

## **Point-Nonpointillism:**

The challenges that water quality trading faces and what we might do about it<sup>1</sup>

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About ten years ago, when I was just starting up WRI's work on nutrient trading, I called someone who had been involved in one of the notable efforts at that time to ask about their experiences. We were thinking about doing some economic comparisons of trading versus various other policies and programs. The person's response was something like, "you're too late, it's all been done and trading really doesn't work."

I was hoping that trading might be the bridge somehow between point source controls in the Clean Water Act and the nonpoint subsidies in the farm bill. Our water quality policies looked to me at that time like they were pretty disjointed, even at cross-purposes and we weren't making the sort of progress that it seemed we could to clean up the nation's waters.

We went ahead with the work because I thought that the efforts that had been tried up to that time hadn't really been trading programs per se, more like offsets, or pollution taxes with offsets, or were so tightly constrained that it was no surprise that they didn't work.

Ten years later though, I continue to hear many people expressing frustration that our policies are *STILL* disjointed, *STILL* at cross-purposes and we *STILL* haven't made the progress we could to clean up the nation's waters. I feel this frustration myself. If I got a call today like the call I made ten years ago, I sometimes wonder what I would say.

I think about the progress that's been made in other applications of trading in shorter amounts of time and it makes me think that we are still quite long way from achieving gains in the water quality area. It didn't take ten years to get the acid rain program up and running and achieving reductions ahead of schedule. As of 2003, key emissions are down by 40 percent. That trading program has yielded real environmental improvements in a cost-effective manner in a fairly short amount of time.

And then when you look at carbon markets in the EU, you have to really be impressed. The Kyoto Protocol isn't yet ten years old, but in 2005 the global carbon market was worth \$11 billion. There's a clear market signal to reduce greenhouse gas emissions, investors are getting into the markets, and renewables and efficiency are taking off.

Contrast this with trading and water quality. Have we made much progress since EPA issued its draft framework for watershed based trading in 1996, or its water quality trading guidance in 2003? There are some bright spots, but overall I think real progress has been spotty. There's some good news in a few places, but it's not clear that trading

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<sup>1</sup> Presented at the Second National Water Quality Trading Conference, Pittsburgh, PA, May 24<sup>th</sup>, 2006

has actually resulted in significantly improved water quality yet. There have been a few “trades”, which really are more like offsets and are largely based on permits. Are there any functioning markets up and running? The answer is no. Are we close anywhere? Hard to tell, but I don’t think so.

So what explains our continuing struggle? The first big problem, in my opinion, is that we keep doing a lot of the same things over and over again, just in different places. Aspects that keep being redone or reinvented include economic and feasibility studies, educating agency staff; defining trading program components; defining links to other agency responsibilities like permitting; educating stakeholders and running an efficient stakeholder process; setting the baseline for trading and establishing trading ratios; providing the trading infrastructure, e.g., estimation tools, marketplace, and registry. With ten regions, fifty states and umpteen watersheds, you could label this “point-nonpointillism.”

This suggests that a fundamental issue is the reductionist approach we take to watershed management. There are some 3,500 waterways and water bodies impaired by nutrients. If we tried to develop a trading program for each one of these, it would be labeled *reductio ad absurdum* – disproving a proposition by showing the absurdity of it when taken to its logical conclusion. So, we obviously don’t want to do that, but what do we do?

I think we need to be much more deliberate about learning from what’s been done. This conference is a great start, and I applaud USEPA and USDA for co-sponsoring it. But it’s not enough. I think we need to develop a “trading program in a box.” Some group of experts needs to get together and sift through all the work that’s been done to date and pick out the best examples and put it all together in one place. The collected best wisdom would help to streamline the development of new and effective efforts, and identify the gaps that need to be filled in.

One of the criteria would certainly be the potential depth of the market. I was in China a few years back at the invitation of the government to advise them on the development of a nutrient trading program. They took me to a city in the southwest called Kung Ming, which has about three million people and sits at the head of a 50 mile long lake. The lake near the city looks like pea soup. There are three major phosphorus sources to the lake: a huge fertilizer factory, a huge chemical factory, and the city’s single sewage outfall. None used anything more than primary treatment. They asked me to help them put together a trading program. I told them that I thought it was a bad idea. My recommendation was to simply make the three big sources treat their outflow as the economies of scale would work in their favor. The administrative hassles of a developing a whole program for just three untreated sources just wouldn’t be worth it. They were extremely disappointed and put me on the next plane back to the States.

But, to bring this lesson back home, I think we need to focus on fewer, bigger watersheds, where the potential of trading could really play out. If Pennsylvania and Virginia finally get their programs up and running to help the Chesapeake Bay, that will be a big deal. And if they do, they ought to consider interstate trading to expand the market, as they’re both contributing to the same problem.

