

APPENDIX F

Responses to Public Comments

The draft Tuscarawas River Watershed Total Maximum Daily Load Report was available for public review from November 13 through December 15, 2008. This appendix contains the comments received and responses to those comments. Please note that references to page numbers in the draft report may not correspond to the same page numbers in the final report.

Three sets of comments were submitted. The comments and responses are grouped by commenter; the number in parenthesis indicates the author of the specific comment, as listed here.

#	Date Received	Name	Affiliation
1	December 11, 2008	Kyle Hazlett	Citizen
2	November 26, 2008	Larry Antosch	Ohio Farm Bureau Federation
3	December 15, 2008	Dr. Dave McCartney, Dr. Kevin Johnston, and Dr. Richard Moore	Ohio Agricultural Research and Development Center / Ohio State University

Comment (1)

The HHEI for evaluating Primary Headwater Habitats (PHWH) is being worked on at the OEPA as a tool for surface water professionals to address the smaller <1 mile primary source headwaters that flow to designated-use waterways. Is the HHEI in use or in the process to be finalized and implemented in the near future?

Response

The HHEI was developed and has been in use for a number of years. Its use has largely pertained to 401/404 permitting and certifications which deals with the filling and/or alteration of streams or wetlands.

Land development often intersects small streams and wetlands and the HHEI (as well as the Ohio Rapid Assessment Method for measuring wetland quality) is used to guide decisions regarding the granting or denying of 401 certification. It also is considered when deciding the type of mitigation to be required to offset damaged water quality. Currently rule making is underway which will formalize the use of the HHEI evaluations in the 401 certification process. The rulemaking is scheduled to be in the interested party review phase of development by late 2009. The HHEI is not used for routine water quality assessments such as the one used for the Tuscarawas River TMDL.

Comment (1)

Did the smaller tributaries <1 mile get taken in account for TMDL or are the findings more specific to designated-use streams/rivers within a corresponding assessment unit (AU)?

Response

The beneficial uses of streams are evaluated based on a use attainability analysis (UAA). Streams that have not been designated an aquatic life use based on an UAA are still subject to the chemical criteria associated with warmwater habitat.

For this project, just a few of the more than 140 survey sites had a drainage area of less than one square mile. The metrics used to evaluate aquatic biological health were developed and calibrated in stream systems that drained five square miles or more. Thus, Ohio EPA typically selects survey sites with drainage areas of five square miles or more. However, if there is a substantial source of groundwater or other hydrologic conditions that augment flow, some streams behave more like streams with larger drainage areas and it is appropriate to evaluate the biological communities.

Although few streams with drainage areas <1 square mile were directly evaluated for biology, pollutant loading or other water quality stressors they contribute is taken into account during the TMDL loading analyses. In particular, point sources and land contributions of total phosphorus are accounted for in the loading analyses done to address impairment at downstream stream reaches. An allocation of the pollutant load that is considered allowable or sustainable for an unimpaired biological community is typically calculated at the outlet of an entire 14-digit watershed (approximately 20 square miles in area). That allowable load is distributed among all of its sources including point sources and the various land use types within that 14-digit watershed, including those found on streams with < 1 square mile drainage area.

Comment (1)

Is the OEPA providing documentation about total phosphorus (TP) levels to the main dischargers with the most impairment, and having them discharge within guidelines regulated by the OEPA? If so will the dischargers be required via a permit to discharge below the < 1ppm TP level?

Response

The TMDL report and accompanying appendices document conditions in the Tuscarawas River in the area of several of the major dischargers. This information is and will continue to be available. The report presents the allowable total phosphorus loads for the river in those locations and assigns discharge loads to individual facilities.

Nine waste water dischargers have recommendations to reduce their total phosphorus discharge to a level of one part per million (ppm). These dischargers are located upstream of areas that are adversely impacted by high instream nutrient concentrations. Two of these facilities discharge directly to the Tuscarawas River and are among the largest dischargers in the project area, in terms of daily waste water volume. The other facilities discharge along impaired tributary streams.

