

Prospects and Models for Conservation District Roles in Environmental Markets

Don Stuart

America's conservation districts have a considerable interest in seeing our agriculture industry become a major supplier in newly emerging ecosystem service markets (referred to here as environmental markets). These markets have the potential to provide substantial, dependable, and much-needed revenue for voluntary conservation stewardship on private lands as well as for the conservation district assistance that will be needed to get that stewardship on the ground.

Because these markets are still emerging, conservation districts have an early opportunity to identify the roles they might like to play and to consider how to influence these markets so they develop in ways that work for districts and their constituents. This paper is intended to help districts assess their possibilities, make informed choices, and identify ways to constructively influence the emergence of strong markets for environmental services provided by agriculture.

The current role of conservation districts

Historically, districts were created to help private agricultural landowners implement good soil conservation and to serve as local community partners for the USDA/Natural Resources Conservation Service (NRCS). Over the years, districts have broadened their roles to include assistance for landowners with a full array of conservation stewardship issues including water quality, wildlife habitat, air quality, sustainable forestry, and a host of unique local conservation stewardship needs. Increasingly, districts have been able to secure independent funding, sometimes through appropriations from state and local governments, through local taxes, or from private and public grants and contracts.

Modern conservation districts are co-equal partners with their NRCS brethren. They operate their own independent programs with highly qualified local staff. They serve as a trusted (and trustworthy), non-regulatory source of technical assistance on the land stewardship issues that face most agricultural landowners. They are a conduit, and sometimes a source, for voluntary financial incentives funding that can help farmers pay the often-substantial costs of implementing conservation practices on their land. Several generations of consistent high quality work with private landowners have earned America's conservation districts broad respect in our nation's agricultural communities.¹

The struggle for conservation district funding

Finding adequate funding for conservation district work, however, has always been, and seems likely to continue to be, a challenge. Conservation incentives are often expensive, and the availability of financial incentives is one of the major motivations for landowners considering conservation actions and district assistance. A well qualified professional staff is also expensive – districts have struggled, over the years, to consistently maintain strong well-funded programs for sound landowner assistance in the face of lean and fluctuating public revenues.

These uncertainties in funding for conservation district work are aggravated by continued ambiguity in our choices between regulations and incentives. Society has not yet developed a clear rationale for the appropriate circumstances under which to use voluntary incentives to address environmental concerns, versus when regulations are the better option. Policymakers can turn to regulations as a “first choice” solution, and sometimes support district work more as a “feel good” measure than as the critically necessary component of society’s environmental response that it ought to be.

This attitude is apparent in the minimal funding typically provided in local & state appropriations processes. While there has been somewhat more success at the federal level, NRCS appropriations also still only cover a fraction of landowner demand.² And the apparent demand itself represents only a fraction of the voluntary private lands conservation that would be possible with sufficient resources to help more landowners or to pay the full and actual cost of practice implementation.³ Most landowners are fully aware of the limits on available incentives funding as well as the resulting percentage limits on the amount that can be made available for any particular project – were more funding available, a great many more would apply.

Districts need a more secure and more substantial source of revenue to fund their activities and landowners need increased public funding in each conservation project if we are to see the dramatic increase in their participation we know is possible. Environmental markets could help fill that need by paying the full cost (plus profit) in needed conservation investments.

The promise and possibilities of environmental markets

After many years (even decades) of discussion, environmental markets are finally beginning to emerge in various forms around the country. None of them yet take full advantage of the possibilities for agriculture participation. But some are already seeing substantial capital investment, establishing relatively clear rules for participation, providing strong assurances of performance, and have developed formal institutions and consistent participation. There are ongoing, working markets for carbon offsets, wetland mitigation, and water quantity trading. There is a definite market for renewable energy. Water quality trading and wildlife habitat mitigation banking are beginning to occur at various locations around the country. And there seem to be prospects for flood mitigation, as well as for other ecosystem services that can be provided by agriculture. Not all of these markets are consistently suitable (or beneficial) for agriculture. But the potential benefits for private lands conservation from well managed markets are clear.

These markets provide substantial advantages for the environment. Purchasing environmental services from the lowest cost provider makes environmental protection cheaper, making more protection possible for the same money. Reducing the economic cost makes securing environmental protections easier to accomplish politically. With markets, there is less reliance on scarce public funding so funding for conservation stewardship can be more consistent over time. Conservative transaction ratios often result in the production of environmental benefits greater than those which are being replaced. Generating the specific environmental values that are produced to be sold almost always results in also producing additional, co-benefits for the environment, besides those which are being bought and paid for. Increased funding in the system can make it possible for purchases to be more strategic and more cost-effective. By

purchasing environmental services from many suppliers, the risk of failure is greatly diminished. And establishing a real dollar value for services humans receive from the environment can make it more difficult for society, and policymakers, to ignore and “externalize” these services in the years ahead.⁴

The potential benefits for agricultural landowners are equally powerful. These markets can provide diversified and supplemental income for struggling farm businesses. They also provide a new, substantial potential revenue flow for conservation incentives which should diminish the need and the political pressure to regulate agriculture. In addition to operating revenue, these markets seem likely to also provide revenue for purchase of development rights on farmland, slowing the loss and fragmentation of agricultural lands while respecting the owners’ property rights. They also place agriculture in a new, key, socially valuable position as a supplier for environmental services (in addition to food) badly needed by a growing society. And as environmental services take on a real (rather than a largely abstract) dollar value, the actual cost of environmental regulation is likely to become clearer and the boundaries of fairness in sharing the burdens on environmental protection easier to define in the political arena.⁵

The specific promise of agriculture as a potential supplier to these markets is that farmers seem likely to be able to produce environmental services at a price that is highly competitive. This is because farmers are already producing valuable ecosystem services for humanity in the form of food and fiber and because it is often quite practical for them to also provide (or enhance) additional ecosystem services (like clean water, habitat, carbon sequestration, etc.) on the same land with only minimal interference with their current income flow. So the price they need to charge for these services can be lower than would be charged by other suppliers because the environmental markets need only provide supplemental income. Despite this advantage, there will be some instances where these markets also create pressure to take land out of active, working agriculture, so it will be important that the agriculture community (and conservation districts) be actively engaged in market development and design so they work in ways that make it possible for farmers to supply them while also helping to keep land in farming.

