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Maryland's Regulatory Approach to Nutrient Management

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The Maryland General Assembly passed the Water Quality Improvement Act (WQIA) during the closing hours of the 1998 session. The WQIA has been described as the most comprehensive farm nutrient control legislation in the country. What is it? Why was it passed? What does it do and what doesn't it do? How should farmers and others who will be regulated under the Act be involved and prepared to operate successfully under the WQIA?

History of the Water Quality Improvement Act

On September 15, 1997, Governor Parris N. Glendening appointed the Citizens' Pfiesteria Action Commission, chaired by former Governor Harry Hughes, to study events surrounding the Pfiesteria outbreaks on the Lower Eastern Shore and to recommend policy actions to the Governor.

The Commission issued its report on November 3, 1997, that subsequently formed the basis for the Governor's legislative package. A key finding was a probable link between Pfiesteria populations (not toxicity) and nutrient overenrichment. This consensus, developed by an independent group of marine scientists, was adopted by the Commission and guided its recommendations. At the same time, a group of agricultural scientists concluded that dissolved phosphorus in runoff can be high, even without erosion, on soils with excessive soil test phosphorus levels. This finding caused the Commission to place a higher emphasis on phosphorus in nutrient management planning.

On January 21, 1998, the Governor introduced the Water Quality Improvement Act of 1998 in the Senate, largely following the recommendations of the Citizens' Pfiesteria Action Commission. The bill contained many requirements, new programs, and associated budget initiatives. The most controversial included mandatory nitrogen- and phosphorus-based nutrient management plans to be developed by 2000 and implemented by 2002.

Although consistent with the recommendations of the Citizens' Pfiesteria Action Commission, this bill was a clear and major departure from the State's long-term emphasis on voluntary agricultural nutrient pollution control programs, which were the cornerstone of Maryland's Chesapeake Bay Tributary Strategies. The bill created a great deal of controversy among farmers, poultry processors, environmental groups, Tributary Teams, and many others.

A group of rural legislators introduced a counter measure in the House near the end of January 1998; the Nutrient Management Improvement Act of 1998. This bill maintained a voluntary nutrient management approach with incremental goals, resulting in 80 percent of all farmland under nutrient

management by 2005. It was amended in committee to require all farms to have nitrogen-based plans by 2003 and nitrogen- and phosphorus-based plans by 2006. The bill was passed by the House in early March 1998.

The Governor's bill was amended to require nitrogen-based plans by 2002 and nitrogen- and phosphorus-based plans by 2004. This bill was passed by the Senate in early March 1998.

The bills were sent to a conference committee. Since both bills required mandatory nitrogen- and phosphorus-based nutrient management, debate during conference focused heavily on compromise implementation dates. On April 13, 1998, the last day of the Session, the House approved the Act unanimously and the Senate voted 39 to 7 in favor of the Act. The Governor signed the Act on May 12, 1998.

The Maryland Department of Agriculture (MDA) was given authority for regulation development under the Act. The Department expanded an existing Nutrient Management Advisory Committee and began the task of regulation development during the summer of 1998. Development of draft regulations was completed during 1999 and public hearings and comment are being conducted during the winter of 2000. The discussion that follows is based on the WQIA and the final draft of the regulations published in the Maryland Register on January 28, 2000 (27:2:160-174). A bill making technical modification and limited changes to the Act was introduced, with Department support, in February 2000.

Requirements of The Water Quality Improvement Act

The most far-reaching requirement of the WQIA is that all agricultural operations with gross annual incomes greater than \$2,500, or more than eight animal units, must have and implement a nitrogen- and phosphorus-based nutrient management plan. The Act requires that anyone "who, in operating a farm, uses chemical fertilizer" have a nitrogen- and phosphorus-based plan by December 31, 2001, which must be implemented by December 31, 2002. Persons using sludge or animal manure must have and implement nitrogen-based plans by the same dates as those using commercial fertilizers. Those using organic sources have until July 1, 2004, to submit a nitrogen- and phosphorus-based nutrient management plan, which must be implemented by July 1, 2005. The proposed regulations allow farms that predominantly use commercial fertilizer, but use organic sources on 10 acres or more, to wait until the later date to address phosphorus.

Some animal operations producing manure will need alternative uses for part or all of it. Alternative use technologies, distribution systems, and methods to reduce available phosphorus in organic waste must be refined and implemented. State strategies, programs, and cost-share programs to encourage this are available but the amount of excess manure that cannot be land applied is still not clear.

The later date for organic waste reflects concerns over the time needed to refine and implement these solutions. Because of the ability to blend balanced commercial fertilizers, time was not considered to be as much of an issue for commercial fertilizer users.

Affected operations

As stated above, anyone who grosses more than 2500 per year from an agricultural operation must

obtain and implement a nutrient management plan. This includes nurseries, greenhouses, Christmas trees farms, cut flowers and fresh vegetables, as well as agronomic crops and animal agriculture. The low annual gross and broad definition of an “agricultural operation” means that essentially all agricultural activities are subject to the requirements of the law.

