genetically engineered corn and soybeans, which have been altered to tolerate being sprayed with *Enlist Duo*. The specialty crops and the herbicide are to be sold as a branded "*Enlist Weed Control System*." Like the popular *Roundup Ready System* developed by rival *Monsanto Co.*, farmers who plant *Enlist* crops can spray over the crops in their fields with *Enlist* herbicide and kill weeds but not the crops. *Enlist Duo* combines an herbicide component known as 2,4-D with glyphosate, the active ingredient in *Monsanto's Roundup*. The EPA is currently evaluating a weed resistance management plan for glyphosate as well. A coalition of U.S. farmer and environmental groups filed a lawsuit in October seeking to overturn the EPA's approval of *Enlist Duo*, claiming the EPA did not adequately analyze the impact of 2,4-D.

Sources: Carey Gillam, *Reuters*, 4/1/15; and *Greenwire*, 4/2/15 BACK TO TOP

Fish Pass Along Harm From Chemical Exposure as Embryos

When fish are exposed to endocrine-disrupting chemicals as embryos, they pass on the negative reproductive effects to future generations, according to a new study from the USGS and the University of Missouri. The study, published in the journal *Scientific Reports*, highlights the potential environmental repercussions of chemicals that are already finding their way into aquatic environments. Scientists exposed fish during embryonic development to two chemicals: bisphenol A (BPA) and 7a-ethinylestradiol (EE2). BPA is used to manufacture polycarbonate plastics, among other things, and EE2 is found in birth control pills. In a laboratory, scientists only exposed the first generation of embryos, but subsequent generations showed a reduced rate of fertilization and increased embryo mortality. Fish two generations after exposure suffered a 30 percent decrease in their fertilization rate; that number was 20 percent after three generations. The study used higher concentrations of the chemicals than are generally found in the environment. But the results indicate that fish can pass on negative effects. "This study shows that even though endocrine disruptors may not affect the life of the exposed fish, it may negatively affect future generations," said Ramji Bhandari, a USGS visiting scientist and University of Missouri assistant research professor, in a statement. "This is the first step in understanding how endocrine disruptors affect future generations, and more studies are needed to determine what happens in the natural environment."

A second new study published in late May in the journal *Science of the Total Environment* concludes that airborne industrial emissions of bisphenol-A, or BPA, can increase BPA levels in nearby aquatic environments. Researchers at the University of Missouri and the USGS found that water concentrations of BPA were up to 10 times higher in areas near sites where it was released into the atmosphere, providing new clues as to how to manage the chemical. The findings "provide evidence that these atmospheric discharges can dramatically elevate BPA in environments," lead researcher Christopher Kassotis, a doctoral candidate at the University of Mis-

souri, said in a statement. Previously, the study said, atmospheric releases of BPA "have not been considered important sources to the environment."

Source: Emily Yehle, *E&ENews PM*, 3/24/15; and Sam Pearson, *Greenwire*, 5/20/15 BACK TO TOP

Pavement Sealant Kills Fish, Alters DNA

The nearly shiny black liquid used to protect and spruce up parking lots and playgrounds has deadly downstream effects well after application, according to a pair of studies contradicting the pavement sealant industry's best management practices. The reports bolster previous USGS research linking seal coating made from coal tar to elevated levels of likely carcinogens in air, soil and water. Polycyclic aromatic hydrocarbons (PAHs) occur naturally in fossil fuels, but concentrations in coal tar are about 100 times higher than in motor oil, according to the USGS. Industry groups have sharply criticized previous findings blaming coal-tar sealants for increasing levels of PAHs in urban lake sediment and air around pavement sealed with coal tar. They have labeled government reports misleading, citing their own studies. Anne LeHuray, executive director of the *Pavement Coatings Technology Council* (PCTC), an industry group, also immediately expressed skepticism about the new reports.

