Comparison of Phosphorus Management Tool (PMT) Regulatory Proposals

	FIRST PROPOSAL	SECOND PROPOSAL	THIRD PROPOSAL	FOURTH PROPOSAL	HOGAN-RUTHERFORD PROPOSAL
Submitted to AELR	December 2012	July 11, 2013	September 2013	November 14, 2014	February 24, 2015
Proposed Regulation Published in MD Register	January 25, 2013	(Emergency)	October 18, 2013	December 1, 2014	April 3, 2015
Withdrawn	July 2013	August 26, 2013	November 18, 2013	February 24, 2015	
Transition Timeframe— Includes the time period between adoption of the regulation and when farmers would BEGIN implementing those changes. Those differences are shown in this row. In all proposals, farmers would run both the existing Phosphorus Site Index (PSI) and new Phosphorus Management Tool (PMT) on fields high in phosphorus to understand and plan for management changes required by the PMT.	1 Year (2013)	1 Year (2013)	1 Year (2014)	2 Years (2015-2016)	2 Years (2016-2017)
Implementation Timeframe— Includes the time period between when the farm community begins to change their use of phosphorus and when the new regulation would be fully implemented.	1 Year (2014)	1 Year (2014)	1 Year(January 2015)	5 Year Phase-In Period (2017-2021)	5 Year Phase-In Period (2018-2022)

Implementation Strategy	All farms with soil test phosphorus above a certain level (150 Fertility Index Value or FIV[1]) are required to fully implement PMT beginning in 2014.	All farms with soil test phosphorus above a certain level (150 Fertility Index Value or FIV[1]) are required to fully implement PMT beginning in 2014.	All farms with soil test phosphorus above a certain level (150 Fertility Index Value or FIV[1]) are required to fully implement PMT beginning Jan 1, 2015.	All farms with a soil test phosphorus level above a certain level (150 Fertility Index Value or FIV[1]) are required to fully implement PMT beginning in crop year 2021. Staggered implementation schedule based on soil test phosphorus levels averaged for the farm.[2] Phosphorus applications are incrementally lowered during the 5 year phase-in period[3]	All farms with a soil test phosphorus level above a certain level (150 Fertility Index Value or FIV[1]) are required to fully implement PMT beginning in crop year 2022. Staggered implementation schedule based on soil test phosphorus levels averaged for the farm.[10] Phosphorus applications are incrementally lowered during the 5 year phase-in period[3] Effective immediately upon adoption, phosphorus applications are banned on soils with phosphorus levels of 500 FIV and higher. Ban remains effective until 2022 when PMT will determine phosphorus applications on high P soils. During incremental phase-in, evaluation of critical needs (adequate infrastructure, capacity, markets and resources) is required prior to advancing to next more stringent level of management.

Data Reporting by Consultants Developing Nutrient Management Plans	None	None	Consultants report farm-specific data to MDA related to running both the current and proposed phosphorus risk assessment tools.[4]	Consultants report farm-specific data to MDA related to running both the current and proposed phosphorus risk assessment tools.[4]	Consultants report farm-specific data to MDA related to running both the current and proposed phosphorus risk assessment tools.[4] In 2016 and every six years thereafter, consultants provide MDA field-scale soil phosphorus data statewide, along with related acreage and county.
Provisions Allowing Phosphorus Applications Not in Strict Compliance with the PMT[5]	None	None	None	***Four Provisions:*** Tissue Analysis[6] High P Crops[7] Organics[8] Alternative Use[9]	***Four Provisions:*** Tissue Analysis[6] High P Crops[7] Organics[8] Alternative Use[9]

Footnotes

[1] ***Fertility Index Value (FIV)***—FIV is a measurement of phosphorus in the soil as determined by a laboratory test of a soil sample. The University of Maryland (UMD) provides recommendations to farmers on how much fertilizer to add to the field to produce a specific crop, based on soil test results.

A FIV level of 100 is considered "Optimum" for crop production. FIV Levels above 100 indicate the soil contains more phosphorus than the crop needs. Soils with FIV levels above 150 are evaluated for the risk of phosphorus loss and determine (potentially change) how phosphorus is managed.

[2] ***Staggered Implementation Schedule***—The last proposal established Scheduling Tiers for each farm operation based on the average soil test P level for fields above 150 FIV. "High-risk tier" farms (i.e., farms with average phosphorus levels greater than 450 FIV) begin to phase in implementation in 2017 and have five years to fully transition to PMT. Farms in the "Medium-Risk Tier" (i.e., average phosphorus levels of 300-450 FIV) begin to phase in implementation in 2018 and have four years to fully transition to PMT. Farms in Low Risk Tier (i.e., average phosphorus levels of 150-299 FIV) begin

to phase in implementation in 2019 and have three years to fully transition to PMT. All farms would have fully implemented and be managing phosphorus applications under the PMT requirements by 2021.