The next big obvious target where trading would make sense is to address hypoxia in the Gulf of Mexico. Studies by WRI and Purdue suggest that trading could make a lot of economic sense, assuming there was some sort of state compact to tackle

the issue, like the Chesapeake Bay states have done. Right now, policy to address the dead zone is more or less being ignored.

I'm guessing that many of you are saying to yourselves right now, "talk about hard, that would be impossible." So let me offer the counter-example of the Regional Greenhouse Gas Initiative, also known as RGGI.<sup>2</sup> I don't know how many of you have heard about RGGI; it's a group of eight northeastern and mid-Atlantic states that have come together to create a regional market to trade carbon dioxide emissions from power plants. In December 2005 the states signed an MOU to adopt a cap and trade system, and last March they released a draft rule, to be finalized by July. The final rule will be the basis for state rulemaking.

The RGGI process got started in 2003 and will be operative beginning in 2009. That's less than six years from start to finish. I don't think there's any insurmountable technical reason why a multi-state water quality trading program couldn't be set up for the Mississippi; I just think we haven't had the leadership to make it happen.

In addition to being the main culprit in the cause of hypoxia, a focus on nitrogen would also make a lot of sense for climate reasons. Nitrous oxide is the main greenhouse gas that comes from U.S. agriculture. Per molecule, it is 311 times more powerful in trapping heat than carbon dioxide. The main source for nitrous oxide creation is fertilizer, so any activity that would be done in the context of a trading program to reduce agricultural nitrogen emissions to the nation's waters would also have a climate benefit. These benefits are permanent, unlike offsets generated by soil carbon sequestration, which can be re-released if tillage practices change. It's possible that farmers could generate a water quality credit and a separate greenhouse gas credit from the same activity, to be sold into different markets. But, you need a big, deep market for all that to make any sense.

Fortunately, the USDA has come out strongly in favor of market-based approaches. Their current strategic plan calls for market-based approaches to leverage private sector funding for conservation efforts on the nation's farmland. The bad news is that the Department is doing this in expectation of flat or decreased funding in next year's farm bill.

I would take this a step further and suggest that the farm conservation programs themselves operate using market-based approaches. The Conservation Reserve Program uses the Conservation Benefits Index, which is a start, but you could imagine the government spending conservation dollars based on the price of environmental credits offered by farmers. The key difference would be that the government would be the only buyer, so it would be what's called a monopsony. In this case, the sellers (farmers) would bid their credits at the lowest price in a "reverse auction." The USDA would buy as many credits as it could, cheapest ones first, until the budget for that program was used up.

With a grant from the USDA, we're working with the Pennsylvania Environmental Council to test this idea by adapting our trading website, NutrientNet for the purpose. Suzie Greenhalgh and Scott VandeMark made a presentation on the preliminary results yesterday. They found that the range of prices for phosphorus reductions was very broad – from a low of about \$2.36 per pound up to \$157 per pound. While the USDA tries to bundle activities and prioritize to get the biggest bang for the buck, they don't have any way to discern who's offering the cheapest credits.

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<sup>2</sup> <http://www.rggi.org/>

The next logical step would be to tie in a market-based federal conservation program with trading programs in major basins such as the Mississippi or the Chesapeake. Think for a moment if there was one major market for the Mississippi, with nonpoint sources offering water quality credits on the Chicago Board of Trade, and carbon credits on the Chicago Climate Exchange, all put together by bundlers such as farm cooperatives, with major buyers including point sources and the USDA. Point source purchases could be applied against their permits and government purchases would be permanently retired.

The last thing to make this all work is that the commodity programs have to change. A recent study on the dead zone by the Environmental Working Group found that “taxpayer funded commodity spending overwhelms water quality related conservation spending by more than 500 to 1... Farms in counties that comprise just 15 percent of the total land area of the Mississippi River Basin are responsible for 80 percent of the critical spring surge of agricultural nitrate pollution to the Gulf.” And, from 1995 through 2002, \$28 billion out of almost \$60 billion, or nearly half of all subsidies in the Mississippi basin went to these counties. They also found that the value of nitrogen fertilizers that runoff into the Mississippi and down to the Gulf was worth almost \$400 million dollars last year.<sup>3</sup>

While there’s clearly a concentrated problem in the Mississippi River Basin, the commodity programs change farmers’ incentives and are a key cause the nutrient pollution in the first place. If the USDA’s right that the outlook for conservation funding is bad, then Congress ought to get it from the commodity titles.

In the 19<sup>th</sup> century the artists who developed pointillism were seeking a technique to create brighter paintings where the image stood out from the canvas as you stepped back. I think the question for us today is to figure out how our efforts can add up to something bigger than a collection of disconnected activities, as I’ve called it, “point-nonpointillism.” In another ten years, what sort of picture will we have produced with water quality trading? Unlike the person I talked to ten years ago, I hope we’ll be able to say that it’s all been done, and it really *does* work.

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<sup>3</sup> <http://www.ewg.org/reports/deadzone/execsumm.php>