Developed in the 1950s, coal tar is a byproduct of burning coal to make steel. With America's traditional steel industry found primarily east of the Continental Divide, coal-tar sealant is primarily used in the central, southern and eastern United States. Western contractors mostly use asphalt-based alternatives that have PAH concentrations 1,000 times less than coal-tar sealants, according to the USGS. Barbara Mahler, a USGS scientist who has spent a decade studying PAHs, said fresh coal-tar sealants have established connections to environmental and health impacts, pointing to a massive fish die-off in Boone, N.C., where she said fish died a mile and a half downstream after rain fell on pavement coated with fresh coal-tar sealant. Industry says that coal-tar sealant is safe, however, so long as no precipitation disturbs the 48-hour curing process following application. The USGS report released in mid-April in the journal *Environmental Science and Technology*, however, indicated runoff collected even three months after the coal-tar seal coat was completed contained toxin concentrations fatal to 100 percent of small fish and other aquatic species. "There continued to be toxicity associated with the runoff, particularly if the test organisms were also exposed to sunlight," said Mahler, who co-authored the report. Ultraviolet radiation "photoactivated" the toxins ingested by wildlife, Mahler said, causing the formation of oxygen compounds that destroy cells and possibly lead to cancer.

Cellular DNA was also damaged by exposure to coal-tar sealant runoff, according to the second study published in the journal *Science of the Total Environment*. Sylvie Bony, who led researchers at the *École Nationale des Travaux Publics de l'Etat* based in Lyon, France, reported not only was genetic material damaged, but PAHs inhibited a species's ability to repair itself. The results of both studies furthered the case against coal-tar sealants put forward by previous USGS studies. According to the agency, a coal-tar-sealed parking lot, for instance, produced ambient PAH concentrations 60 times greater than an unsealed lot, even after three to eight years. Mahler said the gradual breakdown of the sealant layer also creates a dust with exceedingly high levels of PAHs, which contaminate air surrounding coal-tar-sealed pavement and get into homes. A 2013 study found that the risk of cancer among people, particularly children, living adjacent to coal-tar-sealed pavement was estimated to be 38 times more over a lifetime.

PCTC's LeHuray accused Mahler and other researchers, whose areas of expertise are in sediment sampling and chemical trend analysis, of cherry-picking citations and data. "These same USGS authors have shown once again that they do not feel constrained by their background, training or experience and freely offer conclusions draped in scientific jargon so long as those opinions pertain to pavement sealers, no matter how remotely," she said. Sealant companies and advocates have been fighting a state-by-state battle against coal-tar sealant bans. Some states and municipalities have rejected coal-tar sealant restrictions, while governments ranging from a Wisconsin county to the state of Washington and the city of Washington, D.C., have passed bans. Austin, Texas, where USGS conducted their experiments for the latest reports, became the first U.S. city to ban coal-tar sealants in 2005.

Source: Dylan Brown, *Greenwire*, 4/14/15 BACK TO TOP

Microbeads Passing Through Wastewater Plants

Samples from New York water treatment plants show plastic microbeads are passing through the systems and into waterways, according to a study released by the New York State Attorney General's Office. The report, "Discharging Microbeads to Our Waters: An Examination of Wastewater Treatment Plants in New York," evaluated samples from 34 municipal and private water treatment plants in the state and detected microbeads in 74 percent of the samples. Microbeads were detected at facilities that were of widely varying size and locations and that used a range of treatment processes. Scientists have previously found microbeads in the Great Lakes and assumed they came through water treatment systems, but detecting them in the water systems confirms that hypothesis, researchers said. In addition, the research found that just 6 percent of microbeads were spherical or speckled. These were the only microbeads measured because their shape makes them easiest to identify; however, the true universe of microbead pollution may be significantly

greater, the report said.

Scientists say microbeads can harm aquatic ecosystems because other chemicals can attach to them. Illinois was the first state to pass a bill banning microbeads in 2014, and at least a dozen other states are considering similar plans. New York Attorney General Eric Schneiderman (D) said in a statement that the findings of the study show that preventing microbeads from entering the waste stream is the only way to contain the pollutants. Representatives from the *Personal Care Products Council*, an industry group, didn't respond to a request for comment on the report. In recent months, however, the group has supported legislation to phase out microbeads provided the new rules give enough time for companies to comply.