Institutional roles in environmental markets

Conservation districts have played an essential role in many of the environmental markets that have emerged around the country in recent years. District credibility within the agriculture community, expertise in modeling impacts for specific conservation practices, capacity to provide sound landowner technical assistance, a history of dealing with incentive-based conservation – all of these and more will often make the local conservation district a highly valued partner in an environmental market transaction or program.

In many cases, it is still unclear what kinds of institutional support might develop to help these markets flourish. There seem to be multiple potentially needed roles for both the private and the public sectors. Some of these roles could potentially be filled by a single institution – perhaps resulting in better service. Some may need to be performed independently.

The following brief, descriptive “menu” of services required for the success of environmental markets generally is intended to assist the conservation district community in assessing potential

market roles or functions that, given their history and expertise, might (or might not) be appropriate for conservation district work:

- ◆ Certification: Ecosystem service buyers (and their permitting agencies) need positive, independent assurance that the services which will be purchased can actually be provided. The buyer or the agency will often lack either the staff or the expertise to provide such assurance. This role needs to be filled by independent, credible, certifiers with the scientific/technical credentials to evaluate the site and the supplier, assess the supplier's performance potential against their baseline, and certify the amount and quality of the services anticipated to be provided. This role may, or may not also include subsequent monitoring.
- ◆ Monitoring: Once the capacity and anticipated amount and quality of services have been initially certified, there is still a need to monitor ongoing actual performance. This can be done by the same people who initially certified the anticipated production or it could be done by someone else, perhaps who specializes in monitoring. Both certification and monitoring will need to satisfy the demands of buyers and of any public agency that may have conditioned an operating permit for the buyer on the purchase of the environmental services involved.
- ◆ Trusted point of contact for sellers: Market suppliers will typically be small, independent, family farmers with a good deal of knowledge about their land, and perhaps with a fair amount of knowledge (or access to assistance) about its potential to provide environmental services. But these new markets are complex. And a farmer/supplier may need to navigate several markets for several kinds of environmental services, each of which is driven by separate regulatory requirements and has entirely different buyers with unique needs. Suppliers will be on a tight budget and will have limited time and willingness to fully and independently investigate the rules and possibilities for each market in which they may have an interest. This suggests that there will be a substantial need, if they are to be comfortable entering meaningful transactions, for them to deal with a trusted agent or point of contact whom they feel shares their interests and objectives.
- ◆ Trusted point of contact for buyers: Buyers may often be large public or private institutions. They will typically enter fewer, larger transactions and will probably wish to deal only in a single environmental commodity – water quality, habitat, wetlands, water quantity, carbon, etc. As such they may be thought to be more sophisticated than most sellers. But they may also lack the specific expertise required and be in need of professional assistance from experts who understand the market, and who are sympathetic to their interest in obtaining good services at a reasonable price. They may also be unfamiliar with the perspective of the sellers with whom they must deal. They, like sellers, are likely to be looking for a trusted point of contact to help them navigate the marketplace.
- ◆ Agency representation: In existing carbon markets, agents have already emerged who are fulfilling this need for trusted contact. They can help facilitate transactions on commission in much the same way as do real-estate brokers. They provide a mechanism to match buyers

and sellers, helping to market the seller's supply to potential buyers, and the buyers demand to potential sellers.

- ◆ Single entry: A typical farmer/supplier might be able to provide multiple services on a single farm that would be of interest to several different buyers – perhaps by adopting several management practices or perhaps there may be several environmental benefits provided by a single practice. Currently, there is a different point of contact for each of the kinds of services to be provided – perhaps a separate formal market or a separate specific potential buyer or set of buyers for each. And for each, there is a separate track or process for making a sale, with different regulations, different institutions, and different market drivers. It will be useful (and a big encouragement to participate) if there is a single location that has expertise on and can handle transactions in several markets. And such an institutional arrangement can help assemble multi-credit transactions through which the seller can potentially be paid from multiple buyers for a single conservation practice or set of practices that will generate multiple environmental benefits.
- ◆ Technical conservation assistance: Sellers and buyers both will need access to expertise in the possibilities, likely environmental impact benefits, site-specific considerations, and potential performance measures for different conservation practices, in what is required to place those practices on the ground, and in how one can most easily model or monitor the benefits produced. Someone will need to come to the farm and help the farmer design practices that they feel they will be able to live with in their farming operation. And someone will need to be able to show buyers and their permitting agencies how the suggested practices will reliably supply the services required.
- ◆ Technical market assistance: The environmental marketplace is complicated and difficult for most participants, or even for professional conservation technical assistance providers, to navigate and understand. This is especially true for sellers since sellers may need to access several markets in order to sell the full value of conservation practices that can provide multiple environmental services. Somewhere in the system, there is a need for this expertise to be made available to both buyers and sellers who wish to participate.
- ◆ Intermediaries: In the carbon market, the function of helping buyers and sellers find each other is provided by market exchanges, like the Chicago Climate Exchange and the California Climate Action Registry.⁶ Water trusts may help serve this function in water quantity markets. And in some instances, farmer organizations have served this function.⁷ But for other markets, it may be quite difficult for buyers to identify potential sellers and for sellers to figure out who might be interested in buying. There is a need for intermediaries, who may or may not charge a commission, to help fill this role.
- ◆ Registries: Registries can provide a central clearinghouse for buyers and sellers to find each other. They can be complex, or fairly simple. They might cover a wide variety of market types, or they might deal with only one. And they might cover a wide geographic area, or only one watershed or limited area appropriate for a single market. In the carbon market, for example, the Chicago Climate Exchange and the Climate Action Registry have served this

role. Some kind of registry or central advertising/marketing medium will need to emerge to help participants identify actual transaction opportunities.

