Stewards of the Lower Susquehanna, Inc.
Lower Susquehanna RIVERKEEPER®

December 19, 2011

Mrs. Pat Gleason
US EPA Region III

RE: COMMENTS ON EPA DRAFT REVIEWS OF STATE NUTRIENT TRADING PROGRAMS

Dear Mrs. Gleason,

Thank you for the opportunity to comment on EPA's draft review of State Nutrient Trading Programs. Stewards of the Lower Susquehanna and the Lower Susquehanna Riverkeeper work in an area of 9,215 square miles of the Susquehanna Watershed, from Sunbury, PA to Havre de Grace, MD. We work in 24 counties in Pennsylvania and 4 counties in Maryland to improve and preserve the ecological and aesthetic qualities of our waterways and the communities they serve.

The Clean Water Act was drafted with the understanding that Americans were damaging one of our most basic resources by carelessly using our surface waters for industrial and human waste disposal. The Act was a mandate to REDUCE waste loads, using improved practices and technology, until all waters are fishable, swimmable, and drinkable. If implemented properly, the Clean Water Act would protect our waters with the goal of creating a sustainable resource for ALL future generations.

The TMDL language of the CWA calls for listing of impaired waterways and for those waterways to then have science applied to find the allowed load of pollution that would maintain water resource and community needs. The next step is to quantify the load sources and calculate point source (Waste Load Allocations) and non-point source (Load Allocations). Then a plan using voluntary or a combination of federal CWA jurisdiction and state legislation regarding non-point sources must be followed to reduce the loads to acceptable levels. This is the proper and legal mechanism for healing our impaired waterways such as the Conestoga River, Susquehanna River, and Chesapeake Bay. Unfortunately, due to lack of political will to follow the law, jurisdictions have not listed all impaired waterways for algae blooms and low dissolved oxygen levels created by nutrients and sediment. The citizens are told that the Clean Water Act has failed us, so we must adopt a scheme that was not conceived by the drafters of the Clean Water Act. Stewards of the Lower Susquehanna (SOLS) believes this plan to be arbitrary, unscientific and illegal. That said, here are our recommendations for improving this program.

Unproven and Untested Scheme

Nutrient Trading is a relatively new and untested technique for pollutant reductions that makes assumptions regarding short and long term effects. EPA must provide vigilant oversight and frequent re-evaluation of jurisdictional trading methods. *SOLS and the Lower Susquehanna Riverkeeper acknowledge some success of the Clean Air Act trading program to reduce sulfur emissions from point sources, however, the qualities of air emissions trading may not translate to waterbodies.* Chesapeake tributaries are each unique, in a confined area, and mostly flow in a single direction. Each type of effluent or runoff to be traded has different characteristics, and many other constituents (including endocrine disrupting compounds) beyond the three TMDL related pollutants, nitrogen, phosphorus, and sediment. The differences in the waterbodies and the load constituents must be studied and evaluated beyond our current understanding. The effects of trading agricultural runoff for increased stormwa-

ter, WWTP, or industrial inputs must be closely scrutinized as the programs develop.

Upstream Reduction Policy

All efforts should be made to improve and preserve local water quality. Inter-watershed trading could lead to diminished water quality in an individual waterway, for the sake of improving another. Nutrient trading and the Chesapeake TMDL should not be used to maximize local waterway loads to the maximum allowable limit.

Trading of nutrient credits and offsets of new sources are currently being looked at for the entire Chesapeake Bay, with the potential of interstate and inter-watershed trades and offsets. Some have proposed intra-watershed trading and offsets only. While both of these ideas could benefit the Chesapeake Bay, both may actually increase pollution in segments of local waterways. The Lower Susquehanna Riverkeeper and SOLS stand by the principle that when we improve local waterways, the Chesapeake Bay's health must improve. Following this principle and the simple laws of science, an acceptable policy for geographic framework for trading and offsets follows: All reductions must be made upstream of the new loads requiring offsets or existing loads requiring credits. For example, if an offset is created at mile marker 20 of a waterway (20 miles upstream from the Chesapeake Bay), and a new WWTP adds nutrients at mile marker 10, ten miles of waterway will have been improved as well as an overall reduced load to the Chesapeake Bay. To the contrary, if the new load is upstream at mile marker 20, and the offset is at mile marker 10, ten miles of a local waterway have been degraded. The other benefit of an "upstream reduction" policy is that it may promote restoration of smaller agricultural waterways. Forested or reforested small waterways are responsible for large amounts of nutrient reduction (see Stroud Water Research Center, 2009). We do not believe that the Chesapeake TMDL should cause increases in local pollution, and an "upstream reduction" policy will prevent this from occurring.