7 YEAR SCHEDULE
2 YEAR TRANSITION PERIOD AND 5 YEAR PHASED-IMPLEMENTATION

	Crop Year 2015	2016	2017	2018	2019	2020	2021
Average PMT FIV P 450 and above	PSI/PMT	PSI/PMT	TM1	TM1	TM2	TM2	PMT
Average PMT FIV P 300 to 450	PSI/PMT	PSI/PMT	PSI/PMT	TM1	TM2	TM2	PMT
Average PMT FIV P 150 to 300	PSI/PMT	PSI/PMT	PSI/PMT	PSI/PMT	TM1	TM2	PMT

PSI- Phosphorus Site Index
TM1 - Transition Management Phase 1
TM2 - Transition Management Phase 2
PMT - Phosphorus Management Tool

Crop Year - June 30 - July 1. Example - Crop year 2020 begins July 1, 2019 and ends June 30, 2020

[3]***The latest proposal includes Transitional Management Phases 1 and 2*** which layout progressively lower rates of phosphorus application in order to provide a more gradual change in management. These incremental phases provide a less disruptive change in management to the farmer's current business plan. In addition, the gradual change in application rates of phosphorus helps address the incremental amounts of additional animal manure that is newly available at each phase. Management of this newly available manure will require additional manure handling and transport capacity, infrastructure, and private or public sector costs would be required. Gradual changes in manure volumes are also less disruptive to markets that currently exist for buying and selling animal manures as crop fertilizers.

[4]***Consultants would be required to provide information to MDA*** related to results from running both the existing Phosphorus Site Index (PSI) and the new Phosphorus Management Tool (PMT). By running both tools, farmers have information about pending changes to phosphorus management on their operations and can plan for changes on a known timetable. Reporting this information to MDA also enables more effective program planning, provides the agency information about change in phosphorus/manure applications to occur over time, allows course corrections to occur if warranted and provides information about the resource needs of farmers to implement new requirements.

[5]***Conditional provisions*** were developed based on most recent conversations between MDA and key sectors of the agriculture industry. While the Department had sought input from the agriculture community and others earlier in the process, after the third proposal was withdrawn—and concurrent with the development of the economic analysis—MDA met with representatives of the poultry, dairy, grain and organic sectors to identify key concerns and explore solutions. This input, combined with other previous feedback, resulted in four provisions being developed to respond to concerns. Those provisions were included in the fourth proposal submitted to AELR on November 14, 2014 and are described below.

All four provisions would apply when the PMT is fully implemented *and* the PMT calculation indicates a HIGH risk situation where, as a rule, no additional phosphorus would be allowed to be applied to the field.

Special Provisions:

[6]***Tissue Analysis***—Grain producers have a perception that phosphorus may not be available to their crops even when the soil sample indicates a high level. Farmers are concerned that crop yields will be affected if the crop does not have sufficient phosphorus. Crop tissue, such as the leaves of a corn plant, can be analyzed as an indicator of crop health and nutrient deficiency. This provision allows farmer to have crop tissue analyzed and, if the analysis indicates a phosphorus deficiency, then the farmer will be allowed to add additional phosphorus to the crop field.

[7] ***High P Crops***—Certain high-value crops, generally vegetables, need more phosphorus in their "diets" than other crops to grow and be productive. The risk of lower production as a result of insufficient crop nutrients poses great financial risk. UMD recommends additional phosphorus be applied when growing these crops, even when soil tests indicate sufficient levels are already present in the soil. Based on this greater need for phosphorus, this provision allows additional phosphorus to be applied to certain crops at planting, when the PMT would otherwise restrict the addition of more phosphorus.

[8]***Organic Crops*** —Organic farmers often rely on animal manures as a source of both nitrogen and phosphorus for crop production. In situations where the PMT would prohibit the application of additional phosphorus, restricting manure application would also eliminate the nitrogen otherwise provided by manure. While there are certain alternative sources of nitrogen, it is difficult, if not impossible, to fully meet nitrogen needs of certain crops through alternative sources. This provision would apply to certified organic producers where the PMT indicated a high risk to water quality from phosphorus. Growers would be allowed to apply additional phosphorus for crop production but application would be limited to the amount the crop would use in one growing season. According to the most recent Census of Agriculture, there are less than 3,100 acres of major crops (corn, soybeans, wheat and barley) grown in Maryland by certified organic growers. This amounts to less than 3/10 of one percent of total cropland in Maryland.

[9] ***Alternative Use*** —The State of Maryland is currently promoting and funding the development, demonstration and deployment of technologies that provide alternative uses of animal manure. Farmers are seeking solutions that will provide management flexibility while meeting environmental goals. Many of today's new technologies make significant reductions in the amount of phosphorus in animal manures but none completely eliminate phosphorus. Farmers will need options for the use of materials coming out of animal waste management technologies. If the farmer has high risk fields according to the PMT, and is therefore prohibited from applying additional phosphorus, he has limited options for the use of these materials. In effect, this situation will be a disincentive for farmers to adopt new, alternative technologies. This provision addresses the situation by allowing farms that adopt technologies efficient at lowering phosphorus content from animal manure to apply limited amounts of phosphorus even though the PMT may otherwise prohibit the application.

[10] ***Staggered Implementation Schedule***—The last proposal established Scheduling Tiers for each farm operation based on the average soil test P level for fields above 150 FIV. "High-risk tier" farms (i.e., farms with average phosphorus levels greater than 450 FIV) begin to phase in implementation in 2018 and have five years to fully transition to PMT. Farms in the "Medium-Risk Tier" (i.e., average phosphorus levels of 300-450 FIV) begin to phase in implementation in 2019 and have four years to fully transition to PMT. Farms in Low Risk Tier (i.e., average phosphorus levels of 150-299 FIV) begin to phase in implementation in 2020 and have three years to fully transition to PMT. All farms would have fully implemented and be managing phosphorus applications under the PMT requirements by 2022.

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