Source: Sam Pearson, *Greenwire*, 4/20/15 BACK TO TOP

FWS Creates Mountain Bog Refuge

The U.S. Fish and Wildlife Service (FWS), in late April, announced the establishment of a new national wildlife refuge in western North Carolina intended to conserve southern Appalachian mountain bogs, one of the rarest and most imperiled habitats in the United States. The *Mountain Bogs National Wildlife Refuge* "will provide a focal point for mountain bog conservation in the area," FWS Deputy Director Jim Kurth said. He credited the "efforts of a number of dedicated partners" for helping make the refuge a reality. Two groups in particular were central to the push. The state chapter of the *Nature Conservancy* donated an easement on a 39-acre parcel in Ashe County, which formally established the refuge. The *Carolina Mountain Land Conservancy* has also been a key player in the bog conservation push, according to a FWS news release. The refuge may eventually grow to 23,000 acres, FWS said.

"While western North Carolina has beautiful swaths of conserved public lands, mountain bogs, which are home to several endangered species, are largely unprotected," said Mike Oetker, deputy director for the service's Southeast Region. "People have worked for decades to conserve these bogs, and creating this refuge was an opportunity to build on that effort in a significant way." Mountain bogs typically are small areas of swampy land that are saturated with water for most of the year. Widely scattered across the landscape, they are often covered with thick layers of moss and composed of deep layers of peat and black mud. Important to wildlife and plants, mountain bogs are home to endangered bog turtles and four endangered plant species. They also provide habitat for migratory birds and game animals and breeding grounds for amphibians, and they reduce the impacts of floods and droughts. While some parts of the refuge will likely be too fragile for recreation, FWS said that other parts could be opened for wildlife-based recreation, including hunting, fishing, education, interpretation, and wildlife observation and photography.

The eventual size of the new bog refuge will depend on the willingness of landowners in the region to sell their properties and the availability of federal funds to purchase them. The agency has identified 30 bog sites near the refuge that it will focus on buying or protecting via conservation easements in the coming years. FWS hopes to fund expansion of the mountain bogs site with money from the *Land and Water Conservation Fund* (LWCF). The 50-year-old habitat protection program bankrolled by up to $900 million a year of offshore oil and gas revenues is set to expire Sept. 30. The LWCF has bipartisan support, but conservative lawmakers argue that it should be used to pay down the National Park Service's nearly $11.5 billion deferred maintenance backlog instead of purchasing new lands like those used to create the mountain bogs refuge.

Source: Corbin Hiar, *Greenwire*, 4/23/15 BACK TO TOP

Genetic Study Offers Hope for Imperiled Freshwater Mussels

A new genetic analysis of freshwater mussels suggests these vital components of aquatic ecosystems aren't as bad off as previously thought according to research conducted by a team of U.S. and Canadian researchers. The genetics of six mussel species found in four Great Lakes tributaries in southwestern Ontario were compared in research published in the journal *Conservation Genetics*. The species ranged from the endangered snuffbox mussel to the abundant threeridge mussel with kidneyshell, mapleleaf, wavy-rayed lampmussel and flutedshell in between, but the report identified common patterns. "Evidence of historical genetic connectivity within rivers was ubiquitous across species and may reflect dispersal abilities of host fish. There was little to no signature of recent disturbance events or bottlenecks, even in endangered species, likely as a function of mussel longevity and historical population sizes (i.e., insufficient time for genetic drift to be detectable). Genetic structure was largely at the watershed scale suggesting that population augmentation via translocation within rivers may be a useful conservation tool if needed, while minimizing genetic risks to recipient sites"

"That genetic structuring is occurring within individual rivers is good news, because it may be a means of protecting rare, threatened and endangered species from impending extinction," Heather Galbraith, USGS, said in a news release. While more than two-thirds of 300 North American freshwater mussel species are "highly imperiled" by dams, navigation projects, pollution and invasive species, local population losses may not be irreversible. "Knowing the genetic structure of a freshwater mussel population is necessary for re-

storing declining populations to prevent factors such as inbreeding, high mutation rates and low survivorship." It will also help inform relocation efforts in case development affects mussels. "Knowing a little bit about what mussels populations can be moved and how far away you can move them, and within what rivers you can move them, helps us save mussels we're [relocating], but also make sure we're doing more good than harm in the long run," Galbraith said. But genetics are limited by freshwater mussels' longevity, putting the onus on managers to ensure the mollusks don't disappear. Galbraith said, "By the time we observe a genetic change, it may be too late for the population."

