

**AFT Ohio River Basin Listening Workshop
Bluffton, Indiana in the Wabash River Watershed
March 8, 2010**

Note: American Farmland Trust will be holding listening sessions with producers in the Ohio River Basin (ORB) as we work with our partners to establish the nation's first regional water quality trading market. This market will allow utility companies and wastewater treatment plants to purchase nutrient and possibly carbon offsets or credits from agricultural producers in the Basin. More information about this project is available at www.epri.com/ohiorivertrading with project related reports, meeting announcements and materials, and webcast recordings and from the AFT website at <http://www.farmland.org/programs/environment/solutions/ohio.asp>.

Snapshot of the Wabash River and Indiana Agriculture:

Statewide, Indiana has 64 percent of its land in agriculture with almost 61,000 farms averaging 242 acres in size. Indiana ranks third in the nation for egg laying poultry, fourth in the nation for soybeans, fifth for corn and fifth for hogs and pigs. According to the 2004 Wabash River Heritage Corridor Management Plan, the Wabash drains surface water from two-thirds of the state's 92 counties. Thirty-two miles from its origin in Ohio, the river enters the state in East Central Indiana (Jay County) near the Adams County Line. The Wabash runs 475 miles through Indiana before emptying into the Ohio River southwest of Mt. Vernon, serving as the state boundary between Indiana and Illinois from southern Vigo County to the Ohio River in the southwestern part of the state. Cutting through 19 Indiana counties, much of the Wabash Corridor is classified as prime farmland. With Indiana ranking second only to Illinois in the percentage of statewide soils that are classified as prime, the Wabash River runs through some of the most productive farmland soils in the world. The 19 counties adjacent to the river total just over 5 million acres or 22.1 percent of the state land base. As reported in the 1997 Natural Resources Inventory, 25 percent of Indiana's "land in farms," or over 3.7 million acres, was located in this 19-county belt known as the Wabash River Corridor.

The Listening Session:

American Farmland Trust worked with the Conservation Technology Information Center and the Indiana Farm Bureau to identify and invite producers, Soil and Water Conservation District (SWCD) staff and others in the Upper Wabash with an interest in water quality, to the Bluffton, Indiana listening session. Jim Klang with Kieser and Associates, LLC, a partner along with AFT in the Electric Power Research Institute-led Ohio River Basin Water Quality Trading Market project, provided an overview of water quality trading to the group. We then launched into a lively discussion prompted by a number of questions addressing issues that producers will likely face in water quality trading markets. We started with the same list of questions we had developed for a similar listening session with producers and SWCD staff in Troy, Ohio in April 2009.

Jim Klang's Water Quality Trading 101

Regulated point sources like municipal wastewater treatment plants and industry are required to meet water quality standards by treating or reducing their discharges and, as standards become more stringent, treatment costs can go up. Water quality trading (WQT) is a flexible tool that

applies a watershed approach to address persistent sediment and nutrient loading (total phosphorus and total nitrogen). Point sources with high treatment costs may be able to trade with other point sources that have lower costs or with producers in the watershed who can implement conservation practices to keep nutrients and soil sediment from leaving their fields. Bacteria, toxic metals and other non-permanent 'pollution' are not tradable. Water quality trading with producers can provide multiple benefits for the watershed that more technical solutions cannot since the best management practices (BMP) that producers implement not only address the pollutant of concern but can also address other pollutants (e.g., soil sediment), create wildlife habitat, enhance canopies to shade creeks and streams and lower temperatures, stabilize stream banks, reduce the flow velocity during heavy rains, create wetlands, preserve floodlands and increase the assimilative capacity of the watershed to reduce the risk of flooding. Credits can only be produced and traded within the same defined watershed. For producers to be able to generate credits, markets must decide what conservation practices producers must implement before being able to sell credits since they are looking for further reductions of nutrients in the watershed (baseline requirements). Previous markets have defined baselines as the documented practices used by producers in the last three to five years or those practices that producers must implement to reach Total Maximum Daily Load (TMDL) allocations.

Question & Answer session with Jim:

Q: If a producer has been using multiple conservation practices before this market is established (that is, has been a "good actor"), to what degree will his or her existing conservation practices qualify for credits? This will depend on where the baseline is set and will be determined as the market structure is created.