The new total phosphorus recommendations will be included in these permits when they are renewed, perhaps with a compliance schedule. These particular permits expire in 1 to 3 years (of a five-year permit cycle). Ohio EPA staff are already discussing the needed total phosphorus reductions with staff from these facilities.

Comment (1)

As for adjacent land uses, left and right of streams/creeks/streams, are these areas specifically noted (roads/landmarks/stream mile) so that a local watershed professional or even a citizen could be involved with city/county to address appropriate vegetative buffers and BMP's for the impaired AU's?

Response

The short answer is no. Providing that level of detail for buffer locations is not done due to the difficulties in clearly and concisely presenting so much information as well as constraints on the staff resources that would be necessary to complete such an analysis (there are nearly 2,000 miles of streams within this TMDL project area).

However, what is provided are the specific stream miles where there is water quality impairment and the respective causes and sources of that impairment (e.g., causes/sources that may be related to the quality and extent of the riparian buffers). The final section of the report discusses implementation options and describes the conditions that are appropriate for employing buffers

and various BMPs. Using these two sources of information narrows the search for places to look to establish buffers and BMPs.

Options for citizen groups and others for obtaining these types of information might be to focus on a specific area (perhaps within a defined political boundary) and gather the aerial photography that is available from county agencies (Auditor, Soil and Water Conservation Districts) or imagery that is available on the internet (e.g., Google® Maps). The presence or absence of trees can easily be determined without training, and even other types of land uses are often fairly obvious.

Comment (1)*Green Infrastructure and Community Involvement*

Urban and developing communities seem to be more involved in watershed management with the increase in 'green-infrastructure' such as trails, boardwalks, parks, and even signs (to get them there). The increase in watershed improvement seems to correlate to local green-infrastructure for the urban landscape. A community action plan to have a "clean-up your watershed day" a few times in a year could bring more interest to restoring water quality with a memorandum to integrate green-infrastructure. Consequently, the public involvement and physical sampling educates the community of what's there and sparks interest in them of what to do. Innovative ways to reduce pollution such as using a model that works well in other communities that have already taken action to restore their local watershed. . . .

Response

We are encouraged by the growing awareness of the benefits of green infrastructure as a component for reducing the impacts of nonpoint source pollution in Ohio's waters. Historically, measures to address the impacts of nonpoint source pollution have focused on the rural landscape. Comparable efforts in Ohio's communities over the years have lagged. The evolution of green infrastructure now provides urban and suburban communities with better alternatives for addressing their unique nonpoint source problems.

As noted in the comment, public participation is a critical component of an effective nonpoint source management initiative. In recognition of the benefits of public involvement, Ohio EPA has invested more than \$3.5 million in grant funding to local watershed groups since 2001. These groups provide important opportunities for local participation in watershed planning, water quality monitoring and important education and outreach efforts. We are also seeing such groups becoming vital advocates for the expansion of local green infrastructure. For information about forming and/or participating in a local watershed group, please see the following web link: <http://ohiowatersheds.osu.edu>.

Comment (1)

. . . In addition, local public hearings to discuss the formation of more stringent guidelines for industries and plants discharging above the EPA acceptable <1ppm TP level for impairment would be a good start.

Response

Permits for point sources (NPDES permits) are issued by the Ohio EPA to dischargers in the State. The pollutant effluent limits included with those permits are developed based on the most current water quality information and the necessary hydrologic analyses. Ohio EPA cannot issue permits with effluent limits that are inconsistent with maintaining water quality standards.

Ohio has not established criteria for in-stream concentrations of total phosphorus. Therefore, when developing TMDLs to protect aquatic life against the damaging impacts of elevated total phosphorus, an instream target based on Ohio's extensive water quality data is selected. Also, Ohio EPA has not committed to a single value for acceptable total phosphorus concentrations from dischargers.