Obtaining a nutrient management plan

Plans must be developed by a nutrient management consultant certified by the MDA. Certified consultants are located in every Maryland Cooperative Extension (MCE) county office and private sector consultants are available through independent crop consulting firms and farm supply/fertilizer companies. Funds have been provided to hire additional nutrient management consultants through MCE.

Cost-share is available for farmers who wish to hire private nutrient management consultants to develop their plans. However, implementation is required when the cost-shared plan is written, not by the deadline of December 31, 2002.

Submission and Evaluation of Plans

All nutrient management plans and plan revisions must be filed with MDA. Copies will be maintained for 3 years. The plans are considered part of a farmer's business records and are therefore provided confidentiality. MDA will conduct on-farm evaluations of the implementation of the nutrient management plan. Maryland Department of Environment (MDE) was not given a direct role in the Act, but will be called in when there is evidence of a water quality violation, or after the third citation of a WQIA provision.

When a nutrient management plan is submitted, it must include a "grant of a right of entry" to MDA to evaluate implementation. Evaluations must be prearranged, done during daylight hours, and the farmer must be given the opportunity to be present. The Act also requires that evaluations be done in a manner that minimizes inconvenience to the farmer.

MDA will notify individuals who do not submit plans by the applicable date. If, "after a reasonable period of time" following notification, no plan is submitted, the individual can be fined up to \$250. This fine is in addition to any fines associated with failure to implement a plan.

If someone does not implement their plan, they will initially be given a warning that they are violating the Act. If they still do not implement the plan, they will be offered an opportunity for an administrative hearing after which they can be fined up to \$100 per violation, not to exceed \$2,000 per year. Each day is considered a separate violation.

In addition to the fines, MDA may require repayment of cost-share funds for projects that are in violation and may deny or restrict eligibility for future cost-share.

Phosphorus-based nutrient management plans

The Act specifies that nutrient management plans consider both nitrogen and phosphorus application rates. Recommendations have always been made for both nutrients, however, when animal manures or sludge were used, the recommended application rate was based on crop nitrogen needs. This practice

resulted in substantial over-application of phosphorus.

The Act identifies what must be considered in a plan, but does not specify what constitutes a phosphorus-based plan. Agricultural scientists support an approach that considers the many site-specific factors influence the potential for phosphorus loss. These scientists have proposed the use of a "Phosphorus Site Index" which is incorporated by reference into proposed regulations. A generalized national index was developed and has been adapted for use in Maryland. It evaluates slope, runoff potential, proximity to surface water, soil phosphorus levels, watershed priority and fertilizer/manure application rates, timing, and methods. The scientific community feels that site-specific assessments using this tool provide the most comprehensive evaluation of potential environmental impacts without restricting phosphorus application to low risk sites.

The proposed regulations require that all fields with soil test "fertility index values" (FIV) greater than 150 have a Phosphorus Site Index calculated to guide management decisions. The Maryland FIV is a unitless system where 50 is optimal and 100 begins to be excessive. It is in the farmers best interest to check their site index and manage to prevent reaching an FIV of 150.

The Phosphorus Site Index rates the potential risk for phosphorus loss from low to very high. At low risk levels, a nitrogen based plan can be used but care is suggested to avoid building phosphorus levels. A medium rating means that phosphorus application should be limited to phosphorus soil test recommendations or crop removal, whichever is greater. At a high risk level, only recommended soil test phosphorus levels may be applied (usually starter phosphorus only). At very high levels, no additional phosphorus can be applied. For high or very high levels, all practical management practices for reducing phosphorus losses must be implemented.

WQIA Nutrient Management Plan Content

Maryland has had a strong, voluntary nutrient management program since the 1980's. These plans focused largely on nutrient application for crop production. Plans required by the WQIA continue this emphasis but also require consideration of land and manure management. This, in combination with detailed record keeping requirements, has been used by the state to argue that WQIA plans will be "functionally equivalent" to federal Comprehensive Nutrient Management Plans (CNMP).

The regulations require the plan to address "all aspects of the agricultural operation, including tillage, cropping, pasture, and production of agricultural products, such as plants, trees, sod, food, feed, and fiber." It also requires plans for the identification, management and disposal of "all primary nutrients produced on, imported to, and exported from" the agricultural operation. There must be manure management conditions that protect water quality and improve manure utilization. This includes handling, storage, and management for manures produced on-farm for direct use or export as well as any manures brought onto the farm. Nutrient application rates cannot exceed plan recommendations. All other recommendations in the plan must also be followed. Plans must also include BMPs and/or a phased-in approach to get nutrient levels to optimal ranges. Changes in crops, animal number, etc., that cause significant changes in nutrient amounts or use require submission of a revised plan. Detailed plan content and criteria are provided in the proposed regulations.