Q: How does one know which watersheds qualify? In defining watersheds, you need to consider both how that watershed fits within larger watersheds (watersheds are typically nested with small watersheds discharging into larger watersheds) and what you are trying to achieve by trading. In the Ohio River Basin, the small creeks and streams in relatively small watersheds are discharging into the Ohio River which flows through 14 states and supplies about 30 percent of the water in the Mississippi River which, in turn, drains 38 states and discharges into the Gulf of Mexico.

Q: How does one work from a watershed that does not have a Problem A identified within the watershed but rather is identified as having Problem B? If you are dealing with a persistent pollutant (e.g., total nitrogen), it may be a problem for the larger watershed and in that case you may be able to trade with other watersheds linked into the larger system.

Q: To what degree can TMDLs be negotiated to include WQT as a tool to meet goals if WQT tool is not included in current action plans, or in the TMDL language? You need to negotiate with the state authority to include WQT as an alternative method for making progress within a watershed to meet a TMDL. Point sources are protected by the TMDL. If the TMDL is not valid, it will need to be re-negotiated.

Q: What are factors that affect the degree to which an existing wastewater treatment plant (TP) would want to purchase farmer credits? The decision to purchase nutrient credits from farmers will likely be an economic one. Wastewater treatment plant upgrades to biological nutrient

removal technologies may be quite expensive and farmers may be able to implement best management practices that remove an equivalent or greater amount of pollutant from entering the river or stream at a significantly lower cost. [Note: In the Great Miami River watershed, the estimated costs to upgrade wastewater treatment plants in the watershed was \$422.5 million whereas the costs for farmers to implement no-till practices to meet point source watershed demand were \$37.8 million.]

Q: What is science behind implementing BMPs? Researchers monitor soil sediment movement (erosion) and the nutrients attached to the sediments. They then create computer models that can predict the amount of run-off and dissolved nutrients and continually improve the models by checking their predictions with actual field sampling. Currently, a large federally fund project is quantifying the environmental benefits of best management practices (Conservation Effects Assessment Project: <http://www.nrcs.usda.gov/technical/nri/ceap/>).

Facilitated Discussion

Which BMPS are considered “conventional” in the ORB? What kinds of BMPs are needed? What are you comfortable with? What are the conventional practices that could be improved?

- Real Time Kinematic (R-T-K) signal precision technology helps precisely target fertilizers and reduces overlap in applications resulting in significant reductions. It can cost between \$10,000 to \$15,000 to subscribe on an annual basis and larger farmers are able to more rapidly recoup those costs because they farm more acres (and save more dollars/acre by applying less fertilizer and applying it only to areas that need it). Smaller farms may be polluting more than larger farms, but may not be aware that they are losing nutrients or applying too much fertilizer because they are not keeping records. WQT credit payments can be compared to those offered by the Conservation Security Program where one simple practice may be worth \$23/acre and a Tier 3 15-year contract can generate a base payment of \$35/acre/year. This relatively ‘easy’ payment seems much more attractive than do WQT credits which may have more uncertainty, complexity and paperwork, involve more time and possibly generate yearly inspections. It seems like WQT credits need to generate payments in the double digit \$20/acre range. You may need to consider coupling enough opportunities (e.g., “stacked” carbon and nutrient credits) to get into this price range.

What are the cutting edge BMPs that could benefit from more outreach?

- Upgrading application equipment: Perhaps municipalities could come up with a program and offer something to farmers? We would also need to have an initial conversation with municipalities to see what their concerns and goals are since they may have potential standards that may need to be met. If the payment to agriculture winds up to be less than a few dollars per acre, it would be better to channel those dollars to a conservation district to cover education and outreach efforts on conservation practices to producers. A small amount of dollars will not light fires under farmers to change.
- No-till and conservation tillage: Producers must be convinced that “no-till” will do the trick. We should consider covering yield drag [Note: crop yields can decrease during the first few years of no-till due to a number of factors: nitrogen may be immobilized in the crop residue which may take several years to decompose; it can take microbes, plants,

worms, etc., several years to rebuild the soil aggregations destroyed by previous tillage used in the field; there can also be drainage problems. American Farmland Trust has developed an innovative tool, the Best Management Challenge, that guarantees against any potential loss of income for farmers who reduce fertilizer use or utilize reduced tillage practices. The BMP Challenge has helped over 50 farmers on 9,200 acres in seven Midwest and Mid-Atlantic states overcome the fear of yield drag to adopt these practices. See: <http://www.farmland.org/programs/environment/solutions/bmp-challenge.asp>