Comment (1)

The local public hearings and watershed events should conduct a way to integrate green-infrastructure with nearby waterways (avoiding impacts to the current local water resources) so that the public will be conscious about where these areas drain and how important it is to restore the watershed. The buffers between the green-infrastructure and a waterway (and beyond) would lead to better public and private activities and possibly provide a few jobs in the community for the overall restoration and sustainability of these areas. The socio-economic value of providing green-infrastructure to the community would be greatly improved. Green-infrastructure would be a significant means to appeal to people in urban areas with increasing population growth. The value in providing people with nearby activities that promote a conscious understanding of the watershed will lead to more viable steps to reduce the pollution for that impaired waterway.

Response

These comments align with a continually growing body of evidence and thinking suggesting that investing in more environmentally sustainable infrastructure has many benefits to communities. The improvements in health and aesthetics through better water and air quality, from green infrastructure often translates to increases in property values and makes communities more attractive to prospective businesses that may located in a given region or area. Several organizations are involved in promoting these types of developments and provide information about these issues.

Comment (1)

As for the rural areas, a step-by-step guide should be sent to the farmers and citizens of the areas with the most impairment. This guide could indicate what areas are of concern from the TMDL findings and how new techniques for drainage through BMP's or adjacent land use buffers could restore the watershed. County and/or regional action planning could be developed to find ways to subsidize through the state or local governments controlled drainage structures, cover crop, conservation tillage practices, and fencing/bridging to exclude livestock from streams. Installation of structures, management of these areas, and testing of the waterways by local county/regional representatives could provide more involvement in restoring the watershed.

Response

Ohio EPA shares the results of TMDL studies in public meetings and through less formal methods with local implementing parties such as the Soil & Water Conservation Districts (SWCD), Natural Resources Conservation Service (NRCS) and other rural community organizations. SWCDs and NRCS offices annually prepare plans for addressing local water quality and other natural resources concerns. However, there are other parties in Ohio's rural communities who have important roles in controlling and managing nonpoint source pollution.

Ohio EPA has also expanded outreach efforts to provide TMDL results with local governments, park districts, county engineers and other large land holding organizations. The result has been an increase in the breadth and success of efforts to improve water quality in rural and suburban areas.

Effectively improving water quality in Ohio requires a comprehensive approach that includes the direct restoration and re-naturalization of streams, reduction of nonpoint pollution sources, targeted education and outreach as well as protecting existing high quality stream segments. Engaging agriculture and other rural landholders is vital for the success Ohio's nonpoint source programming efforts.

Comment (1)

In addition, county environmental testing could be provide incentives or subsidies to those local communities with increased fecal coliform or high septic drainage rates and in turn allow for the county/city to take action to analyze, prepare a reports, and propose methods and techniques for reducing point source pollution loads. Again installation, management of these areas, and testing of the nearby waterways by local county/regional representatives could provide more involvement in restoring the watershed.

Response

Point source dischargers are required to submit water quality monitoring data to the Ohio EPA on a monthly basis. Several factors determine if bacteria, total phosphorus, or other nutrients are among the parameters being monitored. Such factors include the size and type of discharge as well as characteristics of the receiving stream. Ohio EPA in fact, relies heavily on these data in making regulatory and/or management decisions.

As far as other monitoring, Ohio EPA is always eager to receive credible data to further our understanding of the streams in Ohio. Volunteer monitoring data can be very helpful especially for identifying areas of concern that may otherwise go undetected due to limits in our monitoring coverage due to budget constraints. Perhaps even more importantly, volunteer data that is collected at a regular frequency assists Ohio EPA in detecting trends over an extended timeframe and draw inferences as to what activities (e.g., land based management) are impacting water quality and to what degree.

Ohio EPA's Credible Data Program is established, in part, to guide volunteer monitoring groups and assist them in becoming certified to submit credible water quality data. There are three levels of Credible Data which are distinguished according to how the data can be used. Level one data require the least rigor in terms of becoming certified as well as in the sophistication of methods and analytical equipment used for monitoring. These data are collected in an educational setting or as a way to raise awareness of water resource issues. Level two is more robust in terms of the methods and equipment used and has more stringent requirements for certification. Level two data can be used as a screening method to identify areas that need further monitoring using Level three methodologies. Level three data is used in making regulatory and other management decisions. More information about the Credible Data Program can be found at: <http://www.epa.state.oh.us/dsw/volunteermonitoring/index.html>

Comment (2)

Please replace Section 6.2.5 on pages 203 and 204 of the draft report with the attached updated information.

