What is a TMDL – And Why Is That Important To Me?

By Kori Andrews and Sara G. Smith

TMDL development is critical to the agricultural community. Kentucky is in the process of establishing a nutrient TMDL for Floyd's Fork, a watershed that is located in eastern Jefferson County and includes portions of Henry, Oldham, Shelby, Spencer and Bullitt counties. While other TMDLs have been established for other streams and for other pollutants, the nutrient standard under development in this particular watershed requires careful monitoring and engagement. Because of the complexity of a nutrient TMDL, Kentucky's Division of Water (DOW) has asked U.S. EPA to develop a TMDL model for nutrients in the Floyd's Fork watershed. As explained below, many of the assumptions and technical processes used by EPA and DOW in the Floyds Fork assessment will be used to determine the impact of agriculture in other watersheds across the state.

What is a TMDL? A **T**otal **M**aximum **D**aily **L**oad is a tool provided by the Clean Water Act to achieve national water quality goals. Stated simply, TMDLs establish the maximum levels of pollutants that a water body can take in without exceeding water quality standards. TMDLs apply to both point sources and nonpoint sources. (*A point source is an identified and discrete point at which water is discharged to a receiving stream. Point sources are subject to water discharge permitting and discharge limitations. A non-point source describes water that reaches a stream through sheet flow or is otherwise not subject to permitting.*)

A TMDL is a target that is developed as the result of the evaluation of existing water quality in a stream or watershed for a particular pollutant; a TMDL also examines the existing pollutant loads and the pollutant loads that are projected to impact that stream. The limits or targets established through the TMDL development process are used to bring the actual water quality closer to water quality goals. The concept behind implementing TMDLs is to develop cleanup plans on a stream by stream basis.

That said, a number of difficulties are inherent in the process and the policy of TMDL development and implementation. The key to appropriate development of TMDLs, and the most difficult aspect of the process, is gathering adequate water quality data and other types of input and stream use data. In the decades since the establishment of the Clean Water Act, U.S. EPA, the states, private industry and environmental groups have spent massive amounts of money on permitting and cleanup efforts but comparably little on measuring water quality or even determining exactly what is "normal" water quality. Estimates of the percentage of the nation's water bodies that have been adequately assessed generally

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range around twenty five percent. Most streams flowing through rural or agricultural land has not been adequately assessed.

Why are TMDLs performed? Under Section 303(d)(1)(A) of the Clean Water Act, each state is required to identify and rank waters that are not meeting applicable water quality standards. The list and ranking is referred to as the 303(d) list. Kentucky's 303(d) list can be found on Kentucky Division of Water's website and is published every other year. Agriculture was listed as the number one probable source that contributed to impairments for 2010. (The 2012 report is not yet final). TMDLs for specific pollutants (like nutrients or sediment) are developed and established in accordance with the priority ranking on the 303(d) list, even if the water body is affected only by nonpoint source pollution.

What are nutrients? The current effort in the Floyd's Fork watershed addresses nutrients. In general "nutrients" refer to the level of nitrogen, phosphorus and other materials that raise the available nutrient levels in the water body. These materials are often discharged from sewage treatment plants, septic discharges, package plants and even straight pipes. Agriculture is also under attack because nutrients have been sourced to agricultural practices, including fertilizer application and livestock management. Lawn treatment chemicals provide another source of nutrient components.

How are TMDLs analyzed? In theory, once adequate data is gathered, it is analyzed, often using models that predict the impact of an increase of the constituent within the water body. The predictive models are then used to determine the extent to which the water body can maintain water quality standards while support the existing pollutant load and increased loads expected from future development of the contributing area.

What does a TMDL do after it is implemented? TMDLs help regulators devise the limitations necessary to meet water quality standards by identifying and quantifying both point and non-point sources contributing to the problem. For example, regulators use permit conditions, Best Management Practices (BMP) requirements, grants, partnerships and other voluntary programs.