- Controlled drainage and stream-bank stabilization: It was noted that the Soil and Water Conservation Districts have computer models that predict nutrient reductions tied to cover crops or tillage but do not yet have models to predict nutrient reductions for controlled drainage. [Note: *The EPRI-led Ohio River Basin WQT effort will include models that can help predict nutrient reductions tied to controlled drainage*].

What is the minimum payment that will get farmers' attention and convince them to complete the necessary paperwork?

- Contract flexibility may be more important than the payment: On a 15-year contract, one of the challenges is how to commit to its parameters and obligations when agriculture and markets can change during the life of the contract. For example, the economics of corn have changed drastically in the last few years because of increased demand for ethanol, but, with a CSP 15-year contract, second year corn or corn after corn production is prohibited. Flexibility in any contract that enables farmers to respond to market signals is highly desirable and may be more important than the size of the payments. In addition, producers need to be able to change practices with new information. For example, in no-till fields, glyphosate is beginning to build up in the first six inches of soil and new research is showing that deep tillage may be necessary to offset this. Glyphosate is an herbicide that is increasing in use as genetically engineered corn and soybeans with resistance to glyphosate are being planted. In this case, it would be advantageous to have some flexibility to "rip" the soil a bit if necessary, maybe every four to five years. [Note: *No-till farming often causes a slight increase in soil bulk density but it is a misconception that periodic tillage is necessary to "fluff" the soil back up. There are millions of acres of land that have not been tilled for over 20 years and water infiltration, biologic activity, soil aggregate stability and productivity have all increased well beyond nearby traditionally tilled lands. On the other hand, the increased use of glyphosate has created more glyphosate-resistant weeds and periodic tillage could be one method of controlling these weeds and reducing the weeds' exposure to glyphosate.*] WQT credit contracts may be able to build some flexibility into the contracts to allow for these kinds of necessary adjustments.
- The ability to "stack" federal cost-share payments with WQT credit payments: From a federal government perspective, if a farmer uses federal cost-share dollars to implement a practice, the resulting environmental credits belong to the farmer so the farmer can sell those credits to a private entity. However, local policies may specifically prohibit this kind of payment "stacking." Sometimes the limitations are tied to a particular practice. There could be local-federal interpretations that may set the limitations for "double" benefits, or using federally-funded benefits in a private market. Other possibilities include using federal cost-share programs to reach the baseline of conservation practices

required by the market to be eligible to sell credits (e.g., the Great Miami Conservancy District program) or discounting credits that result from federal cost-share dollars (e.g., if EQIP has covered half of the cost of installing a grass buffer, the resulting credits are discounted by 50 percent. The WQT program, in this case, is covering the other half of the costs of installing and maintaining the buffer.)

In the course of this discussion, the Great Miami Conservancy example led to a question about whether the technical liability and responsibility for practice implementation lies with the aggregator (in the Great Miami, the aggregators are the Soil and Water Conservation Districts). In Minnesota, technical service providers provide the technical assistance to help install technical and structural practices that are then reviewed by middlemen. They can also help calculate credits, using something like a spreadsheet or a computer-based tool like the nutrient trading tool.

Are there any specific practices that farmers are eager to implement but need dollars or help with those practices in order to do so? What is limiting? What is needed?

