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The Real Reason for High Nitrates in the Raccoon and Des Moines Rivers

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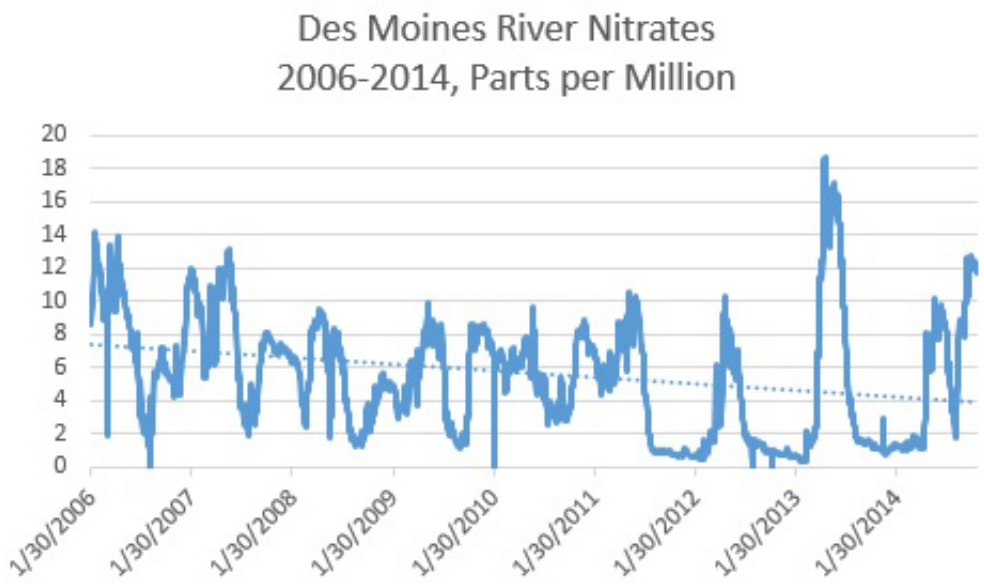
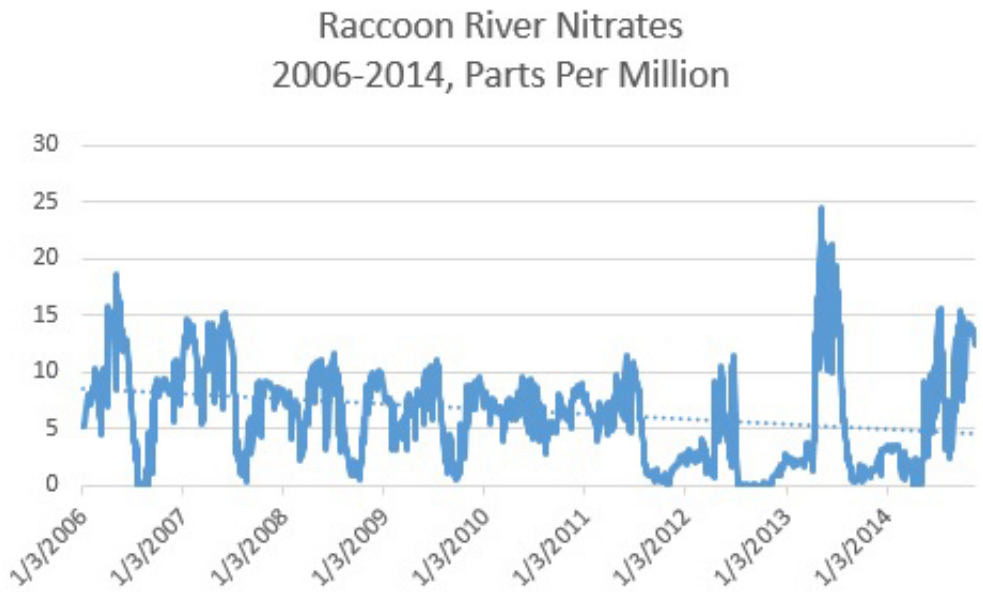
Like many Des Moines-area residents, I have been paying close attention to recent media reports on high river nitrate levels in the Raccoon and Des Moines Rivers.

And while a number of people have eagerly assigned blame for this rare occurrence, the science and data that help explain it have received very little attention.

I've analyzed all publicly-available data for the Raccoon and Des Moines Rivers on the Des Moines Water Works website. Since 2006, average daily nitrate levels for raw, untreated water in the Raccoon and Des Moines Rivers, respectively, are 6.6 parts per million (ppm) and 5.6 ppm. (The EPA drinking water standard for finished, treated water is 10 ppm.)

And, despite the recent unusual spike in nitrates, the data show statistically significant **declining** daily trend-lines for nitrates in both rivers over the past eight years.





The data also show only one other fall/winter nitrate spike during this eight-year period, in which nitrate levels in raw, untreated river water exceed the 10 ppm finished, treated drinking water standard (in the fall of 2006/winter 2007 season).

Since this year appears to be an exception, what's causing it?

Weather

Nitrate movement is most influenced by weather. Peer reviewed science finds that rainfall and temperature contribute more to a seasonal variation in nitrate concentrations in the Raccoon than anything else. A review of monthly Iowa weather summaries for this episode and in 2006-07 finds either above average monthly precipitation or temperatures, or longer than unusual periods of rainfall or milder temperatures.

It is most likely that the wetter, milder temperatures this fall have contributed to the unusual movement of nitrates in the Raccoon and Des Moines Rivers from a variety of sources. Wet and warm weather has increased subsurface/groundwater flow, likely resulting in the persistently higher than usual nitrate levels since early September.

Also, it's likely not a result of unusual farming activity. By most accounts, other than delays caused by wet weather, fall tillage, fertilizer applications (down 25-50 percent in some areas) and manure applications were not unusual this year. In fact, **agronomists say there's a general trend of applying less fall fertilizer and putting on more in the spring in split applications and often with some type of inhibitor or stabilizer**. Additionally, crop yields were good in most areas of the state so one would expect that the nitrogen applied by farmers was well utilized by this year's crops (as opposed to running off).

Conservation Practices

Iowa farmers used at least $13 million of their own money this year and leveraged $9.5 million in state soil and water conservation cost-share funding to build more than $22 million in conservation structures and adopt conservation practices that prevent erosion and improve water quality (according to the Iowa Department of Agriculture & Land Stewardship). **The $22 million figure is a recent (and likely an all-time) record, and it is just one indicator of farmers' interest in doing their part to protect water quality. Farmers are doing more conservation today than ever before.**

Farms, farmers and regions of Iowa are different and need different, targeted scientific solutions, as noted by the Iowa Nutrient Reduction Strategy, Iowa's new science and technology-based plan to improve water quality. The one-size-fits-all, prescriptive regulations proposed by some would miss the mark, not resulting in environmental improvement and needlessly put family farmers out of business.

The science doesn't support any one, two or three solutions. It's a combination of many practices that vary from farmer-to-farmer, farm-to-farm, and region to region of Iowa, and that will need to be implemented over a period of time.

By Rick Robinson. Rick is Iowa Farm Bureau's Environmental Policy Advisor.