- ◆ Aggregation: A single large buyer will often need a much larger quantity of environmental services than most single small farm sellers will be able to supply, requiring the buyer to deal with a great many sellers. This can be difficult and time-consuming to do – especially since the buyer will often have little knowledge of or connection to the agriculture industry sellers and little understanding of their issues and concerns. An aggregator, with knowledge of agriculture, may be able to supply this needed connection and expertise, assemble a large number of sellers, and present the buyer with a single transaction and a single contract guarantee – perhaps with appropriate pooling, bonding, insurance, or other financial assurances of performance. The aggregator will, in turn, contract separately with a sufficient number of sellers that it can fulfill its obligation to the buyer. A buyer may also want a very long-term commitment – too long for the comfort of most sellers. An aggregator can make this long-term commitment, while fulfilling it with a series of shorter contracts with a large number of farmer-suppliers, replacing sellers who drop out with new ones over time.
- ◆ Rule-making and standard setting: Any marketplace requires rules. Someone has to establish the performance baseline above which additional environmental services will be considered creditable. Someone will determine the trading ratios that will be needed to provide needed certainty. What will be the certification and monitoring requirements, and who will be trusted to perform them? What kind of pooling, insurance, or bonding will be required? Can credits be certified in advance of sale? A host of decisions of this kind will be needed – most likely made by regulatory agencies whose requirements drive permitting for potential buyers. But aggregators, exchanges, certifiers, and other market institutions also have a role to play in setting standards – especially in a voluntary marketplace or early in development of a market. The Chicago Climate Exchange and the Climate Action Registry (both private organizations) are serving some of this function for carbon offset markets, simply to provide public assurances of the credibility of the offsets they have to offer.
- ◆ Credit banking: Sellers may want to begin generating environmental services for which they have not yet identified a buyer. For example, wetland bankers will generally purchase a property and, with the advance approval of government regulators, improve it as a wetland and then, after the wetland is complete and functioning, sell its wetland credits to interested buyers. For this to be possible, the regulatory agency whose requirements drive the buyer's needs must be willing to certify the seller's credits, in advance. The credits are “banked” and later made available to potential future buyers as their need/demand arises.
- ◆ Capital investment and finance: The banking of credits may be too expensive for an individual farmer to do on his or her own, but it could be financed by a “green” lender or investor who might pay for the conservation practice work, take a security interest in or an option on the environmental credits that will be generated, or simply require a security interest (like a mortgage) in the credits for payment when they are actually sold. This function could be potentially performed, for example, by someone who is also in the business of marketing environmental credits.

- ◆ Pooling, insurance, bonding: Several of the roles involved in environmental markets (e.g. aggregation, finance, certification, monitoring, registry, suppliers, private in-lieu fee programs, etc.) may require that good faith, credibility, and credit be placed on the line. For example, buyers who deal with aggregators will need strong guarantees that the promised services will be delivered, as promised, over time. Failure of promised offsets or mitigation to meet the demands of the regulatory agency issuing an operating permit to the buyer could result in a complete shut-down of the buyer's operations with potentially severe consequences. So the aggregator may need to provide a strong financial bond, insurance, or other guarantee of performance. In some cases, sellers of these services may need to provide such insurance and bonding as well. One approach is for the aggregator to purchase more contracts for services than actually needed. This will provide a "pool" of services sufficient to assure that, if some suppliers fail to complete their contracts, there will be enough in reserve who do that the requirements will be satisfied.

- ◆ "Fee in-lieu" of mitigation: Developers often dislike taking on the responsibility to produce themselves the mitigation required for the impacts of their construction projects or to have to purchase it directly from a producer/supplier. Their real expertise is usually in the development/construction project itself. So they would often much prefer to pay a simple fee that will cover the cost of needed mitigation and free them of responsibility so they can focus on the construction of the project – not on environmental mitigation. "Fee in-lieu" programs provide this service. They accept a fee "in-lieu" of mitigation, and then take responsibility to produce the environmental services that are required. Sometimes these are public programs.⁸ Sometimes local permitting agencies may contract with a qualified private profit or non-profit organization that is in the business of providing environmental services. Fee in-lieu programs represent one institutional system through which farmers could be paid for providing environmental services. And it seems conceivable that conservation districts could, in some circumstances, provide this fee in-lieu service.

- ◆ Watershed assessment and characterization: If new funding generated by environmental markets is to be wisely spent, the hope is that it will be spent in furthering the carefully considered goals of a thorough assessment of the needs of the relevant watershed. So the potential availability of this new money heightens the likely need and demand for high quality watershed assessments/characterizations that can identify the most strategic needs and opportunities for environmental improvement. This suggests other potential roles for conservation districts.

- ◆ Community input on strategic acquisition: Even when a strong assessment of the most strategic environmental needs in a watershed has already been completed, that does not necessarily mean that assessment will be followed. And it does not mean that the acquisitions chosen will be the ones which are most acceptable to the local community. With more money in the system, there is likely to be increased need for careful selection of acquisitions of environmental services to make sure they are in accordance with local planning and with community needs. Community process is likely to be required for this purpose – potentially run by a local district.

