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Pennsylvania's Nutrient Trading Program: Legal Issues and Challenges

A White Paper Prepared by

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In December 2006, Pennsylvania approved a policy to allow point sources of pollution (primarily wastewater treatment plants) to offset pollution discharges by purchasing "credits" from other facilities or farmers. Although water quality (or nutrient) trading has been talked about for years as a market-based incentive program to reduce pollution, Pennsylvania is the first state to embrace point-nonpoint source exchanges on a wide scale. Other states in the Chesapeake Bay region, at the encouragement of the Environmental Protection Agency (EPA), are also considering trading programs. Virginia, for instance, already has rules in place that would allow trading between point sources.

Water quality trading as an economic theory is very attractive. Water quality trading programs create a market for the buying and selling of pollution "credits." Once a market is up and running, facilities facing higher pollution control costs have the option of meeting regulatory obligations by purchasing pollution reductions (credits) from another source at lower cost. Trading worked for acid rain, so why not water pollution?

In practice, however, water quality trading is much more complicated and less likely to succeed than existing emission trading programs, such as that under the Clean Air Act (CAA) for SO_2. First, Congress authorized the EPA to implement a market-based allowance trading system to deal with acid rain through the 1990 amendments to the CAA. EPA does not have such clear statutory authority with respect to water quality trading. Second, the major sources of SO_2 pollution were stationary facilities already regulated by the EPA. With water pollution, the major sources – nonpoint sources – are essentially unregulated. Third, water quality trading is more technically challenging if only for the fact that it is far easier to measure the emissions from a smokestack than the runoff from a farm or parking lot.

But difficult does not mean impossible, and given the failure of the current regulations to clean up the Bay, it is understandable that federal and state managers would experiment with alternative methods of control. A 1998 study, for example, found that 45 percent of assessed rivers and streams in the United States and 54 percent of assessed lakes, reservoirs, and ponds were threatened or impaired by pollutants for their designated uses.[1]

At the request of the EPA Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC), the National Sea Grant Law Center investigated the legal issues that may emerge as Pennsylvania begins to implement its policy. Most of the legal hurdles arise from the Clean Water Act (CWA), but other federal and state statutes are implicated as well. After laying out the regulatory framework for managing water pollution in the Chesapeake Bay and Pennsylvania's new trading policy, a number of potentially problematic legal issues are discussed.

Clean Water Act

The goal of CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[2] To achieve this goal, Congress prohibited the discharge of any

[1] Greenhalgh, S. and P. Faeth. *Trading on Water.* 16 Forum for Applied Research and Public Policy 71 (Spring 2001) http://forum.ra.utk.edu .
[2] 33 U.S.C. § 1251.

pollutant from a point source into waters of the U.S without a permit issued by the EPA or an authorized state through the National Pollutant Discharge Elimination System (NPDES) program. "Point source" means any "discernible, confined and discrete conveyance" and includes pipes, channels, ditches, and concentrated animal feeding operations (CAFOs).[3] Through the NPDES program, point sources are required to meet technology-based effluent (or discharge) limitations incorporated into their permits. In areas where effluent limitations alone are not enough to achieve state-designated water quality standards (WQS), additional standards will be imposed. This means that "point sources subject to the NPDES program must meet not only the best technology obligations but also 'any more stringent limitation' necessary to achieve water quality standards or other provisions of state or federal law."[4]

The CWA requires states to establish WQS that include designated uses for each waterbody in the state and water quality criteria (WQC) "set at the level of water pollution that is permissible (usually expressed in concentration levels) before there start to be significant effects on health or the environment."[5] Every two years, states are required to identify waters which are not meeting WQS to the EPA on what is known as the 303(d) or impaired waters list.

"For water bodies that do not meet the water quality standards or that are expected to fall short in the future, the state must establish a Total Maximum Daily Load [TMDL] of pollutants so that the water quality will not be worse than what is required by the standard."[6] The process of setting up a TMDL is quite complicated. First, the state must determine the maximum amount of pollution that a body of water may receive and still meet the established water quality standards. That "load" must then be allocated to all sources contributing to the problem, including existing point sources, unregulated nonpoint sources, and natural background sources of pollution. TMDLs are submitted by the state and approved by the EPA.

CWA and the Chesapeake Bay

In 1983, Maryland, Virginia, Pennsylvania, the District of Columbia, the Administrator of the EPA, and the Chesapeake Bay Commission signed the Chesapeake Bay Agreement and committed to reducing the amount of nonpoint source pollution in the Bay. In 1987, a second agreement established a goal of a 40 percent reduction in phosphorus and nitrogen by the year 2000.