- Hay-in buffers (that would allow flexibility not currently available in federal cost-share programs): There is a continuing demand for feed and, if you use EQIP funding, you cannot cut after September 15 and you must use an alfalfa-hay mix. A number of farmers are using demonstration EQIP funding for three years to install these 33 to 180 foot buffers (the wider buffer is required next to road ditches, streams and waterways). What happens after the third year when one does not get payment? How does one get the farmer to put a strip back into hay after the fourth year? Otherwise, farmer will revert back to old practices (no more hay or cover) along roads and ditches. The CRP program also invests in grass buffers (40 to 60 feet wide next to ditches) and also has a restriction on haying. Participants could see some merit in installing strips that could be routinely cut for hay with both the credit payments and hay sales supporting the practice. Grass buffer strips need routine maintenance and may need to be reseeded.
- Polymer-based nitrogen application: What about investing in the use of slow-release N fertilizers such as ESN which costs about 20 percent more than urea? One concern voiced about slow-release fertilizers was the possibility that they could be carried away by a large rain event. *[Between 2000 and 2007, at least 12 companies developed new nitrogen fertilizers or product developments that can be broadly classified as Enhanced Efficiency Fertilizers (EEFs). ESN is a polymer-coated urea commercialized in 2006 for agricultural use. The EEFs have different modes of action and may react differently with different soil types and different corn hybrids. Research by the American Farm Bureau Federation with another EEF (Stabl-U) yielded more corn with less nitrate in the soil water].*
- Practices that increase yields rather than reduce cost per acre: Reducing cost per acre is one interest, but most farmers want to PRODUCE more. Focus ideas on striving for more. “I would rather produce more for same cost, than reduce production via cost savings.” In this regard, cover crops are a win-win because they can save money without reducing production yields. *[Note: the nutrient trading tool (NTT) which will help farmers calculate credits for the Ohio River Basin WQT project based on the Best*

Management Practices they place in their fields also calculates their impacts on yields. More information on NTT is available at: <http://ntt.tarleton.edu/nttwebars/>

- Hybrid cover crops: Hybrid cover crops can allow farmers to use a lower rate of N application (20 to 25 units per acre). We need more data and information on cover crops to match and help encourage producer decisions on whether to implement. Producers just don't know much about them. Since cover crops can be more challenging if you have to kill them off (burn them), it might be better to focus on those that die off over winter. Most cover crop demonstrations are well-attended. No-till and cover crops often go hand-in-hand. The Great Miami Conservancy program has seen increasing interest in cover crops and in combining manure applications with cover crops. With use of cover crops in manure utilization, one can maintain and retain N credits. Producers like this because it reduces some of the need for added N and simultaneously reduces N leaking off the field. So cover crops have to be included in the current RUSSEL calculation and any new models need to take this into account. However, if the benefit is only \$2 per acre and the cost for implementing the cover crop is \$10 to \$20 per acre, cost becomes an issue. It is a win-win situation if you can make the numbers work for all involved. At least one participant felt that cover crops and no-till practices should go hand-in-hand. [*Kieser & Associates recently compared EQIP cost-share with the WQT payments in the Miami Conservancy District and found that WQT payments offered more flexibility to producers than EQIP but not necessarily more money: <http://kieser-associates.com/inside.php?a=PG:575>].*
- Precision equipment, add-ons, no-till, filter strips (in areas that are less productive) and grass waterways: These are general practices for farmers close to the Illinois border. Farmers really want the option to cut hay on filter strips and if they could utilize this with a WQT payment, they would be interested.
- Two-tier stream bank/ditches: These are working very well but are not generally used because they are a new concept and take land out of production (at \$10,000/acre). They look like a great correction to a problem because current ditches have banks that are way too steep. The two-tier ditches allow tile drains to come out onto grass areas. Clean Water Act Section 319 funding is available for these types of ditches. County surveyors need educated on this. They are expensive but this is a one-time expense and long-term maintenance is minimal. One participant suggested pairing two-stage ditches with the use of cover crops. The Nature Conservancy is experimenting with two-stage ditches near the St. Joseph River in northeastern Indiana and is reporting significant sediment reduction. Considerable work has also been done on the Shatto Ditch near Warsaw [see: <http://www.nature.org/wherework/northamerica/states/indiana/misc/art25464.html>]
- Managed tile-drainage: This could potentially greatly reduce nitrate discharges beyond farmer interest and is not on farmers' radar screens. You can close off tiles when manure is hauled. Currently managed tile drainage is used more to accommodate manure application. Participants felt the concept sounded good but that the research wasn't there yet.

What kind of payment option for BMP would a producer support?

- Farmers would rather go through a bank for most loans—rather than another source.

- The SWCD low interest loan program for equipment hasn't been very popular or successful.
- They prefer receiving largest payments up front and smaller payments later to help relieve the upfront financial burden of adopting a BMP.
- One participant suggested tying cash payments for credits to crop yields with higher payments in low yield years).