Sources Should Trade with Similar Sources

Chemical Concerns

Trading of credits and offsets between different sources may have unforeseen consequences. While it is convenient to look at Chesapeake Watershed pollution through the lens of only three pollutants, i.e. nitrogen, phosphorus, and sediment, our waterways are much more complex than this. We are unable to isolate the pollutants traded from all of the accompanying constituents in the quantity of water that contains a pound of nitrogen, a pound of phosphorus, or a pound of sediment. What is really being traded are quantities of water that contain, in the example of agricultural runoff, a pound of nitrogen plus an amount of phosphorus, an amount of sediment, an amount of hormones (endocrine disruptors), an amount of pesticides (potential endocrine disruptors), an amount of heavy metals, etc. In the case of WWTP effluent, we are trading a quantity of water that contains one pound of nitrogen, an amount of phosphorus, amounts of various heavy metals, and some mixture of over 84,000 chemicals that are in use in industry, medicine, and in our homes (including 400 known endocrine disruptors). Similar concerns occur when examining the constituents of MS4 runoff (heavy metals, PAH's, etc.) or the various industrial facilities that may increase input of currently unregulated or under-regulated chemicals.

In the Susquehanna, Potomac, Shenandoah, and James Rivers 85-100% of male smallmouth bass populations have characteristics of both male and female fish (intersex), lesions, and bacterial and parasitic infestations. The cause (s) of this occurrence are still not identified after ten years of research, but it is currently not suspected that one of the three Chesapeake TMDL pollutants is the cause. These four rivers make up 81% of all freshwater entering the Chesapeake Bay. Without further research into the causes of these problems, it is reckless to allow increased loads of unknown mixtures of chemicals from wastewater treatment plants in exchange for relatively constant loads of agricultural pollutants. WWTPs must reduce their loads to allow for more loading of similar mixtures. Agriculture must steadily reduce their loads.

Independent, rigorous, and transparent verification

Independent, rigorous, and transparent verification may be difficult, but market integrity must be established from the beginning for the program to maintain credit purchasers' and the public's support. *While*

we respect the potential advantages of using free market forces to advance pollutant reduction rates for the Chesapeake Bay, free market forces MUST be regulated to deter the temptation of over-crediting or unverified credited practices. Without a third-party, independent verification the programs face a risk factor to buyers that could permanently damage the demand for credits. Additionally, permitting trading transactions only in those scenarios where the pollution reductions and watershed gains can be adequately quantified and documented will maintain market integrity. Aggregators of credits acting as verifiers of credits is too similar to the recent mortgage debacle. There will be a substantial expense for verification, and no specific profit for the aggregators in following through with vigilant verification, though these costs should be incorporated into trades and not put on the taxpayers. Independent, third-party verifiers create a wall between the aggregators and sellers, who in many instances engage in other business together (agricultural consultants).

In addition, a transparent and simple policy, where the trades produce actual reductions and benefits for the resource, and are clearly authenticated, is needed. Toward that end, credits should only be generated by actual practices and reductions instead of on anticipated practices or speculative ones that have yet to occur. As an illustration, we disfavor the awarding of credits for farmers who elect to farm their lands instead of selling it to developers. Using trading to pre-empt hypothetical reductions is nearly impossible to track or quantify. (Incidentally, there are many other funding programs designed to incentivize land conservation. Pollution trading has not been designed to serve that purpose and does not benefit water quality in any measurable way.)

Other Notes on Verification

DEP, MDE, and DEQ are currently all grossly deficient in transparency and/or enforcement
MD NMP's kept from public after court order
MD Farm Bureau says NMP transparency would destroy the Maryland Ag Economy
PA NMP's are available at DEP or CCD's.
Non-Point Credits based on Modeling
No individual farm or stream verification
No funding committed for increased staff requirements
Third Party Verifiers still yet to be named
Citizen Enforcement will be Limited by Access
The Clean Water Act has Powerful Tools, but who has time and resources to use them?
Narrative Criteria? Who has used this?