In 1999, a lawsuit brought by several environmental organizations against the EPA and the Virginia Association of Municipal Wastewater Agencies (VAMWA) claimed that Virginia and the EPA had failed to fulfill its duties under the CWA to improve water quality.[7] As part of a settlement agreement, the United States District Court in Eastern Virginia affirmed a consent decree that specified an eleven-year schedule for the establishment of

[3] *Id.* § 1362(14).
[4] William H. Rodgers, Jr., Environmental Law, Sec. 4-16 (2007).
[5] Environmental Law Practice Guide § 18.11(1).
[6] *Id.* at § 18.11(3)(a).
[7] *American Canoe Ass'n v. United States EPA*, 54 F.Supp.2d 621 (D. Va. 1999).

TMDLs for Virginia waters. If Virginia failed to do so, EPA would intervene and establish TMDLs where necessary.

This settlement agreement prompted the states to agree to new nutrient reduction goals for the region. In the Chesapeake 2000 Agreement, member states agreed to "work cooperatively to achieve the nutrient and sediment reduction targets that we agree are necessary to achieve the goals of a clean Chesapeake Bay by 2010, thereby allowing the Chesapeake and its tidal tributaries to be removed from the list of impaired waters." If the Bay and its tributaries are removed from the 303(d) list, the EPA would not be required to develop a TMDL. In the Agreement, the parties also agreed to collaborate on the development and use of innovative measures, including effluent trading.

Water Quality Standards

The first step towards the Chesapeake 2000 Agreement goals was the establishment of new water quality criteria for the Bay. The EPA and state partners developed water quality standards based on three criteria: dissolved oxygen, chlorophyll-a and water clarity. These criteria were developed for five habitat areas: shallow water, open water, deep water, deep channel and migratory and spawning areas. For each habitat area, a "designated use" was established. Chesapeake Bay jurisdictions with tidal waters – Maryland, Virginia, Delaware and the District of Columbia – were expected to incorporate the recommended criteria and designated uses into their existing WQS. Maryland's new water quality standards became effective in 2005.

Load Allocations

Realistically, EPA will be unable to avoid implementing a TMDL for the Chesapeake Bay. In September 2007, the EPA Office of Inspector General announced that "EPA and its Chesapeake Bay watershed partners will not meet load reduction goals for developed lands by 2010 as established in the *Chesapeake 2000* Agreement" due to continued development pressures in the region.[8] The inevitability of a TMDL is apparent in the willingness of the parties to voluntarily undertake and implement many components of a TMDL. A rose by any other name is still a rose.

In 2003, the six Chesapeake Bay watershed states (Maryland, Pennsylvania, Virginia, Delaware, New York, and West Virginia) and the District of Columbia agreed to new nutrient reduction goals for nitrogen and phosphorus, and sediment reduction goals.[9] The new goals, developed by the EPA's Chesapeake Bay Program, call for the states to reduce nitrogen pollution to 175 million lb/yr, phosphorus to 12.8 million lb/yr, and sediment to 4.15 million tons/yr. The target pollution levels are in essence the total load EPA estimates the Chesapeake Bay can handle and still meet the three new water quality criteria. While not technically a TMDL, it is the first step towards allocating pollution loads in the region. Although a TMDL would specify the maximum amount of a pollutant that a waterbody

[8] EPA Office of Inspector General, *Development Growth Outpacing Progress in Watershed Efforts to Restore the Chesapeake Bay*, Report No. 2007-P-00031 (Sept. 10, 2007) *available at* www.epa.gov/oig/reports/2007/20070910-2007-P-00031.pdf .

[9] Chesapeake Bay Program, Backgrounder: *Setting Nutrient and Sediment Reduction Goals for the Chesapeake Bay Watershed* (2003), http://www.chesapeakebay.net/info/wqcriteriapv/basin.pdf .

could receive, it would also allocate pollutant loadings among point and nonpoint sources of pollution. These mandatory, regulatory caps on pollution must be incorporated into NPDES permits. Under the Chesapeake 2000 Agreement, however, states have the freedom to choose from a range of pollution reduction mechanisms.

Armed with the total allowable load for the Bay, the EPA divided the Bay watershed into nine major river basins. These river basins were further subdivided by state boundaries. This resulted in twenty distinct state-specific basins. The total load for the entire Bay was allocated among these basins. For example, the Susquehanna River basin received a nitrogen allocation of 80.99 million lb/yr of which Pennsylvania was allocated 67.58 million lb/yr, New York12.58 million lb/yr, and Maryland .83 million lb/yr.

Each partner state agreed to develop plans, known as Tributary Strategies, to achieve these basin-specific nutrient reduction goals. "Tributary strategies are river-specific cleanup strategies that detail the 'on-the-ground' actions needed to reduce the amount of nutrients and sediment flowing into the Chesapeake Bay."[10] Tributary strategies may include such tasks as upgrading sewage treatment plants, using erosion control practices, or implementing agricultural Best Management Practices (BMPs) like conservation tillage or riparian buffers.

Pennsylvania's Chesapeake Bay Tributary Strategy

Pennsylvania's Chesapeake Bay Tributary Strategy was published in December 2004. As part of its strategy, Pennsylvania committed to implementing and enforcing new regulations requiring sewage and industrial dischargers to significantly reduce their nutrient loads. Since EPA regulations prohibit the issuance of a permit "when the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected States,"[11] Pennsylvania was forced to tighten permit standards to comply with Maryland's new WQS.