How would contracts work for those farmers who lease land or farm on cash-shared rented acres?

- USDA NRCS allows farmers on leased land to move a cover crop to a different field if the farmer drops out of the lease agreement.
- In the Great Miami Conservancy District WQT program, farmers can sign up leased land but if it drops out, they don't receive any payments.
- Landlord could co-sign the contracts and agree to rent to the farmer over the life of the contract—this might be a real boon to farmers who now struggle with year-to-year leases.
- The WQT program could allow for X number of acres in a practice and not tie that practice to any given field so it could be moved if the land is no longer available to the farmer.
- You could split payments to encourage the landowner to keep that land in that practice (e.g., with CSP, there are tenant incentives to share part of CSP benefit with landowner.)
- The general consensus is that the BMPs enhance the owners' land and that payments for those BMPs must be worked out between the owner and renter.

How should WQT payments be teamed with existing cost-share programs? Double dip? Add payments to EQIP?

- If you can design WQT credit payments as an add-on (e.g., the Conservation Reserve Enhancement Program is an add-on to the Conservation Reserve Program), it would have a real benefit. The programs need to work synergistically. We should avoid any approach that ends up looking like some form of a penalization. The last thing we need is for farmers who are doing the right thing to be penalized because of a new program, such as WQT or new federal programs so we need to complement the existing programs.
- Technical assistance is a very important component and under-funded. For example, even though Indiana has CSP dollars, they do not have enough technical staff to get those dollars out the door.
- The SWCD in the Great Miami Conservancy District WQT program take a \$5/acre payment from the price of the credit to help farmers, process the paperwork, complete spot checks and keep records. For example, the program pays about \$45/acre for cover crops (<\$2/lb. N) and \$5/acre goes to SWCD. As a result, they tend to favor WQT over EQIP and CRP because of these technical assistance funds. On the other hand, producers are looking for long-term N efficiency with cover crops over time so getting \$40/acre for the practice in addition to the long-term N benefits is significant. You know you are doing something right when a farmer who has been farming for 25 years starts talking about improving soil tilth and compaction and talks to his neighbors, etc.

- If the farmer gets 50 percent cost share from the federal program, then the WQT program could help cover the other 50 percent. If WQT really gets off the ground, then maybe it would free up more Clean Water Act Section 319 dollars for education.
- The more that is added on or tied together (both funding and application-wise), the more farmers who will be likely to participate. “You pay us, we’ll do it, or if we get a benefit, we’ll do it.”
- WQT credit dollars might be able to reach those producers who don’t like government programs. The WQT credit dollars will also be more attractive if they are more flexible than cost-share.
- 10 years from now, corn hybrids may be able to produce some of their own N—how will they fit into the programs? We need to factor in genetics. Seed costs will escalate quickly—perhaps WQT credits can cover some of those seed costs?

Is there a subset of producers now who don’t come in the door that may be interested in WQT? (Farmers who do not want feds on their land—or want to do things on their own) Will WQT reach these farmers?

- Yes. Some farmers who don’t participate in federal programs may be willing to participate in a private sector program.
- If the use of precision agriculture (using Global Positioning Systems and Geographic Information Systems to precisely map soil types and yields and tie this to the application of materials) can generate water quality credits, this may attract some larger producers. By using these tools, they can map those areas that do not show yield benefits and may be interested in alternatives for these areas (like taking land out of production and putting it in permanent grass cover, trees or wetlands).
- The Conservation Reserve Program pays a lot better than but if practices are valuable enough, then WQT will compete.
- WQT may have a benefit over other types of conservation contracts because it offers producers more flexibility within the contract.

Who are the trusted points of contact?

- In the retail sector, it would probably be certified crop advisers but they may not have the time to have a WQT role.
- Agricultural retailers are another possibility. Farmers are evolving into precision agriculture, reducing input sales so these firms are also evolving into providing value-added technical expertise. Farmers will pay for solid advice and technical services. If the agricultural retailers take on this role, they will have to be fully compensated.
- The brokerage houses might be a perfect fit since they are already into trading commodities and know how markets work.
- I would consider a government entity and any WQT credits could be coupled with carbon and other greenhouse gas payments.
- I would consider a Pheasants Forever entity (e.g., a conservation nonprofit). If WQT is going to be successful, a significant number of acres will be involved, so we need to incorporate someone/entity who “can get it done.” Maybe at \$5/acre the certified crop advisers will be willing to participate.