- ◆ Marketing supply or marketing demand: Implicitly included in some of the above is the function of marketing either the availability of a supply of environmental services or the existence of a demand for them. This might be done by simply maintaining some kind of registry, or by actively communicating with interested buyers or sellers and stimulating market interest. This role seems like it deserves separate mention since it could, at least potentially, be a specialty for some institution, agency, or enterprise – including conservation districts.
- ◆ Public education: The development of environmental markets will also call for ongoing public education so that communities appreciate the function and importance of the marketplace. The community ultimately pays for the environmental services that will be supplied (either directly through taxes and utility charges, or indirectly through higher development costs and prices for goods and services). So they must feel confidence that the marketplace is operating in their best interest. Environmental markets are complex, and communicating that complexity to the general community will be a necessary and challenging role if they are to function well and to provide the multiple benefits we will expect of them.

Models/examples of environmental market roles in practice:

A great many of the various environmental markets and transactions that have already occurred around the United States have required the services of local conservation districts.⁹ What follows is an effort to provide a few informal examples of district roles that can help provide models to how this can work. Hopefully these examples can help illustrate how some of the more interesting of these examples played out in practice and how conservation districts were involved:

George DeRuyter & Sons Dairy- Outlook, WA – Anaerobic digester:¹⁰

The DeRuyter Dairy is a 5,500-cow, family-operated dairy located in Outlook, near Sunnyside, WA. The family has moved from open waste storage lagoons and application to fields as fertilizer to a digester that will produce 1.2 megawatts of electricity, fiber, compost and fertilizer as well as sequestering some 20,000 plus metric tons of carbon equivalent at about \$8 per ton. Apparently, credits were sold through TerraPass,¹¹ an aggregator working through the Chicago Climate Exchange. So this project illustrates both a sale of carbon credits and a sale of renewable energy.

This project is a partnership with the Port of Sunnyside and the South Yakima Conservation District. It had an initial investment cost of \$3.2 million. The State of Washington's new Energy Freedom Loan fund¹² loaned the partnership \$1.9 million, with bank financing and a \$500,000 grant from USDA providing the rest of the funds needed.

The \$3.2 million initial investment is a steep one, even for a large dairy operation with state loan and federal grant assistance. But, like the VanderHaak dairy (another anaerobic digester project in Whatcom County, WA) multiple lines of income from several products of the dairy will hopefully make it a profitable one. There is some cost trade-off for these digesters in that they also eliminate (or reduce) the need for a costly (perhaps hundreds of thousands of dollars) dairy

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storage lagoon and eliminate odors that can be offensive to neighbors and sometimes form the basis for nuisance complaints.

Contact:

Dan DeRuyter
George DeRuyter & Sons Farms
5121 Dekker Rd.
Outlook, WA 98938
(509) 837-7783

Great Miami River Watershed:¹³

Over 80 percent of the private land in the Great Miami River watershed in Ohio is in agricultural use. The watershed covers some 3,800 square miles and crosses 15 counties. It also has 314 regulated point sources that discharge pollutants. Seventy percent of the population lives in urban areas covering about 5 percent of the total land base. This watershed is believed to be a significant contributor to pollution in the Gulf of Mexico.

Anticipating stricter state-wide nutrient pollution standards in 2005, the Miami Conservancy District (MCD), a regional government agency, assembled a broad group of stakeholders in the watershed to create a trading program. By allowing point sources to avoid large investments in wastewater treatment facilities, the program is saving local utility ratepayers some \$300 million over the next 20 years and providing substantial funding to local farmers in exchange for improved conservation practices. In 2006, USDA-NRCS also provided a three-year grant of \$1 million. MCD serves as a non-regulatory, third party broker by obtaining credits through contract with agricultural producers who implement BMPs that reduce phosphorous and nitrogen in the watershed. MCD aggregates those credits and then sells them to regulated point source dischargers under separate contract.

Producers directly and through local conservation districts apply for funding in response to an RFP offered by MCD. Those projects that result in the highest reductions in phosphorous and nitrogen per dollar cost are approved through a decision process by a broadly representative advisory group that establishes criteria and actually approves applications. MCD, in turn, separately contracts with point source polluters for their sale and thereby recoups its investment. MCD also establishes rules for the approval of transactions, including trading ratios (to insure against uncertainty), certification of credits, liability and recovery of funds from failed projects.

The following practices are considered eligible for this program:

- Animal waste storage structure
- Settling basins and filter strips
- Critical area protection
- Off-stream watering and stream crossing stabilization
- Roof and gutters
- Water diversions
- Grassed waterways

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- Water and sediment control basins
- Erosion control structures
- Wetland treatment facilities
- Manure and mortality composting facilities
- Heavy use areas
- Swine manure aeration systems
- Tile outlet control for liquid manure

Considerations:

Along with the point sources, wastewater authorities, MCD, USEPA, Ohio EPA, Ohio Department of Natural Resources, local conservation districts, and other affected governments and agencies, agriculture was closely involved in the initial development and is involved in the operation of this program:

- The Ohio Farm Bureau Federation and local county Farm Bureaus participated in development of the program, participate in project selection and establishing criteria, and help facilitate and enlist agricultural participation;
- EQIP funds contribute to this program, so USDA Farm Service Agency helps assure that farmers are eligible for EQIP;
- The County Soil and Water Conservation Districts participated in program development, advise and support farmers to identify and install BMPs, and help quantify credits for the program;
- USDA Natural Resources Conservation Service also participated in program development and helps to quantify credits; and, of course,
- Working with the conservation districts and NRCS, individual producers also, of course, were participants in creating these credits.