Uncertainty in Non-Point Reductions

Uncertainty in non-point reductions, and seasonal and annual variability in runoff, must be compensated for with a higher non-point to point source trading ratio. *We appreciate that jurisdictions have included minimal reserve and retirement ratios, but these do not adequately reflect the uncertainty and variability of non-point source runoff.* In a year like 2011 it is easy to see the great uncertainty and variability that precipitation brings to non-point to point source nutrient trading. Agricultural BMPs in northern Pennsylvania and in Lancaster County were reported to have failed during high precipitation events in March and September, and the predicted reductions providing credits used by industry for the same period have not been verified. This annual and seasonal precipitation uncertainty, and the uncertainty of BMP effectiveness, soil types, groundwater depths, and geology, to name a few of the variables, suggests that a more robust ratio of predicted non-point source reductions be implemented. This Committee suggests a 3 to 1 ratio of pounds predicted to be removed to nutrient credits.

Seasonal and Episodic Variability

Releases of WWTP effluent occur daily at a relatively constant rate. Agricultural runoff occurs during precipitation and snow-melt events, with broad variability in episodic, seasonal, and annual loads occurring. *There may be beneficial and detrimental effects from exchanging a variable source for a constant source, i.e. agricultural credits for increased WWTP loads.* In the Chesapeake Bay, and in our local waterways, we have seen the effects of variability. Drought years can produce poor water quality for local waterways, but these also appear to be recovery years for the Chesapeake Bay (decreased loads of nutrient and sediment runoff). On the other hand,

years of heavy rainfall tend to flush local waterways of pollutants and increase dissolved oxygen. But these years tend to pollute the Bay and increase dead zones. A constant flow of pollutants may be more attractive, but we have found no research on this issue. What is certain is that nature provides annual, seasonal and episodic variability, and nature provides for periods of healing that may not be seen if we continue to increase constant daily flows of pollutant from WWTPs.

Best Available Technology

Trading may allow some industries that would have otherwise upgraded to reduce their loads, to continue at a level of technology below industry standard. How long until upgrades are required? *Trading provides some communities and industries some "breathing time" to come into compliance with technology standards. But trades should be specified only as a last resort where strict compliance is either impracticable or creates some form of public hardship.* The best public policy reasoning for trading is to provide some flexibility to facilitate discharge sources coming into compliance with the Clean Water Act. But trading should not be used as a substitute for compliance. The aim is to expediently reduce the loading of nutrients into our waterways. Concentrating on the marketplace values inherent in natural resources tends to side-step the other values inherent in those same resources. Trading should be used sparingly and not as the first avenue for those wishing to institutionalize or monetize bad practice. Pollution sources seeking to trade must as a matter of good policy either already be in compliance, or on an enumerated schedule to come into compliance and the credits generated must be retired expediently so that resulting trade is a genuine mechanism for producing better practice on some specific timetable. For example, similar to a TMDL schedule of compliance, a point source should create a schedule of upgrades before being allowed to offset loads in excess of NPDES permitted effluent loads.

Environmental Justice Issues

Trading may create Environmental Justice issues by moving problems to poorer areas. *Nutrient trading provides opportunities to transfer funding to agricultural communities for much-needed BMPs. However trading programs should and cannot extend negative ecological impacts of human health effects and quality of life issues into locales already impaired for the constituent being traded.* Environmental justice principles reveal that those economically disadvantaged already suffer lopsided consequences of onerous environmental practices. Allowing these practices to continue unabated by allowing perpetrators to pay fees to credit marketers or aggregators elsewhere only perpetuates an existing disparity and provides a marketplace that sanctions disparity for economic gain. Communities suffering the impact of onerous environmental problems should share as a matter of equity in the economic and ecological benefits of the regulatory activity that seeks to address those impairments. Also, we have concern that once normalized; trading might be creatively extended to toxins and endocrine disrupters. There need to be limiters or caveats that make clear that it is unacceptable to trade toxins or known manmade biological poisons that threaten marine or human health and the long term viability of our waterways. . The committee generally found that local water quality baselines need to be met before trading can occur.