Source: Dylan Brown, *Greenwire*, 5/19/15 BACK TO TOP

Listing of Crayfish Proposed in Appalachian Coal Country

The U.S. Fish and Wildlife Service (FWS) is proposing that two rare species of Appalachian crayfish be added to the federal list of endangered species – a move that could hinder mountaintop-removal coal mining in the region. The proposal was welcomed by the *Center for Biological Diversity* (CBD), an environmental group that has been pushing FWS since 2010 to protect the Big Sandy crayfish and closely related Guyandotte River crayfish. Coal mining practices like mountaintop removal, where vegetation and earth are blasted away and then disposed of in streams, are an "immediate threat to the continued existence of the Guyandotte River crayfish," FWS said. The water-pollution-sensitive species is only found in one county of West Virginia. Coal mining is also one of the primary threats to the Big Sandy crayfish, which survives in parts of Virginia, West Virginia and Kentucky. Other factors that have put the two species at risk include commercial timber harvesting, residential and commercial development, roads, and sewage discharges.

"This listing proposal is historic because these are the first species to be proposed for protection under the Endangered Species Act because of harm caused by mountaintop-removal coal mining," said Tierra Curry, a senior scientist at CBD. "By protecting streams for these crayfishes, we will also be protecting water quality for people in a region where public health has long been sacrificed to dirty coal." CBD sued the agency in 2012 to force a listing decision after FWS concluded in 2011 that the animals warranted protection. Crayfish keep streams cleaner by eating decaying plants and animals, according to CBD. The crawdads or mudbugs, as they're sometimes known, are also eaten by fish, birds, reptiles, amphibians and mammals, making them an important link in the food web. FWS will accept comments on the proposal over the next three months and plans to issue a final listing decision by April 2016. Coal industry trade groups did not immediately respond to requests for comment.

Source: Corbin Hiar, *E&ENews PM*, 4/6/15 BACK TO TOP

Living with Land and Water in the Ozarks

Living with Land and Water in the Ozarks (a landowner's guide to streamside living) is a publication of the advocacy group *Ozark Water Watch* (OWW). The guide is intended to assist streamside landowners in Arkansas and Missouri by providing a practical "hands on" guide for the kinds of issues and questions they might encounter. The common theme of the publication is the important role landowners play in maintaining their property in such a way as to sustain water quality in the river or stream adjoining their property. Topics covered include Ownership and Public Use, Property and Stream Modifications, Water Quality Regulations, Gravel Mining, Septic Systems, How Streams Work, Threats to Streams, Nutrients, Erosion to Stream Banks, Riparian Buffer Zones, Forest Landowner and Water Quality, and Agency/Organization Contact Information. The guide has broad applicability beyond the Ozark geographic area and is available for download in .pdf format from the OWW web site. Hard copies are also available in limited numbers. David Casaletto, Executive Director, *Ozarks Water Watch*, 2 Kissee Avenue, Kimberling City, MO 65686 (417-739-5001) can be contacted for additional information.

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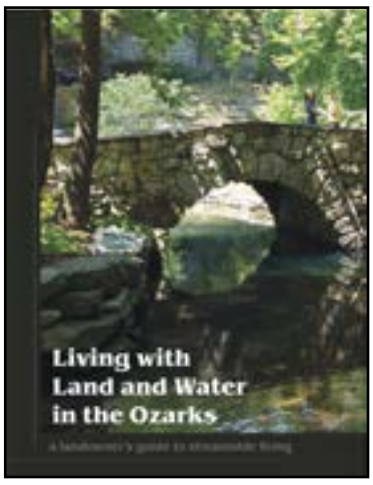

Meetings of Interest

Jul 13-17: Third International Conference on Fish Telemetry Halifax , Canada.

Jul. 26-29: *70th Annual Soil and Water Conservation Society Conference*, Greensboro, NC.

Aug. 5-7: American Society of Civil Engineers Watershed Management Symposium, Reston, VA.