Reporting and Record Keeping

As discussed above, a detailed summary of the plan developed by a certified consultant must be submitted to MDA. The Department will conduct random spot checks to determine compliance. There are significant record keeping requirements for farmers to document compliance. These include the full nutrient management plan, soil and manure analysis, and field or management unit yield information. Information must be maintained on manure management, animal numbers, and manure quantity. They must also keep receipts for all nutrient purchases. Records must be kept on a field or management unit basis for the timing rate, quantity, types, and analysis of nutrient use. They must also document any changes to implementation of their nutrient management plan.

Requirements for nonagricultural nutrient use

Anyone who applies nutrients to property of 3 or more acres for nonagricultural purposes (lawns, gardens, beds, etc.) or to any State property must do so in a manner consistent with the recommendations of Maryland Cooperative Extension. Pending legislation would remove the three acre minimum parcel size, thus regulating all “for hire” nonagricultural nutrient application. Fines for violation of this requirement are up to \$1,000 for the first violation, and \$2,000 for subsequent violations, up to \$10,000 per year for violations associated with "the same facts and circumstances." Each day is a separate violation. MDA is responsible for determining compliance with these requirements.

Programs to help implement WQIA

Pilot poultry litter transport program. This program is a joint project between the State and poultry processors. It provides cost-share, up to \$20 per ton, to offset the cost of transportation and handling of poultry litter from farms with excess. Poultry farms anywhere in the State are eligible for the program, but the goal is to remove 20 percent of the poultry litter produced by Maryland's four Lower Eastern Shore counties. Litter must be transported for use on land "having the capacity to hold additional phosphorus." Cost-share can also be obtained for transport to sites for other environmentally acceptable uses, such as composting. The State and poultry processors will provide up to \$750,000 for this project.

Poultry Litter Matching Service. MDA has established a service linking farmers with excess litter with nearby farmers who can use litter as a nutrient source. This service will build on the existing Delmarva Poultry Industry Program and support the pilot transport program.

Animal Waste Technology Fund. This fund was established in the Department of Business and Economic Development to provide support for research and development of technologies to reduce nutrient content of animal waste, alter the composition of animal waste, or develop alternative animal waste utilization processes. The fund can provide grants, loans, loan guarantees, or equity investments.

Eligible projects must have strong potential to improve public health and the environment, preserve the viability of agriculture, and have a positive economic impact in the State. Funding will be competitive based on the above considerations. One million dollars has been appropriated annually to this fund.

Tax Credit for Additional Fertilizer Costs. Some individuals will have to reduce or eliminate their use of animal manures as a fertilizer source to comply with their nutrient management plan and will have

to purchase additional fertilizer, particularly nitrogen.

The Act allows for a State tax credit equal to 50 percent of the additional cost of fertilizer up to \$4,500 per year for up to 3 consecutive years. If the credit exceeds the total tax for the year, the excess may be applied to subsequent tax years until the excess is used, or by the fifth succeeding tax year.

Tax Deduction for Purchase of Manure/Litter Spreading Equipment. A person who purchases equipment to spread poultry litter with the capacity of being calibrated to 1 ton per acre, or to spread solid or liquid livestock waste, may deduct 100 percent of the purchase price in the year of purchase from their State taxable income. If the deduction exceeds the Maryland taxable income, the excess may be carried over for up to 5 succeeding tax years. This deduction is much like an existing tax deduction for conservation tillage equipment.

Technical Assistance/Field Staff. The Act provides additional funding for Extension nutrient management consultants. It also required the State to employ 110 field personnel in conservation districts by July, 1999, which returned staffing levels to previous highs.

Research and Educational Programs. The Governor has committed \$800,000 per year for agricultural research and education programs to expedite implementation of technologies that will help farmers meet the WQIA requirements. This includes research and extension programs on composting, analysis of the pilot transport program, animal nutrition management, development of a phosphorus index, and phosphorus dynamics in soils. A cabinet-level group oversees use of the research funds. These funds have been used to support research on animal nutrition, alternative uses and crop management that are showing much potential. It has also been used to refine the phosphorus index and develop support tools for nutrient management consultants and farmers.

Summary

The Water Quality Improvement Act of 1998 offers many challenges for agricultural and environmental interests in Maryland. It represents a major change in our approach to controlling agricultural nutrient pollution.

There is still considerable public debate about the law and pending regulations. It is clear that phosphorus must be addressed, but there is uncertainty about the impact of doing so, particularly on animal agriculture. While land and manure management are important, making them part of a mandatory nutrient management program has implications for farmers, consultants, agencies, and land grant colleges. It is important that agricultural and environmental interests in Maryland, and around the country, closely watch the phased-in implementation of this program to identify strengths and weaknesses and make needed adjustments.

The proposed regulations are available on the web at www.mda.state.md.us under Nutrient Management.