As part of the planning process, Pennsylvania allocated the necessary reductions between point and nonpoint sources within each of the major river basins. Point source allocations for significant Publicly Owned Treatment Works (POTWs) were initially "collectively set at discharge load limits based upon 2010 flows with concentrations of 8 milligrams per liter (mg/l) for nitrogen and 1 mg/l for phosphorus within both the Susquehanna and Potomac basins."[12] In April 2007, the Pennsylvania Department of Environmental Protection (DEP) decided to set discharge limits based on design flow, rather than projected flows. Facilities are now required to treat effluent to "6.0 mg/l for nitrogen and .8 mg/l for phosphorus."[13]

Nonpoint source allocations were divided among thirteen watershed areas based on both the "portion of anthropogenic (manmade) load that is estimated to be coming from each

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[10] Chesapeake Bay Program, Backgrounder: *What are Tributary Strategies?* (2004), http://www.chesapeakebay.net/pubs/tribstrats_backgrounder_final.pdf .
[11] 44 C.F.R. § 122.4(d).
[12] *Id.*
[13] PA Department of Environmental Protection, *Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting*, 1 (2007), *available at* http://www.depweb.state.pa.us/chesapeake/lib/chesapeake/april2007/implementation_plan_npdes_permitting.pdf .

watershed area and on the relative effort in implementing BMPs that has been accomplished within each watershed area through 2002."[14] After running the numbers, Pennsylvania concluded it would meet or exceed its nutrient load goals, with the exception of the Susquehanna basin phosphorus goal. The 27,000 lb shortfall would be made up by POTWs through a nutrient credit trading program.

Pennsylvania's Nutrient Trading Program

EPA "believes that market-based approaches such as water quality trading provide greater flexibility and have potential to achieve water quality and environmental benefits greater than would otherwise be achieved under more traditional regulatory approaches" and encourages states to develop these programs to deal with excess nutrient and sediment pollution.[15] "Water quality trading is a mechanism for allocating pollution loads among alternative sources in order to achieve an overall pollution load target (e.g., TMDL, mean annual loads, etc.) set by water quality authorities."[16] In theory, trading should allow a source with high abatement costs to purchase the same or greater level of pollution reduction from other pollution sources with lower abatement costs increasing the cost-effectiveness of the relevant pollution control program.

The impetus to trade in Pennsylvania is provided by the new permit limits for the POTWs. Pennsylvania issued its "Final Trading of Nutrient and Sediment Reduction Credits – Policy and Guidelines" in December 2006.[17] Pennsylvania's policy states that once a cap load has been established for a watershed area, "trading can then occur among the sources within that watershed for that nutrient, or for sediment, on the condition that the discharges covered by the trades, along with all other discharges within the watershed, do not exceed water quality standards and the cap load established for the watershed."

All sources must meet legal baseline requirements before nutrient and sediment reductions will be considered eligible for trading. For point sources, the legal baseline is the effluent limit set by the NPDES permit. For nonpoint sources, the legal baseline for agricultural operations is compliance with existing state erosion and nutrient management laws. Credits, within the context of the Bay, must be expressed as pounds per year and will be valid for one year. Credits must be measured and accounted for each year, and banking for future use is not permitted.

For nonpoint sources generating credits to meet Chesapeake Bay WQS, a trading threshold applies in addition to the legal baseline. A trading threshold is defined as the "loading or level of nutrient and sediment reduction efforts to be achieved and maintained before credits can be generated for any additional reductions." For agricultural sources, the threshold requirements are:

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[14] PA DEP, Chesapeake Bay Tributary Strategy, 10 (2004) *available at* http://www.depweb.state.pa.us/chesapeake/lib/chesapeake/pdfs/tribstrategy.pdf .
[15] United States Environmental Protection Agency, Office of Water, *Water Quality Trading Policy* (2003), *available at* http://www.epa.gov/owow/watershed/trading/finalpolicy2003.html.
[16] James Shortle and Richard Horan, *Water Quality Trading*, 14 PENN. ST. ENVTL. L. REV. 231, 233-34 (2006).
[17] PA DEP, Nutrient Trading Policy (2006), *available at* http://www.dep.state.pa.us/river/Nutrient%20Trading%20Documents/Additions%2012-29-2006/Final%20Policy%2012-28.pdf .

- 100 foot mechanical setback or equivalent; this is achieved when ***One*** of the following is met:
    - Manure is not mechanically applied within 100 feet of surface waters
    - There are no surface waters on or within 100 feet of the farm
    - Farm uses no manure application and applies commercial fertilizer at or below the Penn State recommended agronomic rates.