Aug. 16-20: 145th Annual Meeting of the American Fisheries Society, Portland, OR

Aug. 23-28: 4th Biennial Symposium of the International Society for River Science, La Crosse, WI.

Oct. 25-30: Second Mississippi-Yangtze River Basins Symposium, Wuhan, China.

Nov. 1-5: SETAC North America 36th Annual Meeting, Salt Lake City, UT.

Nov. 16-19: National Working Waterfronts and Waterways Symposium, Tampa, FL.

Jan. 24-27, 2016: 76th Midwest Fish and Wildlife Conference, Grand Rapids, MI.

Mar. 13-15, 2016: *3rd International Muskellunge Symposium*, Minnetonka, MN. Contact: Dr. Derek Crane, Lake Superior State University, dcrane83@gmail.com

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Congressional Action Pertinent to the Mississippi River Basin

Climate Change

S. 66. Vitter (R/LA). Prohibits any regulation regarding CO_2 or other GHG emissions reduction in the U.S. until China, India, and Russia implement similar reductions.

H.R. 383. Luetkemeyer (R/MO) and 18 Co-sponsors. Prohibits U.S. contributions to the *Intergovernmental Panel on Climate Change*, the *U.N. Framework Convention on Climate Change*, and the *Green Climate Fund*

H.R. 1961. Honda (D/CA) and 8 Co-sponsors. Authorizes the NOAA to establish a Climate Change Education Program.

H.R. 1971. Lieu (D/CA) and 27 Co-sponsors. Reduces greenhouse gas emissions and protects the climate.

Conservation

S. 330. Heller (R/NV) and 26 Co-sponsors and **H.R. 641,** Kelly (R/PA) and 54 Co-Sponsors. Amends the IRS Code to make permanent the tax deduction for charitable contributions by individuals and corporations of real property interests for conservation purposes.

S. 338. Burr (R/NC) and 14 Co-sponsors and **H.R. 1814,** Grijalva (D/AZ) and 62 Co-Sponsors. Permanently reauthorizes the Land and Water Conservation Fund.

S. 384. Crapo (R/ID) and 4 Co-sponsors. Amends the IRS Code of 1986 to facilitate water leasing and water transfers to promote conservation and efficiency.

S. 890. Cantwell (D/WA) and 19 Co-sponsors. Provides consistent and reliable authority for, and funding of the Land and Water Conservation Fund to maximize the effectiveness of the Fund

H.R. 338. Young (R/AK). Amends the IRS Code of 1986 to encourage charitable contributions of real property for conservation purposes by Native corporations.

H.R. 781. Connolly (D/VA) and 12 Co-sponsors. Amends the IRS Code of 1986 to allow a credit against income tax for qualified conservation contributions which include National Scenic Trails.

H.R. 2346. Wittman (R/VA) and Thompson (D/CA). Amends the North American Wetlands Conservation Act to extend the authorization for the Interior Department to carry out certain wetlands conservation projects through FY2020.

Endangered Species

S. 112. Heller (R/NV). Amends the ESA to require the Interior Secretary to publish and make available for public comment a draft economic analysis at the time a proposed rule to designate critical habitat is published.

S. 292. Cornyn (R/TX) and 14 Co-sponsors and **H.R. 1667**, Lummis (R/WY) and 9 Co-sponsors. Amends the ESA to require publication on the Internet of the basis for determinations that species are endangered or threatened, and for other purposes.

S. 293. Cornyn (R/TX) and 17 Co-sponsors and **H.R. 585**, Flores (R/TX) and 9 Co-sponsors. Amends the ESA to establish a procedure for approval of certain settlements.

S. 736. Enzi (R/WY) and 5 Co-sponsors and **H.R. 2352,** Neugebauer (R/TX) and 8 Co-sponsors. Amends the ESA to require making available to affected States all data that is the basis of threatened or endangered species determinations, and for other purposes.

S. 855. Paul (R/KY) and Heller (R/NV). Amends the ESA to permit Governors of States to regulate intrastate endangered species and intrastate threatened species, and for other purposes.