MCD initially purchases the credits, so it essentially establishes their price (in \$ per pound of pollutant discharge prevented). The RFP system places farmers in direct competition with one another and has tended to keep the price of credits very low, despite the very large savings for point source polluters these credits provide. It is theoretically possible to cover up to 100 percent of the cost of installing BMPs under the program, but agricultural participation has been somewhat limited. Efforts are now underway to improve this structure so as to provide greater encouragement for farmer participation.¹⁴

About five to 10 percent of the BMPs are monitored each year. This adds to program administrative cost but provides some assurance that producers are complying with their contracts.

Contact:

Dusty Hall

dhall@miamiconservancy.org

Miami Conservancy District

38 E. Monument Ave.

Dayton, OH 45402

(937) 223-1278 ext. 3210

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Alpine Cheese Company, Sugar Creek, OH.¹⁵

The Alpine Nutrient trading program in Sugar Creek Watershed, Ohio was initially driven by a single point source – the Alpine Cheese Company – under a single point source National Pollutant Discharge Elimination System (NPDES) permit. The company had phosphorous discharge levels of 225 parts per million (ppm) and was required to reduce that to 1 ppm. The last 3 ppm of that requirement were very difficult and costly to achieve through a technological fix (filtering) and this limitation was preventing the company from expanding its operations, creating new jobs, and creating increased demand for local milk.

Alpine filtered their phosphorous down to 3 ppm, and then provided funding to pay local farmers to reduce phosphorous to remove the remainder. The Holmes Soil and Water Conservation District provided technical assistance to farmers in implementing BMPs, brokered transactions, and developed measures for conservation and cost-share. Ohio State University did monitoring, research, planning, and public education.

Farmers in the basin are paid to adopt BMPs such as grazing plans, biofilters, contour farming, no-till, cover crops, fencing, etc.

Considerations:

Because the point source initially involved is a cheese factory that provides an important market for local dairies in the same watershed, this project was particularly logical – everyone involved could immediately see the mutual economic benefit of making a deal. (Additional point sources are invited to join as the project proceeds.) There were immediate, recognizable economic benefits for the community in facilitating the expansion of the cheese factory (including 12 new jobs at the factory itself and a stronger local market for milk from local farmers).

Local farmers, particularly in the dairy industry, were already familiar with and already had a positive relationship with Alpine Cheese. And the local conservation district was also trusted and so was a natural choice to serve as a broker in transactions with farmers and to help them implement the conservation practices required. Finally, OSU Extension was also trusted in the community so was a logical choice to assist with monitoring, research, planning and education. Note that this area includes many conservative Amish farmers who wanted a low level of outsiders on their farms – but some level of outside monitoring/involvement was necessary. The program was able to sort out this concern by involving trusted, existing community institutions like the SWCD and Extension.

Success of this project required Ohio EPA to be willing to accept the plan as sufficient over an initial five year period. If there is reasonable success in the first five years, they will fine-tune and proceed for an additional renewal period.

Contact:

Richard Moore

Department of Human and Community Resource Development – Ohio State University

Moore.11@osu.edu

614-292-4906

Lower Boise River Effluent Trading:¹⁶

The Lower Boise River Watershed drains about 64 miles of river basin extending eastward from the confluence with the Snake River and about 1,290 square miles including of Idaho's most populous areas along the I-84 corridor in and around the city of Boise and including, important agricultural areas in Ada and Canyon counties. An expectation that a restrictive Total Maximum Daily Load (TMDL) for phosphorous that would require up to an 80 percent reduction in phosphorous loads drove the study of a means to ameliorate its impacts. (Delays in that TMDL delayed implementation of the trading framework.) Participants included Idaho Department of Environmental Quality, USEPA Region 10, Idaho Soil Conservation Commission, Idaho Clean Water Cooperative, NRCS, Idaho Rivers United, Bureau of Reclamation, several municipal governments (Boise, Nampa, Middleton, Star, Notus, and Parma and the Association of Idaho Cities), several industrial stakeholders (Simplot, Micron, Idaho Power Company), and several specific and local agricultural stakeholders, including:

- Idaho Water Users Association
- Idaho Farm Bureau, Pioneer Irrigation District
- Payette River Water Master,
- Ada and Canyon soil conservation districts.

The Idaho Soil Conservation Commission created a list of surface irrigated cropland BMPs approved for credits, including sediment basins, filter strips, irrigation systems, constructed wetlands, and crop sequencing. Measurement was on a watershed scale with each BMP assigned an "effectiveness ratio" and an uncertainty discount (the discount being eliminated if the farmer implemented a fully certified nutrient management plan). Some 22 typical BMPs were listed as potentially controlling phosphorous (practices such as: buffer strips, filter strips, grassed waterways, irrigation systems, irrigation water conveyance, mulching, nutrient management residue management, sediment basins, waste storage, etc.) Trades could be between point sources, directly between point and non-point, or between a point source and an organized group of non-point sources (such as an irrigation district¹⁷).

While it does not appear that there have been active trades under this program, the State of Idaho did follow up on the Lower Boise project and Idaho's Division of Environmental Quality has adopted a water quality pollutant trading handbook that now spells out how such trades can be made in the State of Idaho.¹⁸

Considerations:

The Lower Boise project did succeed in drawing a diverse interest group together to lay the foundations for possible future trades. Clearly this effort benefited from the early participation of both the agriculture and environmental communities. The use of irrigation districts as potential brokers or aggregators also suggests how local government, private, or non-profit groups representing (and having the trust of) the agriculture community may be able to play an important role. And the involvement of the Soil Conservation Commission, local conservation districts, and NRCS was also a positive given their well-known traditional non-regulatory role, their long-standing relationship with the agriculture community, and their expertise in designing, implementing and understanding the use of BMPs.