OR

- 35 foot buffer or equivalent; this is achieved when all of the following are met:
    - A minimum of 35 feet of permanent vegetation is established and maintained between the field and surface water.
    - Area can be grazed or cropped under a specific management plan, and permanent vegetation must be maintained at all times

OR

- 20 percent reduction option
    - A reduction of 20 percent of the farm's overall nutrient balance beyond baseline compliance.[18]

For allocations resulting from a TMDL, "the trading threshold is the level of nutrient and sediment load associated with existing land uses and management practices that is needed to comply with applicable state regulations."[19]

The DEP has pre-approved calculation methods for the generation of credits through various BMPs. For example, say a farmer wishes to generate credits through a riparian forest buffer, which is a linear wooded area planted along rivers and streams. Credit reductions are calculated based on the "original land use loading rate minus forest loading rate times [] total acres converted plus upland land use loading rate times total acres treated times percent efficiency. For nitrogen every 435.6 linear feet of buffer is estimated to treat 5 upland acres of land and for phosphorus and sediment every 435.6 linear feet of buffer is estimated to treat 2 upland acres of land (100 foot buffers)."[20]

Three types of trading ratios are approved for use in Pennsylvania to ensure the necessary nutrient and sediment reductions are achieved through the trade. Delivery ratios may be used to compensate for a nutrient's travel in water or the distance between sources. A ten percent reserve ratio will apply to all credits to create a credit bank. An "edge of segment" (EOS) ratio is a factor unique to each watershed model segment as determined by the Chesapeake Bay Watershed Model.

Critics have raised a number of concerns with Pennsylvania's program. First, some claim the delivery and reserve ratios do not adequately account for uncertainty associated with nonpoint source reductions. Others fear the ability to generate credits by converting agricultural land to other uses, such as low-density development, could increase indirect pollution associated with urban sprawl. Individual point sources have serious liability

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[18] PA DEP, *Nutrient Trading Policy*, Appendix A (2007), *available at* http://www.dep.state.pa.us/river/Nutrient%20Trading%20Documents/Additions%2012-29-2006/Final%20APPENDIX%20A%20_12-28_.pdf .

[19] *Id.*

[20] Pennsylvania Department of Environmental Protection, *Pennsylvania Chesapeake Bay Tributary Strategy*, Appendix C, 103 (2004), *available at* http://www.depweb.state.pa.us/chesapeake/lib/chesapeake/pdfs/tribstrategy.pdf .

concerns associated with permit compliance. Before delving into the legal issues raised by the above criticism, the legality of water quality trading programs in general must be examined first.

Does the CWA Allow Offsets?

One of the major legal hurdles water quality trading program may have to overcome is the issue of whether the CWA allows point sources to offset discharges into impaired waterbodies. EPA argues that offsets are allowed, but not all courts agree.

EPA regulations prohibits the issuance of a permit "to a new source or a new discharger, if the discharge from its construction or operation will cause or contribute to the violation of water quality standards."[21]

> The owner or operator of a new source or new discharger proposing to discharge into a water segment which does not meet applicable water quality standards or is not expected to meet those standards even after the application of the effluent limitations required by sections 301(b)(1)(A) and 301(b)(1)(B) of CWA, and for which the State or interstate agency has performed a pollutants load allocation for the pollutant to be discharged, must demonstrate, before the close of the public comment period, that:
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> (1) There are sufficient remaining pollutant load allocations to allow for the discharge; and
>
> (2) The existing dischargers into that segment are subject to compliance schedules designed to bring the segment into compliance with applicable water quality standards.[22]

This regulatory language would seem to "prohibit the issuance of any NPDES permit to a new source of pollutants into waters not meeting water quality standards unless it could take advantage of an available, unused waste load allocation."[23] EPA, however, generally interprets this provision to allow permits if the point source agrees to offset the discharges. Several court decisions, including a 2007 Ninth Circuit Court of Appeals ruling, question the EPA's interpretation and raise the specter of future challenges to any program involving offsets. The debate centers on "whether any discharge to an 'impaired water' necessarily 'causes or contributes to a violation of water quality standards' or, alternatively, if net improvements to an 'impaired water' can be considered in determining whether a new source or discharger 'causes or contributes' to the violation of water quality standards."[24]

Annandale

In *In re City of Annandale*, the Minnesota cities of Annandale and Maple Lake jointly proposed the construction of a new wastewater treatment plant. The plant would increase

[21] *Id.* § 122.4(i).
[22] *Id.*
[23] Jeffery M. Gaba, *New Sources, New Growth, and the CWA*, 55 ALA. L. REV. 651, 667 (2003).
[24] *In re City of Annandale*, 731 N.W. 2d 502, 518 (Minn. 2007).

phosphorus discharges to the North Fork of the Crow River, a segment already impaired due to excess phosphorus levels. The Minnesota Pollution Control Agency (MPCA) found that the new discharges from the plant would be offset by a planned upgrade to a nearby plant and therefore would not contribute to the violation of WQS. A divided Minnesota Supreme Court held that it was reasonable for the MPCA to consider offsets from another source in the watershed in determining whether a new source would cause or contribute to the violation of water quality standards.

