Stream of Consciousness Musings on Water News

This is not quite “free-floating hostility,” a la George Carlin, but lots of news seems to link together this week. So:

Fracking: An official in Kansas says that fracking may not cause earthquakes, but injection wells disposing of salty, produced water do. Of course, since fracking very, very often involves salty produced water that is re-injected underground, this will probably do little to calm concerns about fracking. Especially since using highly saline water might be the next horizon in agriculture. Also, a new study out of Duke shows that contaminants from both fracking and conventional drilling wastewater are showing up in Appalachian waterways in high levels. So some communities and counties have taken it upon themselves to ban fracking. One such place, Mora County, NM had their fracking ban overturned in federal court this week – partially because it attempted to overturn Citizens United and deny personhood to corporations. New Mexico’s neighbor Colorado has a governor-created task force trying, and currently failing, to find a balance between state and local drilling regulations. It sounds a lot like what one observer back in New Mexico has found: water is for talkin’ over.

Drought: California’s depending on the return of an “atmospheric river” 15 times larger than the Mississippi River to bring an end to their drought. Of course, as Sao Paolo’s empty reservoirs show, those flying rivers aren’t to be taken for granted. Although California might seem like the center of western civilization these days, the continuation of an empire in the face of drought is not guaranteed, either. A new study may have found the key issue behind the long-contemplated collapse of the Mayan Empire. Researchers have analyzed mineral deposits in Belize’s Blue Hole and found that the empire’s collapse around 800 AD coincided with a pair of megadroughts lasting over 100 years – similar to the megadrought that some climate modelers in California and the Southwest have been analyzing. Also, if you want to see California’s great trees, get there soon. A new study found that California’s forests have half as many big trees as they did eighty years ago and lays the blame at a lack of water causing stress to the large trees important for forest structure, carbon storage, and more. Hurry up, or you’ll be headed to “Sequoia Oak National Park.” Then again, oak’s nice.

Toxic air & water in California: When on your way to see
the giant sentinels of the forest, swing by Owens Valley to see the real-life inspiration for Chinatown (not the incest part). Owens Valley and Los Angeles are *thiiis close* to resolving their century-old feud which left Owens Valley so dry and dusty that it has some of the most polluted air in the country. The mayor of L.A. has apologized for stealing the water, but tilling and sprinkling seem to be the answer to tamping down the dust from the lakebed. Rather than toxic air, toxic water is a hardship working class Latinos in California’s Central Valley (west of Owens Valley and much larger) face daily. A new *brief* from UC Davis shows they deal with it by buying costly filtration or bottled water or simply drinking sugary drinks, instead. Where do we stand on that idea of *water as a human right*?

**Farm Pollution:** Beyond harming the workers who harvest the actual crop, agricultural pollution is threatening some of Earth’s greatest natural treasures – like the Great Barrier Reef, Lake Champlain, and Des Moines. Australia has put a *price tag* of $1.7 billion on the investment needed to *clean up* the water headed from land out to the Great Barrier Reef. Those familiar with Louisiana coastal restoration plans would likely counsel Australia to act fast; the longer they wait, the more the bill grows. In Vermont, the *governor* has unveiled a new plan to reel in phosphorus flowing off of farms into Lake Champlain. Environmentalists are unhappy with the governor’s track record and farm lobbyists are unhappy with the proposal, so he might just be on the right track. *Champ* will surely appreciate the effort. Finally, Des Moines has *announced* that they *will sue three upstream counties* under the Clean Water Act, asking that upstream farms be put to the same permitting process as industrial polluters. The case will be contentious and an interesting test of the Clean Water Act and its agricultural exemptions, but the city’s water utility, that has *invested* millions to remove the nitrates from its drinking water, has lost faith in voluntary systems currently in place. This case is one to follow as it could have wide-ranging implications across the farm industry and in the halls of power in Washington, DC and in state capitals like Des Moines.

**Sea Level Rise & Global Warming:** Brand new to Washington, DC is the Senate’s 98-1 *declaration* that climate change is real and 49-50 declaration that it isn’t necessarily human caused (which is somehow a failure in Senate math these days). Just in time, too, because, not only was 2014 *earth’s hottest year* on record according to one new report, an article in *Nature* shows that *sea level rise* has accelerated over the past 20+ years. An article in *Earth’s Future* points out that coastal flooding is the first consequence of that sea level rise, but the “*Urban Climate Change Governance Survey*” shows that North American cities lag behind much of the rest of the world in preparation for coastal inundation. Washington, DC, where they now believe in climate change, at least has had the “*Washington Capitol Regional Climate Change Report*” since 2008. And for more good news, it seems as though the increase of carbon in the atmosphere and oceans that drives the climate change that causes ice sheets and glaciers to melt that has a hand in sea level rise has another kick of carbon coming, as a study in *Nature Geoscience* reports that glaciers and ice sheets store organic carbon and then release that carbon into the hydrological cycle when they melt.

**Science, Water Science:** For most, “where did water come from” isn’t a tough question. It came from the tap/stream/bottle. Astronomers (telescopes, not horoscopes) think on a different level, and they’ve long wondered how water came to Earth in the first place. Some had hypothesized that water came from a comet crashing to Earth 4 billion years ago. A comet like the one Rosetta landed on a few months ago. *Nope!* You see, all water molecules are the same, except when they’re not. Hydrogen (the “H” in the “H₂O”) has a few different *isotopes*, including deuterium, which has a single neutron in addition to the standard single proton and single electron we all learned in high school chemistry. Deuterium is heavier than protium (regular hydrogen atoms) and so water with a lot of deuterium isotopes is called “heavy water.” Well, it turns out that the water on the comet Rosetta landed on is way *too heavy* to be from the same source as Earth water. Speaking of space, a new invention makes it possible to convert 80 percent of *urine back into water* – something that could be necessary for humans to actually travel to Mars (or beyond). Closer to home, Bill Gates is promoting an invention intended to *transform sewage into potable water* and electricity, killing three birds with one stone. As far as potentially revolutionary water processing ideas, this might even beat the *turbines in drinking water pipes* generating electricity in Portland, or the laser- etched *hydrophobic metal* developed in Rochester that makes water bounce. All seriously cool, seriously geeky water innovations.