Contact:

Susan Burke

sburke@deq.idaho.gov

Idaho Department of Environmental Quality

(208) 373-0574

Clean Water Services - OR - Tualatin Basin Shade Credit Temperature Trading Program:¹⁹

The Tualatin River travels some 80 miles and drains some 712 square miles in Northwestern Oregon including some of the more heavily populated areas of the state as well as some of the most productive agricultural lands. Clean Water Services (CWS), a local public wastewater utility, serves some 500,000 customers in 12 local cities (Beaverton, Tigard, Tualatin, Hillsboro, King City, Forest Grove, Sherwood, Cornelius, Banks, Gaston, Durham, and North Plains) in the Portland suburban area and manages four treatment plants subject to NPDES permit.

A new TMDL issued in 2002 substantially limited CWS pollution impacts on the Tualatin. (Chief among these was temperature, although bacteria, DO, ammonia, and phosphorus are also addressed). CWS had the option of spending about \$150 million (and substantial annual operating cost) on an effluent refrigeration system. Instead, they decided on an approach that would pay farmers (and others) to plant trees in riparian areas to cool the water naturally. They provide two agriculture-related programs:

- Enhanced Conservation Reserve Enhancement Program (ECREP) substantially adds to payment levels currently available under the existing Conservation Reserve Enhancement Program (in view of higher land costs in the area). These increased payment levels, along with strong technical assistance and suitable plant materials, are designed to provide additional inducement for farmers to participate in establishing CREP buffers of 35 feet or more.
- Vegetated Buffer Areas for Conservation and Commerce (VEGBACC) is a less generous program that does not include CREP contributions but helps farmers plant trees in riparian buffers narrower than the 35 foot minimum under the CREP program.

CWS surveyed agricultural producers and designed the programs to address the concerns that were expressed in the survey. Both programs are voluntary – with the VEGBACC program designed to provide a less remunerative option for farmers who do not wish to live with some of the restrictions of CREP. Both programs provide suitable plant materials and technical assistance. Both offer conservation easement options, if desired, and offer possible services to transfer and protect water rights.

Among the advantages of these programs and of CWS's approach is that the result is much more beneficial for the overall health of this watershed, addressing a host of additional issues beyond the water temperature limitation that initially drove its creation. Many of the indirect benefits (like habitat creation, for example) are not easily quantifiable. Rather than spending \$150

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million on a refrigeration facility, since 2004, CWA has spent about \$4.3 million on all four of its watershed programs (of which ECREP and VEGBACC are just the agriculture components), a substantial savings for ratepayers.²⁰

Considerations:

The CWS program does not involve specific “trades” between point sources and non-point sources. Rather it is a regulated point source achieving compliance with its NPDES permit by establishing and funding a more effective voluntary, watershed-wide program designed to reduce load levels to a level that will allow it to operate. Nonetheless, it amounts largely to the same thing – providing financial and other incentives to non-point sources in exchange for producing improved environmental quality.

From an agriculture perspective, CWS created a “souped up” version of CREP (ECREP) and a less restrictive version (VEGBACC) to interest additional farmers to participate. Until this program was in place, not one Multnomah County farmer had enrolled in CREP. There were, however, 27 ECREP projects in 2008,²¹ testifying to the program’s ability to meet the needs of farmers. The program uses and works through known institutions (like the soil and water conservation districts and NRCS) and piggy-backs on known programs (like CREP) to build a system with which farmers can easily interact.

Contact:

Bobby Cochran
Clean Water Services
2550 Southwest Hillsboro Highway
Hillsboro, Oregon 97123
(503) 681-3600
- or -
West Multnomah SWCD
503-238-4775 x106

Southern Minnesota Beet Sugar Cooperative - MN²²

In 1999, the Southern Minnesota Beet Sugar Cooperative (SMBSC) and the Minnesota Pollution Control Agency (MPCA) announced a deal that would allow SMBSC to offset its wastewater discharge by working with farmers to implement BMPs in the watershed. The SMBSC is a farmer-owned cooperative whose members grow sugar beets in Southwestern Minnesota. The deal allowed the factory to build a new treatment plant and increase its output of sugar products by 40 percent even though no new discharge into the Minnesota River could be allowed. To avoid additional pollution load, SMBSC contracted with farmers to provide offsets, particularly phosphorous. Environmental and river advocacy groups participated, along with SMBSC, MPCA and other affected local governments, in the design of this program.

SMBSC created a trust fund of \$300,000 to implement non-point projects. A board was created to oversee the program including SMBSC’s consultant, a conservation district official, a watershed coordinator, and an environmental advocate. As a result of these transactions, SMBSC is able to discharge 5,000 pounds of phosphorous per year. In the first two years it

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offset these discharges by contracting with its member-growers to grow spring cover crops on about 36,000 acres upstream. BMPs authorized by the permit include cattle exclusion from streams, buffer strips, constructed wetlands, set-asides, alternative water conveyance, and cover cropping. SMBSC contracts with landowners in the Minnesota River Basin to accomplish the offsets and is required to monitor the results. Modeling formulas determine how much phosphorous is prevented from entering the river basin as a result of the practices.

In addition to the water quality benefits, some air quality benefits were also realized. The cooperative's previous practice of storing wastewater until it could be used to spray irrigate some 500 acres of alfalfa and grassland during the growing season was creating nuisance odor problems and the new facility allowed them to discontinue this practice.