The MPCA issued the permit based on its conclusion that "because of the net reduction in the watershed, the proposed . . . facility will *not contribute* to water quality standard violations."[25] Recognizing that the CWA does not provide clear guidance to states on how to accommodate population growth, the court concluded that "the phrase 'cause or contribute to the violation of water quality standards' leaves leeway for the MPCA to make a range of policy judgments based on the MPCA's scientific and technical knowledge."[26] "Nothing in the language of the regulation or the structure of the CWA prohibits the MPCA from considering offsets in this situation."[27] The court concluded that "it was not unreasonable for the MPCA to allow a 2,200 lb/year (at capacity) increase in phosphorus discharge from a new wastewater treatment facility to be offset by a contemporaneous 53,500 lb/year decrease in a nearby facility that is located in the same watershed."[28]

The dissent disagreed, asserting that the language of § 122.4(i) was unambiguous. Even if the proposed facility will not cause a violation of the standards (because of the net reduction), "it is clear that an increase of 2,200 pounds of phosphorus a year will 'help bring about,' that is, contribute to, a water quality standards violation."[29] According to the dissent, allowing a new discharger to increase its allowable discharge because another discharger is working to reduce its discharge flies in the face of the goals of the CWA and the NPDES permitting scheme which seek to "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[30]

Pinto Creek

The Ninth Circuit interpreted § 122.4(i) a bit more narrowly than the Minnesota Supreme Court. In *Friends of Pinto Creek v. EPA*,[31] environmental groups challenged the EPA's issuance of a permit to Carlota Copper Company for discharges of copper from an open-pit mine into Pinto Creek. Pinto Creek is identified as an impaired water on Arizona's § 303(d) list due to non-attainment of water quality standards for dissolved copper. EPA authorized Carlota's discharges with the condition that the company offset this new source of copper loading through the remediation of an upstream inactive mine. Friends of Pinto Creek argued "that as a 'new discharger,' Carlota's discharge of dissolved copper into a waterway that is already impaired by an excess of the copper pollutant violates the intent and purpose of the [CWA]."[32] The Ninth Circuit agreed and vacated the permit.

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[25] *Id.* at 517. (emphasis in original).
[26] *Id.* at 524.
[27] *Id.*
[28] *Id.* at 525.
[29] *Id.* at 527.
[30] *See* 33 U.S.C. § 1251(a).
[31] 2007 U.S. App. LEXIS 23251 (9th Cir. Oct. 4, 2007).
[32] *Id.* at *9.

The Ninth Circuit, examining the plain language of § 122.4(i), stated that "the regulation is very clear that no permit may be issued to a new discharger if the discharge will contribute to the violation of water quality standards."[33] Although EPA argued that the partial remediation of the discharge from the Gibson Mine would offset the pollution, the court found no authority for that claim. "Nothing in the CWA or the regulation [] provides an exception for an offset when the waters remain impaired and the new source is discharging pollution into that impaired water." The court did recognize that there is an exception when a TMDL has been established. However, the court found that the "exception does not apply unless the new source can demonstrate that, under the TMDL, the plan is designed to bring the waters into compliance with applicable water quality standards."[34]

EPA argued that the court's reading of the regulation would amount to a complete ban on the discharge of pollution to impaired waters. The court disagreed. All § 122.4(i)(2) requires is "compliance schedules designed to bring the segment into compliance with applicable water quality standards."[35] In the present case, however, the existing discharges were not subject to such compliance schedules. The Ninth Circuit stated that the "objective of [§ 122.4(i)(2)] is not simply to show a lessening of pollution, but to show how the water quality standard will be met if Carlota is allowed to discharge pollutants into the impaired waters."[36]

The ruling prohibits EPA from issuing any new permits in the Western states covered by the jurisdiction of the Ninth Circuit for discharges into impaired waterbodies unless it has established compliance schedules for all existing point sources in the area. The court even suggests that EPA may have to establish compliance schedules for nonpoint sources, although EPA has no regulatory authority over such sources. If water quality standards cannot be achieved by point sources alone, "then a permit cannot be issued unless the state or Carlota agrees to establish a schedule to limit pollution from a nonpoint source or sources sufficient to achieve water quality standards."[37] EPA is currently considering whether to seek a rehearing by the Ninth Circuit or review by the Supreme Court.[38]

It is EPA's position that the Ninth Circuit's ruling is inconsistent with the U.S. Supreme Court's opinion in *Arkansas v. Oklahoma*.[39] In 1992, the Supreme Court upheld EPA's issuance of a NPDES permit for a new sewage treatment plant in Arkansas, over Oklahoma's claim that the discharge would result in a violation of its water quality standards. The discharge by the Arkansas facility would have potentially affected a designated "scenic" river in Oklahoma.[40] Under Oklahoma water quality standards, no degradation of a scenic river was allowed.[41] The Tenth Circuit Court of Appeals found for