- We should use SWCD staff working in conjunction with a WQT staff person. Additional WQT funding may drive diversification and enable change in existing structures and offices and staffing.
- “Has to be someone you can trust and who can get the work done.”

Who do you trust to validate the best management practices used to generate credits?

- “I want the same inspector as the administrator of the program.” (To avoid miscommunication and to avoid misrepresentation.)
- Keep the program local: local control, local relationships, locally implemented and administered. There will always be issues (underfunded, too much work).
- Use of a third party will provide a level of comfort and support the integrity of the program but efficiency is crucial.
- If “one stop shopping” is possible, it will be attractive to a farmer. Farmers are already used to seeing NRCS staff. It would be easier for them if they could sign up for WQT while they’re already in the district office. But some counties lack good NRCS or SWCD staff and, in those cases, we would need the flexibility to go to certified crop advisers instead. With SWCD, you have the chicken and egg scenario—they need dollars for staff but need practice in place to get those dollars.
- We could envision setting up one to two people in each 8-digit Hydrologic Unit Code (HUC).

What will be a workable system for the market infrastructure?

- Use the expertise that is already in place: SWCDs and IN State Department of Agriculture. They have the expertise, mechanism and integrity in place but would need new administrative dollars to accommodate an increased work load.
- We might be able to use an existing entity like the Chicago Climate Exchange (CCX).
- Coupling carbon and water together would make it a national issue instead of a watershed program or issue.
- Maybe an overarching structure (e.g., a regional structure) would be easier and add some additional flexibility.

How do we value other benefits? What tools should we use? What will contracts look like?

- We like the thought of web-based tools to readily access. They could help provide uniformity. We will need to accommodate the diversity of farmer concerns and issues. Tools also need to be easy to use and implement with farmers. Most farmers are familiar enough with BMPs to know about their impacts on yields.
- Access to a “real person” would be beneficial when needed.
- With the Miami Conservancy WQT program, farmers are coming through the doors of the SWCDs and office staff sit down with them, review their resource concerns and “suit them up with the best program.” In many cases, that program is the WQT program. There is no real need to advertise, as word of mouth and publicity through funded projects gets the word out.

How do you feel about keeping private information private? What about a public access clearinghouse for trades?

- We caution against publicizing producer names, but are okay with information attributed to county or watershed. Dollars should not be included. However, we do recognize that much of this information is already available via Environmental Working Group and other sources.
- We're somewhat concerned about "bad actors" being given credit [that is, the farmers who have not yet adopted conventional best management practices would be able to generate low cost credits by implementing practices that they should already have had in place].
- National Pollutant Discharge Elimination System (NPDES) permits held by the point sources could lead to Freedom of Information Act (FOIA) requests that in turn could force the point sources to reveal the names and locations of farmers selling credits. Is this a problem?
- There is value in making data loads available to monitor environmental benefits.
- We respect the contractual transparency of WQT contracts, but we have some unease of having things too publicly available for scrutiny.

What level of definitive commitment do you need from point sources that purchase credits?

- It could be a limited commitment. Maybe three to five years is realistic. It does not need to be more than current government contracts, but the purchaser of contracts may want more certainty OR may not want to commit past a certain amount of time, certainly not more than 10 years.
- Commitment may depend on the infrastructure in place to support length of contract. Someone has to run the show.
- Market factors create drivers that may not be reliable so that will limit the length of time of a contract.
- Regulations could change everything.

OTHER COMMENTS — GENERAL

- With manure management, there is currently no driver to buy manure credits. We've seen a lot of potential to address phosphorus issues, especially during the last 10 years. Most manure now is being sold. Land values (\$8,000 to \$10,000/acre) seem to be more of a driver for land conservation abuse than for improved manure handling (higher land values leads to clearing fence rows, straightening creeks, the disappearance of small farms).
- Trucking dense manure and spraying liquid manure may be changing the need for practices and measurements.