S. 1142. Lee (R/UT) and 4 Co-sponsors. Clarifies that noncommercial species found entirely within the borders of a single State are not in interstate commerce subject to regulation under the ESA or any other provision of law enacted as an exercise of the power of Congress to regulate interstate commerce.

H.R. 1668. McClintock (R/CA) and Rohrabacher (R/CA). Amends the ESA to provide for suspension of application of the Act to water releases by Federal and State agencies in river basins that are affected by drought, and for other purposes.

H.R. 2098. Crawford (R/AR) and 4 Co-sponsors. Amends the ESA to require the Interior or Commerce departments to exclude an area from designation as a critical habitat if the benefits of exclusion outweigh the benefits of including the area, unless the failure to designate the area as critical habitat will result in the extinction of the species.

H.R. 2109. Huizenga (R/MI) and 18 Co-sponsors. Amends the ESA to replace the current standard for awarding court costs, including attorney fees, in citizen suits with the federal judicial code standard for awarding costs to a prevailing party.

H.R. 2134. Olson (R/TX). Amends the ESA to require review of the economic cost of adding a species to the list of endangered or threatened species, and for other purposes.

Energy

S. 1. Hoeven (R/ND) and 59 Co-sponsors and **H.R. 3**, Cramer (R/ND) and 30 Co-sponsors. Keystone XL Pipeline Act.

S. 490. Inhofe (R/OK) and 9 Co-sponsors

and **H.R. 866**, Black (R/TN) and 22 Co-sponsors. Permits states to seek to transfer to itself, and to implement, existing federal responsibilities for leasing, permitting, and regulating oil and natural gas development.

H.R. 1902. Pocan (D/WI) and 16 Co-sponsors. Bans hydraulic fracturing on land owned by the U.S. and leased to a third party, and for other purposes.

Fish Culture

H.R. 393. Young (R/AK) and 9 Co-sponsors. Amends the Federal Food, Drug, and Cosmetic Act to require the labeling of genetically-engineered fish.

H.R. 2235. Crawford (R/AR) and 3 Co-sponsors. Ensures the continuation of successful fisheries mitigation programs, and for other purposes.

FWPCA and Water Quality

S. 54. Vitter (R/LA). Amends the FWPCA to define the period of time in which the EPA is authorized to restrict or deny a permit for the discharge of dredged or fill materials into navigable waters.

S. 234. Vitter (R/LA) and 9 Co-sponsors. Amends the FWPCA to confirm the scope of the authority of the EPA to deny or restrict the use of defined areas as disposal sites.

S. 371. Murkowski (R/AK) and 6 Co-sponsors. Removes a limitation on a prohibition relating to permits for discharges incidental to normal operation of vessels.

S. 785. Casey (D/PA) and 11 Co-sponsors. Amends the Safe Drinking Water Act to repeal a certain exemption for hydraulic fracturing, and for other purposes.

S. 1140. Barrasso (R/WY) and 30 Co-sponsors. Requires the Corps and EPA to propose a regulation revising the definition of the term "waters of the United States", and for other purposes

H.R. 349. Latta (R/OH) and 12 Co-sponsors. Requires the NOAA Administrator to create an electronic database of research and information on the causes of, and corrective actions being taken with regard to algal blooms in the Great Lakes, their tributaries, and other surface fresh waters, and for other purposes.

H.R. 594. Gosar (R/AZ) and 185 Co-sponsors. Prohibits the Corps and EPA from implementing the proposed rule entitled, "Definition of 'Waters of the United States' Under the Clean Water Act," issued on April 21, 2014, or the proposed guidance entitled, "Guidance on Identifying Waters Protected By the Clean Water Act," dated February 17, 2012.

H.R. 896. Gibbs (R/OH). Amends the FWPCA to clarify when the EPA has the authority to prohibit the specification of a defined area, or deny or restrict the use of a defined area for specification, as a disposal site under section 404 of such Act, and for other purposes.

H.R. 897: Gibbs (R/OH). Amends the Federal Insecticide, Fungicide, and Rodenticide Act and the FWPCA to clarify Congressional intent regarding regulation of the use of pesticides in or near navigable waters, and for other purposes.

H.R. 1203. McKinley (R/WV) and 5 Co-sponsors. Amends the FWPCA to clarify that the EPA does not have the authority to disapprove a permit after it has been issued by the Corps under section 404 of such Act.