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[33] *Id.*
[34] *Id.* at *11.
[35] *Id.* at *13.
[36] *Id.* at *17.
[37] *Id.* at *18.
[38] *EPA May Seek Reversal of Ruling on Permits in "Impaired" Waters*, Inside EPA, Vol. 28, No. 44 (Nov. 2, 2007).
[39] *Id.*
[40] Gaba, *supra* note 22, at 678.
[41] *Id.*

Oklahoma, holding that the CWA prohibited the issuance of a NPDES permit for a new discharge that would reach waters in violation of water quality standards.[42]

On appeal, the Supreme Court reversed the Tenth Circuit and upheld the issuance of the permit. The Supreme Court stated that nothing in the CWA "mandates a complete ban on discharges into a waterway that is in violation of those standards."[43] In fact, provisions, such as the TMDL program, are "designed to remedy existing water quality violations and to allocate the burden of reducing undesirable discharges between existing sources and new sources."[44] The Court concluded that "the Clean Water Act vests in the EPA and the States broad authority to develop long-range, area-wide programs to alleviate and eliminate existing pollution."[45]

Out of context, this sweeping language seems favorable to EPA's position on water quality trading. However, it is important to note that § 122.4(i) was not discussed in *Arkansas*. Oklahoma was relying on its antidegradation policies to protect the river's water quality. EPA regulations require states to develop and adopt statewide antidegradation policies which limit the degradation of existing water uses or water quality.[46] These policies are intended to protect waterbodies which are meeting water quality standards. Since the Chesapeake Bay is an impaired water, the antidegradation polices of the states are currently inapplicable. Furthermore, "rather than announcing its interpretation of the requirements of the CWA, the Supreme Court relied on principles of judicial deference to uphold the agency's decision."[47] Whether the Court would be as deferential to the EPA with respect to its interpretation that the CWA authorizes offsetting is unknown.

Because the Chesapeake Bay is impaired, as are many of its tributaries, it is clear that neither the EPA nor the states may issue a permit if the discharge "will cause or contribute to the violation of water quality standards." Legal minds are disagreeing, however, on what the phrase "cause or contribute" means, which makes it impossible to predict whether water quality trading programs will be found to be in compliance with the terms of the CWA and EPA regulations. The various courts operating in the Chesapeake Bay region could go either way.

Antibacksliding

Another thorny legal issue is the CWA's antibacksliding provisions. These provisions apply to existing discharges, as opposed to new or expanded dischargers. The CWA "bars the renewal, reissuance or modification of a permit which contains an effluent limitation that is less stringent than those contained in the previous permit."[48] The antibacksliding provisions are quite strict with respect to technology-based effluent limitations. However, water quality-based effluent limitations may be relaxed in two limited circumstances. First, where water quality standards are not being achieved, a reissued permit may contain less

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[42] *Oklahoma v. EPA*, 908 F.2d 595, 632 (10th Cir. 1990).
[43] *Id.* at 108.
[44] *Id.*
[45] *Id.*
[46] 40 C.F.R. § 131.12.
[47] Gaba, *supra* note 22, at 680.
[48] Ann Powers, *Reducing Nitrogen Pollution on Long Island Sound: Is There a Place for Pollutant Trading?*, 23 COLUM. J. ENVTL. L. 137, 179 (1998) (summarizing 33 U.S.C. § 1342(o)(1)).

stringent limits if "a new TMDL and wasteload allocation has been accomplished whereby the cumulative effect of the revised loadings will result in lower total pollutant loadings and will ensure that water quality standards will be attained."[49] Where water quality standards are being met, permit limitations "may be reduced only following compliance with the antidegradation policy established under the [CWA]."[50]

In the trading context, the question becomes: if a facility is given a specific pollutant load limit in its permit, but is allowed to meet that limit by purchasing credits, has it been allowed to "backslide" to a less stringent limit? The answer would depend on whether the facility's previous permit had water quality-based effluent limitations for nitrogen, phosphorus, and sediment. The Chesapeake Bay water quality standards were only recently published and adopted by the states, so it is quite possible that few existing permits contain effluent limits for these pollutants. The anitbacksliding provisions, therefore, would not be triggered. If a permit happens to contain an effluent limit for nitrogen, phosphorus, or sediment, the permit writer would have to pay close attention to the permit language to avoid the appearance of backsliding.

Addressing Uncertainty

Assuming offsets are permissible under the CWA, individual trades must occur in such a way as to ensure that the necessary reductions are taking place. Pollution reductions from point sources are easy to measure by monitoring the effluent discharged from the end of a pipe. Where a trading program involves nonpoint sources, EPA's Water Quality Trading Policy recommends states "adopt methods to account for the greater uncertainty in estimates of nonpoint source loads and reductions."[51] A number of factors increase the uncertainty such as variable performance of BMPs and time lags associated with implementation and groundwater transport. One way to reduce uncertainty is through the use of uncertainty ratios.