Considerations:

The motivation for participation in this project is like that in the Alpine Cheese Company example (described above) but even stronger, since the NPDES permit applicant is a cooperative owned by the farmers. It appears that they were able to meet their need for BMP coverage within the ranks of their own member-farmers who would have had multiple motivations: helping their cooperative, helping their bottom line, reducing environmental worries, and good citizenship.

Contact:

Jim Klang (formerly with Minnesota Pollution Control Agency)

jklang@kieser-associates.com

Kieser & Associates

536 East Michigan Avenue, Suite 300

Kalamazoo, Michigan 49007

(269) 344-7117

Tar-Pamlico Basin - NC²³

The Tar-Pamlico is the fourth largest river basin in North Carolina and a contributor to estuaries that are a part of US EPA's National Estuary Program. The river is 180 miles long and its watershed covers 5,440 square miles and includes habitat for nine State or federally listed threatened or endangered species and two national wildlife refuges.

The Tar-Pamlico Basin Association is a group of point source dischargers in North Carolina who have a joint cap for nitrogen and phosphorous and represent some 94 percent of the point source discharge flows in the basin. If they exceed their joint cap, they are required to pay a fixed per-kilogram price (\$29/kg in 2004) to the North Carolina Agricultural Cost Share Program (NCACSP). NCACSP then pays farmers up to 75 percent of the cost of installing BMPs that address these pollutants. Because caps were stepped down from initial levels, the Association's members have been able to reduce their discharges sufficiently without actually being required to contribute to the NCACSP. Nonetheless, they have provided \$1.4 million to NCACSP for demonstration projects, estuary nutrient modeling and trade identification, and the program is in place in case of need.

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NCAVSP is a State program that provides assistance to farmers implementing BMPs – supplementing federal programs like the Environmental Quality Incentives Program (EQIP). It is administered throughout the State through the Soil & Water Conservation Districts. Completed BMPs are subject to random checks by district personnel to assure contract compliance and farmers who fail to maintain them are subject to repay some or all of the original funds. Between the start of the program in 1984 through 6/30/05, over 45,000 contracts had been approved for BMPs saving an estimated 7.2 million tons of soil. The program is mostly supported by appropriations from the State, but supplemented by the Tar-Pamlico Basin Association's contributions, when they occur.

Considerations:

This approach really amounts to a tax on point source dischargers to the extent that they exceed their cap on pollution. It uses North Carolina conservation district infrastructure and simply pays an appropriate amount into the existing programs. One of the interesting aspects of this (and perhaps of some of the other programs described here) is that the Tar-Pamlico Basin Association and its municipal point source members are very probably supportive of State appropriations to the NCACSP since reduced pollution in the Basin reduces the likelihood that there will be a need for them to contribute to the fund themselves.

Contact:

Steve Coffey, Tar Pamlico Basin Coordinator

Steve.Coffey@ncmail.net

Division of Soil and Water Conservation

1614 Mail Service Center

Raleigh, NC 27699-1614

(919) 715-6106

and

Michelle Raquet

Michelle.Raquet@ncmail.net

Division of Soil and Water Conservation

1614 Mail Service Center

Raleigh, NC 27699-1614

(919) 715-6101

For further information about this paper generally, contact:

Don Stuart

www.donstuart.net

dondstuart@gmail.com

(Note: This document was originally written for and published by American Farmland Trust and is on line at: <http://www.farmland.org/environmentalmarkets>. The above version has been updated.)

NOTES

¹ See generally, the National Association of Conservation Districts' website at:

<http://www.nacdnet.org/about/districts/history.phtml>

² Recent statistics from NRCS indicate that roughly 2/3 of EQIP applications, 1/3 of WHIP applications, 1/4 of WRP applications, and 1/3 of FRPP applications are funded. See USDA Farm Bill conservation program website at: <http://www.nrcs.usda.gov/farmbill>.

³ NRCS typically will pay only up to a 50% "cost share" to assist with implementing conservation practices. Even with allowances for farmer "in-kind" contributions, this usually ignores the landowner's lost opportunity costs, reduced production, inconvenience, or other factors influencing the willingness to participate. And the principal or entire value of many conservation practices is to the public, with no real benefit to the farmer. Accordingly, the vast majority of the landowners who participate, do so largely out of public spiritedness and good citizenship. Sometimes districts are able add a small amount to this, bringing the total up to a 75% cost share maximum.

⁴ These benefits are more completely described in the paper: "Why ecosystem markets can transform agriculture and protect the environment," on line at:

<http://www.farmland.org/documents/HowEcosystemMarketsCanTransformAgricultureandProtecttheEnvironment-AmericanFarmlandTrust-Nov.pdf>.

⁵ Ibid, note 3. On this last point, see also the 2007 AFT report: "Creating Stronger Incentives for Private Lands Conservation in Washington" at: <http://www.farmland.org/programs/states/wa/CreatingStrongerIncentives.asp>.

⁶ This function may also be served by aggregators, brokers, or even industry trade associations.

⁷ For example, the Pacific Northwest Direct Seed organization served as intermediary for its members in selling carbon offsets for no-till practices to the energy company, Entergy.

⁸ Like the new Puget Sound In-Lieu Fee program being started by the Puget Sound Partnership.

⁹ For a more complete assemblage of examples (and descriptions) of environmental markets and transactions, see the Appendices to the "Conservation Markets for Agriculture Discussion Paper" located at:

<http://www.farmland.org/programs/environment/workshops/conservation-markets-november2008.asp>. Also see the "Washington Conservation Markets Study Report" at: <http://ofp.scc.wa.gov/wp-content/uploads/2009/02/cons-mkts-study-report-v1-25-09.pdf>.