H.R. 1321. Pallone (D/NJ) and 2 Co-sponsors. Prohibits the sale or distribution of cosmetics containing synthetic plastic microbeads.

Invasive Species

S. 373. Rubio (R/FL) and 25 Co-sponsors. Provides for establishment of nationally uniform standards governing discharges incidental to the normal operation of a vessel, rolling back water protections against the spread of invasive species through ballast water disposal.

S. 589. Stabenow (D/MI) and 7 Co-sponsors and **H.R. 1135**. Miller (R/MI) and 24 Co-sponsors. Prevents the interbasin transfer of aquatic nuisance species between the Mississippi River and Great Lakes watersheds at a lock and dam choke point downstream from Chicago through measures such as electric barriers, carbon dioxide bubble screens, underwater sound cannons and pheromones.

H.R. 1485. Amodei (R/NV) and Lummis (R/WY). Directs the Interior and Agriculture depts. to control and manage invasive species on lands under their management.

Mining

S. 1458. Coats (R/IN) and 2 Co-sponsors. Amends the Surface Mining Control and Reclamation Act of 1977 to ensure scientific transparency in the development of environmental regulations and for other purposes

H.R. 1644. Mooney (R/WV) and 12 Co-sponsors. Amends the Surface Mining Control and Reclamation Act of 1977 to direct the Interior Secretary to make publicly available, 90 days before publication any information used to develop any rule, analysis, or assessment.

Public Lands

S. 146. Flake (R/AZ) and 4 Co-sponsors. Authorizes funding for national parks, federal refuges and units of national forests during any period in which the Interior or Agriculture secretaries are unable to maintain normal levels of operations at the units due to a lapse in appropriations, and for other purposes.

S. 361. Lee (R/UT) and McCain (R/AZ) and **H.R. 435.** Chaffetz (R/UT). Directs the Interior Secretary to sell certain Federal lands in AZ, CO, ID, MT, NE, NV, NM, OR, UT, and WY, previously identified as suitable for disposal, and for other purposes.

S. 755. Alexander (R/TN) and Corker (R/TN). Designates as wilderness certain public lands in the Cherokee National Forest in the State of Tennessee, and for other purposes.

H.R. 792. Griffith (R/VA). Provides for no net increase in the total acreage of certain Federal lands under the jurisdiction of the BLM, NPS, USFWS, or FS, and for other purposes.

H.R. 1445. Hardy (R/NV) and 2 Co-sponsors. Bars the Interior Dept. from purchasing land resulting in a net increase of land acreage under the jurisdiction of the NPS, USFWS, or BLM unless the federal budget is balanced for the year in which such land is purchased.

H.R. 2324. Amodei (R/NV). Provides for conveyance of small parcels of FS and BLM lands to private landowners, State, county, and local governments, or Indian tribes whose lands share a boundary with subject lands, and for other purposes.

Public Works

S. 1160. Udall (D/NM) and 3 Co-sponsors and **H.R. 2167.** Grijalva (D/AZ) and 3 Co-sponsors. Expands authorities of the Agriculture, Commerce, and Interior secretaries to provide service opportunities for young Americans, to help restore natural, cultural, historic, archaeological, recreational, and scenic resources of the U.S.

H.R. 1966. Kaptur (D/OH) and 6 Co-Sponsors. 21st Century Civilian Conservation Corps Act.

H.R. 1978. Polis (D/CO) and 27 Co-sponsors. Establishes a veterans conservation corps in conservation, resource management, firefighting, law enforcement, and historic preservation projects on public lands and for other purposes.

Recreation

S. 225. Thune (R/SD) and Klobuchar (D/MN). Amends the Toxic Substances Control Act to clarify EPA jurisdiction with respect to certain sporting good articles related to hunting and fishing (i.e., lead based materials), and to exempt those articles from a definition under that Act.

S. 263. Crapo (R/ID) and 2 Co-sponsors and **H.R. 578**, Gibbs (R/OH) and 84 Co-sponsors. Protects the right of individuals to bear arms at water resources development projects.