Lopsided Economics of Trading May Benefit Big Industry, Big Ag, and Big NGO's

Trading could benefit large organizations and corporations without protecting the interests of local waterways and grassroots entities. *Trading should not sanction Clean Water Act violations or non-abatement of ongoing violations of Federal or State water quality protection laws.* Most trades are likely to be advanced by business interests or municipalities concerned primarily with economic considerations. Meanwhile small local and grassroots champions of water quality are much more likely to be concerned about local impacts of trading and how such trades will accrue to better water quality in their communities and waterways as opposed to economic development or even Chesapeake Bay considerations. These local groups may not have the resources to be parties to these trades. Trading programs provide an additional tool for regulators and for polluters but there is the risk of creating a scenario that greatly undermines the trib teams, the Waterkeepers and other local watershed advocacy groups. Providing the option of trading in lieu of compliance would greatly hinder the opportunity for citizens to engage, overhaul or intervene in problematic or unjust trades. For example, allowing violations of WWTP DMR's

by the purchasing of credits to "true-up" the WWTPs allocation promotes localized "hot spots" while reductions are made elsewhere, potentially in another watershed. If we weaken the stakeholder interest of citizens then perhaps compensation could be to benchmark trades sufficiently rigorously that trades can be held to a set of objective standards for quality. If it is impracticable to create Water Quality Standards for all local waterways, narrative criteria for "fishable and swimmable" could be created to limit tributary-choking and odorous algae and aquatic vegetation as seen below WWTPs in some areas of the Chesapeake Watershed.

All Degradation of Ecosystems from Land Use Changes Must Be Accounted For.

All ecosystem service losses and all impacts of trades must be measured fully and compensated for. *Ecosystem "down-grading" results in greater losses from development than may be accounted for. All aspects of development, for instance the total footprint of a new WWTP, must be offset, not just additional effluent loads.* Down-grading from forested or "meadowed" stream not only increases runoff but severely impacts the ability of that waterway to process and remove nutrients. Additionally, manure transport is an excessively variable and uncertain credit practice. Credits appear to be provided inversely to the logical agronomic use, and practices that were the worst are given more credit, i.e. if an agricultural operation previously incorporated manure within two days to maximize nutrient efficiency they receive fewer credits for manure export than an operation that allowed manure to sit in the field and release nutrients to the environment. (see Table 1 below) Manure transport will never be an equitable credit source unless immediate incorporation rates are required of farmers as a baseline for manure transport credits. Also, manure transport does not properly account for ammonia volatilization rates, potential for redeposition within the Chesapeake Watershed, or the nitrogen emissions from the vehicles transporting the manure. A more rigorous mass-balance approach must be used when crediting all practices.

Jurisdictional Differences in Crediting Same Practices

Credited practices and the amounts of credits awarded must be more standardized. *While we appreciate the independence of the various jurisdictions, a recent report from PennFuture makes it quite clear that there are differences in crediting non-point source practices, in some instances by orders of magnitude.* This Committee does not promote the practice of inter-basin trading, and is highly opposed to the practice of inter-state trading. But even for the sake of some equity among the jurisdictions, EPA MUST address the discrepancies in the amount of credits awarded for practices. This variability undermines the integrity of the program and could actually cause hardships to agricultural communities in jurisdictions that do not get the "benefit" of large numbers of credits for implementing the same practices.

Long-Term Credit Availability

The potential demand for credits and offsets may come from many sources. *Existing WWTP's (truing up), expanding WWTP's, new WWTP's and POTW's, MS4's, new development stormwater, new industrial sources, and electric utilities may all be buyers in the market.* In the currently proposed system, most of these buyers will be looking to purchase credits from agriculture. No commitments have been made by any Department of Agriculture or Farm Bureau as to the "perpetual" availability of credits, as would be needed by a new source. As we have seen in the past, agricultural land use is tied to crop prices and the real estate market. If the value of crops, such as corn for ethanol, outweighs the value of credits, available agricultural credits may see a rapid decline. Additionally, new development occurs in great part on former agricultural lands. The former produces uncertainty in the long-term availability of credits and offsets. The latter produces a known decline in the availability of agricultural credits over time. Allowing new sources of pollutants outside of known reductions, by counting on long-term agricultural credit availability is risky, and in the long run unsustainable.