> The application of an uncertainty ratio helps ensure that actual loads resulting from a trade do not violate the water quality standards despite the inability to accurately measure them (Jones 2005). An uncertainty ratio should be applied to estimated nonpoint source load reductions to account for any potential inaccuracies in the methodology or assumptions used in the estimation. Uncertainty ratios are particularly important to account for potential inaccuracies in the estimation methodology when credits from nonpoint source BMPs are estimated or calculated.[52]

States, however, are not required to utilize uncertainty ratios. EPA's policy indicates that a number of approaches are available to reduce uncertainty including monitoring and verification of BMP effectiveness, use of conservative assumptions, and establishment of a reserve pool of credits.

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[49] *Id.*
[50] *Id.*
[51] EPA, *Water Quality Trading Policy*, supra note 13.
[52] EPA, Water Quality Trading Toolkit for Permit Writers. Water Quality Trading Scenario: Point-Non Point Source Trading, 4 (2007), *available at* http://www.epa.gov/npdes/pubs/wqtradingtoolkit_ps-nps.pdf .

Pennsylvania has chosen to address uncertainty through conservative assumptions and a credit bank. Pennsylvania does not require a greater than 1:1 trading ratio. Although this is consistent with EPA's policy, given the program's reliance on modeling and BMPs, this is an extremely risky approach.

Enforcement

Another potentially problematic area is enforcement. EPA's water quality trading policy urges states to "establish clear enforceable mechanisms consistent with NPDES regulations that ensure legal accountability for the generation of credits that are traded." To increase regulatory certainty, facilities who participate in the water quality trading program remain legally responsible for the nutrient reductions required by their permits. EPA's policy states that "in the event of default by another source generating credits, an NPDES permittee using those credits is responsible for complying with the effluent limitations that would apply if the trade had not occurred."[53]

Pennsylvania's trading guidelines clearly state that it is the permittee's responsibility to ensure compliance with the permit. "The discharge limitations in NPDES permits are enforced largely through self-monitoring and reporting by the permittee."[54] NPDES permits require facilities to routinely sample their effluent to monitor the pollutant load in the waste stream. The permittee is required to self-report any violations to the EPA. Because nutrient trading will take place in the context of NPDES permitting, EPA and states are likely to follow similar enforcement procedures.

If a permittee is required to self-report compliance with the generation of credits, how will compliance be determined? Does compliance mean certifying that a BMP has been implemented? Just because a BMP is undertaken by a nonpoint source, it does not necessarily follow that the expected nutrient reductions have occurred. Poor construction or heavy rainfall could result in greater pollution loading than anticipated. A better method would be to require direct monitoring at the edge of the property and determine compliance based on actual reductions in loading. Unfortunately, the feasibility of this option is quite low. Given the difficulty associated with direct monitoring, it is probably safe to assume that EPA views implementation of the BMP as compliance.

Risk Allocation

Contracts between the buyer and seller can shift some legal responsibility to the nonpoint sources, which are not required by law to undertake the activities associated with the generation of credits. Contracts can be used to establish the terms and conditions of the trade, monitoring and verification procedures, and penalties for noncompliance. While the DEP has enforcement discretion and the EPA urges states to allow adequate time for a buyer to correct noncompliance before enforcement penalties are levied, without a contract a point source could be left holding the bag if the necessary reductions are not generated by the nonpoint source.

[53] EPA, *Water Quality Trading Policy*, supra note 13.
[54] Marc Poirier, Environmental Law Practice Guide § 18.02 (2007).

Pennsylvania's nutrient trading policy indicates that DEP does not plan to take action against point sources if the failure to generate credits through BMPs is due to uncontrollable or unforeseeable circumstances, such as extreme weather conditions. In such situations, point sources should be able to take advantage of the credit reserve or purchase additional credits from a different source to achieve compliance with the permits. As an added protection for point sources, willful failure by nonpoint sources to meet trade contract agreements will result in enforcement action by the DEP.

If a credit seller failed to generate the pollution reductions, the credit buyer could pursue a private cause of action against the seller based on breach of contract. Traditionally, the goal of the law of contract remedies is the compensation of the promisee (e.g., the credit buyer) for the loss resulting from the breach, not the compulsion of the promisor (e.g., the credit seller) to perform his promise.[55] It is therefore important to keep in mind that while the buyer would be entitled to some form of compensation for any breach, it is unlikely that the available contractual remedies would result in the reduction of pollution.

Remedies for Breach of Contract

In general, judicial remedies available to protect contractual interests include awarding a sum of money due under the contract or as damages; requiring specific performance of a contract or enjoining its non-performance; requiring restoration of a specific thing to prevent unjust enrichment; and awarding a sum of money to prevent unjust enrichment.[56] Money damages are the most common remedy in breach of contract cases. However, in some situations money damages cannot adequately compensate the plaintiff. In these cases, judges may require specific performance and order the promisor to render the promised performance.