S. 390. Tester (D/MT). Ensures that amounts in the Land and Water Conservation Fund are made available for projects to provide recreational public access, and for other purposes.

S. 405. Murkowski (R/AK) and 21 Co-sponsors; **S. 556.** Murkowski (R/AK); **S. 659**, Sullivan (D/AK); and **H.R. 2406**, Wittman (R/VA) and 3 Co-sponsors. Protects and enhances opportunities for recreational hunting, fishing, and shooting, and for other purposes.

S. 834. Thune (R/SD) and 3 Co-sponsors. Amends the law relating to sport fish restoration and recreational boating safety, and for other purposes.

S. 1464. Schumer (D/NY). Requires all recreational vessels to have and to post passenger capacity limits and for other purposes.

H.R. 176. Womack (R/AR) and Westerman (R/AR). Amends WRDA of 1992 to permit the collection of user fees by non-Federal entities in connection with the challenge cost-sharing program for management of recreation facilities, and for other purposes.

H.R. 528. Benishek (R/MI) and 40 Co-sponsors. Facilitates use of and access to Federal public lands for fishing, sport hunting, and recreational shooting, and for other purposes.

H.R. 974. Lummis (R/WY). Directs the Interior Secretary to promulgate regulations to allow the use of hand-propelled vessels on certain rivers and streams that flow in and through certain Federal lands in Yellowstone National Park, Grand Teton National Park, and the John D. Rockefeller, Jr. Memorial Parkway, and for other purposes.

H.R. 1991. Bishop (R/UT) and Grijalva (D/AZ). Extends the authorities of the Interior and Agriculture secretaries to carry out the Federal Lands Recreation Enhancement Act, and for other purposes.

Regulations

S. 110. Heller (R/NV) and **H.R. 352.** Duffy (R/WI) and 4 Co-sponsors. Requires the EPA to satisfy certain regulatory requirements within 30 days.

S. 226. Paul (R/KY) and 35 Co-sponsors and **H. 427**, Young (R/IN) and 161 Co-sponsors. Requires Congress to approve all new major federal regulations.

S. 280. Portman (R/OH) and 9 Co-sponsors. Improves the efficiency, management, and interagency coordination of the Federal permitting process through reforms overseen by the OMB Director, and for other purposes.

S. 554. Barrasso (R/WY) and 7 Co-sponsors and **H.R. 1030**, Smith (R/TX) and 28 Co-sponsors. Amends the Environmental Research, Development, and Demonstration Authorization Act of 1978 to prohibit the EPA from taking an action unless all scientific and technical information relied on to support such action is the best available science and made publicly available.

S. 1067. Blunt (R/MO) and 3 Co-sponsors and **H.R. 2010.** Hultgren (R/IL) and 2 Co-sponsors. Requires the periodic review and automatic termination of Federal regulations.

Water Resources

S. 176. Boxer (D/CA) and 2 Co-sponsors and **H.R. 291,** Napolitano (D/CA) and 29 Co-sponsors. Establishes within the EPA a *WaterSense* program to identify, label, and promote water efficient products, buildings, landscapes, facilities, processes, and services.

S. 653. Cardin (D/MD) and Boozman (R/AR). Water Resources Research Amendments Act of 2015.

S. 982. Barrasso (R/WY) and 10 Co-sponsors, and **H.R. 1830**, Tipton (R/CO) and 23 Co-sponsors. Prohibits conditioning any permit, lease, or other use agreement on the transfer of any water right to the United States by the Interior and Agriculture Secs. and for other purposes

H.R. 813. Huffman (D/CA) and 11 Co-sponsors. Supplements the Corps of Engineers' existing authorities to review the operations of reservoirs to encompass climatic and atmospheric trends.

H.R. 1370. Graves (R/MO). Directs the Corps to revise the *Missouri Mainstem Reservoir System Master Water Control Manual* and any related regulations to delete fish and wildlife as an authorized purpose of the Corps and elevate flood control as the highest priority of authorized purposes of the Corps at all times.

H.R. 2097. Newhouse (R/WA) and 4 Co-sponsors. Facilitates and streamlines the BOR process for creating or expanding surface water storage under Reclamation law.

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