Expanding new development on former agricultural lands produces two inverse curves. Agricultural credit availability declines as agricultural lands are developed, and credit demand increases for new development stormwater and new and expanding WWTP's. This will cause an increase in the price of credits and offsets, causing potential political implications (discussed below).

Long Term Effects of New Development

Continuing to allow unimpeded new development on agricultural lands has long term consequences. *We currently count on our agricultural lands not only for our food, but to process much of our sludge, as well as most of our animal waste.* As population grows and development spreads, the sludge burden grows. At the same time, the amount of available cropland decreases due to development. The more development expands, the less agricultural land for waste "filtering", and the fewer potential credits for other sources.

Long-Term Politics of Trading: New Development Scenario

New developments create permanent credit needs for stormwater and WWTPs. *A developer must purchase 5 to 10 years of credits, then must sign his name to verify future availability for credits (a verification the developer has no control over). However, this developer will sell the development to individuals or a home-owners' association within the life of the development (considered permanent).* As noted above, credits availability will diminish as agricultural lands are developed. In this market, demand for credits will increase the cost of credits. This may sound like a good control on credits, and an incentive for upgrades, but what happens when politics is thrown into the equation. For example, the developer links the new neighborhood into an expanding WWTP. New owners are charged based on the current credit price. The development is sold over to the Neighborhood Association. The price goes up annually as demand increases. At first this is accepted, but eventually the neighbors revolt against the prices and contact politicians. Politicians change credit requirements based on public opposition to paying for credits. The credit programs are changed and now we have neighborhoods polluting without having to pay for offsets. This is what we predict will come of the nutrient trading scheme.

If the EPA and Jurisdictions Plan to Do this Against our Advice

The credit market should be used to promote wise planning for future growth. *Balance incentives between development in and outside of sewered areas, commensurate with their relative impacts on the TMDL, to minimize increased loads from future development.* This will be accomplished by how the rules of the marketplace are set up. Requiring the purchase of additional credits in development outside sewered areas, both the offset ratio (e.g. 2:1 in exisiting sewered areas, 5:1 outside sewered areas) and higher number of credits needed due to higher loading rates will act as a disincentive to develop in unsewered areas. The fact that a development outside sewered areas will need to buy many more credits will also act to drive development into areas with already developed infrastructure. How this is designed (the rules for a particular stream segment or Trading Geography will impact supply and demand) can also play a part.

Additional Notes on New Development

Pennsylvania's Chesapeake Bay Tributary Strategy
Implementation Plan for Sewage Facilities Planning

II. New Discharges and Facility Expansions

Where credits are purchased for new land development projects that result in new discharges or facility expansions, a developer or municipality must commit in writing, as part of the sewage facilities planning process, to purchase nutrient credits sufficient to offset nutrient loads from the project.

If the purchase of credits is necessary to maintain the zero net increase of nutrients, then the assurance must provide for those credits for the duration of the design life of the project.

PA Draft WIP Section 6. (page 50)

Guidance Document Number 392-0900-001: ***Final Trading of Nutrient and Sediment Regulation Credits – Policy and Guidelines***

The Department will expect to see assurances in the proposal that the credits will be provided to assure the long-term compliance for the treatment facility to meet the regulations in Chapter 71, Section 71.72.

For instance, a formal agreement between the municipality and the developer/permittee that establishes the developer/permittee's responsibility for operating and maintaining the system by providing credits, and

the responsibility of the municipality or local agency for oversight of the system, would normally be an acceptable assurance.

What Do We Lose By Not Sticking With Enforcement?

Enforcement of the TMDL on point sources should spur technology. Necessity is the Mother of Invention. *We are reaching the peak of world phosphorus supplies, with the U.S. having less than 40 years of reserves*. WWTP's pass 10% of all mined phosphorus, and cost-effective technologies exist to remove this phosphorus from WWTPs and industries. Ostara has installed direct phosphorus removal systems at two locations in the Chesapeake Watershed and they are producing income for those WWTP's. I am proud to say that one of these locations is in my home town of York, PA; the other is in Suffolk, VA. Trading reduces demand for new technology and encourages Maximum Daily Load for all waterways.

Thank you very much for considering these comments. We hope we can help in the creation of scientifically-based policies for the future needs of all generations of families in the Chesapeake Bay Watershed.

From the Mighty Susquehanna,

Michael R. Helfrich
Lower Susquehanna RIVERKEEPER©