Specific performance is "the remedy of requiring exact performance of a contract in the specific form in which it was made, or according to the precise terms agreed upon."[57] With the sale of goods, specific performance may be awarded if the subject matter of the contract is of such a special or unique nature or of such a value that money damages would not be a just and reasonable substitute.[58] In other words, specific performance will be granted "where the subject matter is unique, as where the contract calls for specific goods from a specific source."[59] Courts have granted specific performance where one party contracted to sell a restaurant or to buy such items as scrap from a steel company, a roping horse, coal tar, propone gas, mink from a high quality breeder, and the puppy of a showdog.[60]

To determine whether an award of specific performance would be appropriate, a court must first determine the proper subject matter of the contract. In the trading context, for

[55] Restatement 2d *Contracts*, Introductory Note, Chapter 16.
[56] *Contracts*, § 345.
[57] Black's Law Dictionary 1138 (6th ed. 1990).
[58] *See Fleischer v. James Drug Stores,* 1 N.J. 138, 62 A.2d 383 (1948).
[59] *Tennessee Valley Authority v. Mason Coal, Inc.*, 384 F.Supp. 1107, 1111 (D.C. Tenn. 1974).
[60] *Cochrane v. Szpakowski*, 49 A.2d 692 (Pa. 1946); *Eastern Rolling Mill Co. v. Michlovitz*, 145 A. 378 (Md. 1929); *Morris v. Sparrow*, 287 S.W.2d 583 (Ark. 1956); *Equitable Gas Light Co. of Baltimore City v. Baltimore Coal Tar & Mfg. Co.*, 63 Md. 285 (Md. 1885); *Laclede Gas Co. v. Amoco Oil Co.*, 522 F.2d 33 (8th Cir. 1975); *Titus v. Empire Mink Corp.,* 17 N.Y.S.2d 909 (N.Y. Sup. 1939); *Bono v. McCutcheon*, 824 N.E.2d 1013 (Ohio Ct. App. 2005).

example, what is the actual subject matter of the contract? Is the subject matter of a contract between a seller and a buyer the credit or the activity that results in the pollution reduction? If the subject matter of the contract is the "credit," than a judge is unlikely to award specific performance since the buyer can purchase similar "credits" from other sellers. However, if the contract states that the buyer is purchasing pollution reductions generated through the construction of a particular BMP, such as a buffer, the subject matter narrows. Unfortunately, the existence of the reserve credit bank makes it unlikely that specific performance would be granted based on the uniqueness of the subject matter. If the court awarded a buyer money damages, the buyer could purchase credits from the bank and fulfill the terms of the contract.

In a few limited cases, specific performance has been granted as necessary "to protect the public interest."[61] For example, in *Tennessee Valley Authority v. Mason Coal, Inc.*, the Tennessee Valley Authority (TVA) contracted with Mason Coal for a supply of coal to provide electricity to its consumers. When Mason Coal breached the contract, TVA sought specific performance. Because there was a coal shortage at the time of the breach, the court considered coal a unique product and granted specific performance. The court stated that a "continued and reliable supply of coal for the production of electricity is of important concern both to the industrial and private sectors of the region."[62]

Several arguments could be made that specific performance should be awarded in the trading context to protect the public interest. First, the Pennsylvania Clean Streams Law mandates that the discharge of any substance into public waters that either pollutes or creates a danger of polluting public waters is a public nuisance.[63] Abatement of a public nuisance would seem to be in the public interest. Failing to award specific performance and require the construction of a buffer would allow the seller to continue polluting public waters. Still, this is an untested legal strategy which may not succeed in all cases. Courts will most likely award money damages to the buyer for any loss caused by the breach.

Conclusion

As the pollution management challenges continue to rise due to increased development and population growth, federal and state agencies are looking to non-regulatory mechanisms, such as trading programs, to achieve environmental goals. Although EPA has been encouraging states to embrace water quality trading, courts are just starting to consider the legality of such programs. A number of hurdles may await Pennsylvania and the other Chesapeake Bay states. First, EPA and the states may not be authorized to consider offsets when issuing permits for discharges into impaired waters. Second, even if offsets are allowed, trades must not "cause or contribute to the violation of water quality standards." Those cases may be hard to make, especially in Pennsylvania with its 1:1 trading ratio, given the many ways a trade could fail to achieve the anticipated nutrient reductions. States may need to make difficult and unpopular choices, such as requiring direct monitoring of BMP effectiveness and higher trading ratios, if their programs are to succeed.

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[61] *Tennessee Valley Authority v. Mason Coal, Inc.*, 384 F.Supp. 1107, 1116 (E.D. Tenn. 1974); *citing*, *Virginian Ry. v. Federation*, 300 U.S. 515 (1937); *Yakus v. United States*, 321 U.S. 414 (1944); *Porter v. Warner Co.*, 328 U.S. 395 (1946); *United States v. Morgan*, 307 U.S. 183 (1939).
[62] *Id.* at 1112.
[63] 35 PA. STAT. ANN. § 691.3.