How are TMDLs approved? To recap, impaired waters that require a TMDL generally follow this process: (1) the planning phase, where the watershed is targeted for TMDL development as a result of its listing on the 303(d) list; (2) monitoring of the watershed and collection of monitoring data; (3) development and analysis of data and calculation of targets, all of which are compiled in a written report; (4) review of TMDL report that is published for a (minimum) 30-day comment period, revised based on comments, and

submitted to EPA Region 4 for approval; and finally, (5) publication of the final TMDL report that is in watershed planning.

The Floyd's Fork TMDL process is currently in the development phase.

So what's the problem? The theory of TMDLs makes logical sense - examine a watershed and the impacts of a pollutant to that watershed carefully and thoroughly, determine the strengths and weaknesses of the watershed and devise a long-term plan to preserve and improve water quality. The devil is in the details, however, and the history of nutrient standard development in other states and regions is not comforting to those watching the development of the Floyd's Fork TMDL. For example, in both Florida and the Chesapeake Bay there are several lawsuits in which the agricultural community has criticized both the process of the development of nutrient TMDLs and result of the implementation of the TMDL. Concerns have arisen because the TMDLs developed for these regions are similar in many ways to the TMDL that is being developed for Floyd's Fork.

Strengthening these concerns is EPA's and Kentucky DOW's previously mentioned assertion that the nutrient TMDL for Floyd's Fork will be used as a template for TMDL development in the rest of the state. The Floyds Fork nutrient TMDL is the first nutrient TMDL that has been done in Kentucky in many years, but it will not be the last; DOW has targeted at least 34 more nutrient TMDLs throughout the state to be completed in the next year. The Floyds Fork nutrient TMDL will be used as an example for the other nutrient TMDLs that will be done throughout the state. Most of the nutrient TMDLs throughout the state are on streams that flow through land that is agricultural.

As the Floyd's Fork project continues, DOW will identify actions which they believe will achieve a reduction of nutrient load in Floyd's Fork. By being involved in the Floyd Fork nutrient TMDL, farmers can help ensure the assumptions and calculations used to identify these actions are correct and reasonable. Impacts that have been seen in other areas of the country as a result of completion of a nutrient TMDL are mandatory changes in fertilizer composition or methods of fertilizer use; changes in BMPs for developers and agriculture; and increases in sewer fees for ratepayers. In Chesapeake Bay, we have seen twenty percent of land that was previously being farmed taken out of production. In Florida, we have seen farmers being required to spend $10-$20 per acre to implement required BMPs. These results could easily happen in Kentucky if proper oversight is not given.

The Floyd's Fork TMDL process is well underway and Kentucky DOW is in the process of finalizing a timetable for completion. There have been four public meetings and three Technical Advisory Committee

meetings (another form of a public meeting) that have been hosted by EPA and Kentucky DOW. EPA delivered a draft report summarizing the model that will be used to develop the TMDL. The draft model needs revision and, like all projects of this type, the model and its inputs need careful scrutiny. Many groups – including groups that have typically been on opposite ends of environmental issues - have raised questions as to the accuracy and level of data on which the proposed standard is being based. However, as a result of the work of various interest groups, EPA and DOW have recently begun providing additional data in order to address the supposed inaccuracies. The process has become much more collaborative in the past six months. Because the Floyd's Fork nutrient TMDL will impact a number of stakeholders and has state-wide implications, the public – especially agriculture - must ensure that the TMDL model is appropriate and proper inputs, assumptions and data are used. The time to evaluate the inputs and provide additional data is now.

Though the TMDL development process is messy and complex, hopefully the end result will be a scientifically-based and carefully thought out plan to improve water quality in Kentucky and our nation. Careful development of the TMDL model and thoughtful interpretation and collection of data takes time and attention, but the end result is well worth the painstaking process. Kentucky has the benefit of learning from the past mistakes and missteps of other states and regions that have developed nutrient TMDLs. As Kentucky's nutrient TMDLs are developed, we must work together to scrutinize the process by which the targets are developed. If Kentucky's industries, farmers, developers, stakeholders and citizens effectively engage in the process, using both common sense and science, Kentucky can serve as an example of cooperation to achieve environmental responsibility.

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