¹⁰ See the project description on the TerraPass website at: <http://www.terrapass.com/projects/details/george-deruyter-and-sons-dairy.html>.

¹¹ See the TerraPass website at: <http://www.terrapass.com>.

¹² See Puget Sound Business Journal, 7/21/06, <http://seattle.bizjournals.com/seattle/stories/2006/07/24/story12.html>.

¹³ Materials for this section came from: a) The website of the Miami Conservancy District's Water Quality Credit Trading Program: http://www.miamiconservancy.org/water/quality_credit.asp, and the links there provided; b) "Water Quality Trading and Offset Initiatives in the US: A Comprehensive Survey," Breetz, Vanden, Garzon, Jacobs, Kroetz, & Terry (Dartmouth College Hanover, New Hampshire, 8/5/04) and available on line at: <http://www.dartmouth.edu/~kfv/waterqualitytradingdatabase.pdf>; and, c) "Preliminary Economic Analysis of Water Quality Trading Opportunities in the Great Miami River Watershed, Ohio," (Kieiser & Assoc., 6/23/04) on line at: http://www.envtn.org/docs/Great-Miami_Trading_Analysis.pdf.

¹⁴ Personal communication with Brian Bandt, Director with American Farmland Trust's Agricultural Conservation Innovation Center: <http://www.farmland.org/resources/innovation/default.aspx> who has been involved with development of this program.

¹⁵ Materials for this section were based upon an 8/24/06 PowerPoint presentation by Richard Moore of the Dept. of Human and Community Resource Development at Oregon State University to be found on line at:

http://www.envtn.org/ETN_workshop/Presentations/Microsoft%20PowerPoint%20-%20Alpine_ETN_8_24_06_Moore.pdf and "A Plan to Reduce Phosphorous Loading and Improve Stream Ecological Function in the Middle Fork and Adjoining Watersheds of the Sugar Creek Watershed" (1/1/06) to be found on line at: http://www.epa.state.oh.us/dsw/WO_trading/alpine%20cheese%20trading%20plan%201%201%202006.pdf

¹⁶ Materials for this section were based upon: a) "Lower Boise River Effluent Trading Demonstration Project: Summary of Participant Recommendations For a Trading Framework" (Ross & Assoc. Sept. 2000) found at the EPA website at:

[http://yosemite.epa.gov/r10/oi.nsf/Webpage/Lower+Boise+River+Effluent+Trading+Demonstration+Project/\\$FILE/summary.pdf](http://yosemite.epa.gov/r10/oi.nsf/Webpage/Lower+Boise+River+Effluent+Trading+Demonstration+Project/$FILE/summary.pdf), and b) "Water Quality Trading and Offset Initiatives in the US: A Comprehensive Survey," Breetz, Vanden, Garzon, Jacobs, Kroetz, & Terry (Dartmouth College Hanover, New Hampshire, 8/5/04) and available on line at: <http://www.dartmouth.edu/~kfv/waterqualitytradingdatabase.pdf>.

¹⁷ "Water Quality Trading in the United States, (June, 2005), Cynthia Morgan and Ann Wolverton

Working Paper # 05-07, accessible through USEPA site at:

<http://yosemite.epa.gov/ee/epa/eed.nsf/WPNumberNew/2005-07>.

¹⁸ See: Pollutant Trading in Idaho: A Step-by-Step Agricultural Community Guidebook” to be found on line at:

http://www.deq.state.id.us/water/prog_issues/waste_water/pollutant_trading/index.cfm.

¹⁹ Materials in this section are based upon: a) “Watershed-based Permitting Case Study: Tualatin River Watershed, Oregon” (EPA 2007) on line at: http://www.epa.gov/npdes/pubs/wq_casestudy_factsht4.pdf; b) Clean Water Services, “Sustainable Integrated Watershed Management in the Tualatin Basin”, 2008; and, c) West Multnomah Soil & Water Conservation District website at: <http://www.westmultconserv.org/swcd/index.php?id=183>

²⁰ For a map and details on projects in the Tualatin Basin, see the CWS website at:

<http://www.cleanwaterservices.org/PlansAndProjects/Projects/default.aspx>.

²¹ Personal communication between Bobby Cochran, Environmental Marketplace Analyst for Clean Water Services, May 12, 2008 with Catherine Bombico of Evergreen Funding Consultants.

²² Materials for this section were based upon: “Water Quality Trading and Offset Initiatives in the US: A Comprehensive Survey,” Breetz, Vanden, Garzon, Jacobs, Kroetz, & Terry (Dartmouth College Hanover, New Hampshire, 8/5/04) and available on line at: <http://www.dartmouth.edu/~kfv/waterqualitytradingdatabase.pdf>; and, News Release from Minnesota Pollution Control Agency (5/12/99) at:

<http://www.pca.state.mn.us/news/may99/nr51299.html>.

²³ Materials for this section were based upon: a) “Water Quality Trading and Offset Initiatives in the US: A Comprehensive Survey,” Breetz, Vanden, Garzon, Jacobs, Kroetz, & Terry (Dartmouth College Hanover, New Hampshire, 8/5/04) and available on line at: <http://www.dartmouth.edu/~kfv/waterqualitytradingdatabase.pdf>; b) North Carolina Agricultural Cost Share Program described at: <http://www.enr.state.nc.us/dswc/pages/agcostshareprogram.html>; c) “Tar-Pamlico River Basin Nutrient Reduction Trading Program” article on the NC Division of Soil & Water Conservation website at: <http://www.enr.state.nc.us/dswc/pages/tar-pamlico.html>.