Agricultural organizations are working to address water quality problems associated with traditional farming practices. The Ohio Farm Bureau Federation (OFBF) seeks to improve water quality through the employment of scientifically-based economically sound conservation management practices (<http://www.ofbf.org>). In order to pursue this mission OFBF initiated programs aimed at engaging producers in voluntary water quality protection

and improvement efforts. At the local level county Farm Bureau Public Policy Action Teams have the opportunity to administer OFBF programs related to environmental quality. The Public Policy Action Team leader works with the county's Organizational Director, who is a staff member of the OFBF, to implement program initiatives.

OFBF's Agricultural Watershed Awareness and Resource Evaluation (AWARE) program promotes water quality monitoring and education so that producers have more information when making resource conservation decisions regarding their operations. In collaboration with other conservation and commodity organizations OFBF led the development of a producer self-assessment program designed to evaluate the potential for off-site environmental impact and develop strategies to reduce those risks. OFBF also offers assistance to producers to better understand and comply with new and existing environmental regulations.

To help Ohio's livestock, poultry and equine producers identify and address key management issues affecting environmental quality, the Ohio Livestock Coalition (OLC) developed the Livestock Environmental Assurance Program (LEAP). LEAP is a voluntary and confidential environmental assurance program which provides producers the opportunity to take a proactive approach in blending sound production economics with concern about environmental quality. LEAP helps producers profitably manage environmental challenges that are critically important to the success of the business, and effectively assess how farmstead practices affect water quality.

Response

Thank you for providing this update regarding the Ohio Farm Bureau Federation's environmental and water quality related programs. We have replaced our original text with this update.

Comment (3)

Page 1. The following statement is problematic: "A TMDL is defined as a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards and an allocation of that quantity among the sources of the pollutant." The statement implies certitude whereas in reality the calculation is based on the best and most current understanding of the impact of the pollutant on stream attainment of water quality standards. It would be preferable to state that "A TMDL is defined as /a scientific estimate/..."

Response

We agree that the sentence by itself is incomplete. The report is being revised to refer to the standard TMDL definition which includes reference to a margin of safety that is meant to account for uncertainties in the development of TMDLs. The revised language is as follows:

"A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that load among the various sources of that pollutant. TMDLs must also account for seasonal variations in water quality, and include a margin of safety (MOS) to account for uncertainty in predicting how well pollutant reductions will result in meeting water quality standards."

Comment (3)

Page 26. We contest the following statement regarding the use of TP as a nutrient enrichment indicator: "For the purpose of this TMDL, total phosphorus is used as an indicator for the degree of nutrient enrichment." Total phosphorus is one of the major nutrient enrichment stressors that

impact stream attainment of water quality standards. Nitrate nitrogen is another. While freshwater streams often are phosphorus limited for algal growth, this frequently is not the case for summer low flow nuisance algal growth.

Response

Nitrogen limitation has been documented for Ohio streams, particularly in the unglaciated portions of Adams and Brown Counties. Typically, though, phosphorus is the limiting nutrient, especially during summer low, and especially when nuisance conditions are present. More broadly, any one of several indicators can be used as surrogates for nutrient enrichment, for example the percentage of agricultural land in a catchment is as good a predictor of enrichment as either phosphorus or nitrogen. It's best to have several indicators that all point in the same direction, preferably measures of benthic chlorophyll and hourly dissolved oxygen.

Comment (3)

In the study results published in "Association Between Nutrients, Habitat, and the Aquatic Biota in Ohio Rivers and Streams" (Ohio EPA Technical Bulletin MAS/1999-1-1, http://www.epa.state.oh.us/dsw/documents/assoc_load.pdf), the ratio of Nitrate-N to total P for impaired streams (IBI 20-29) was well below the Redfield ratio of ~7.2:1 (~4:1). This finding strongly suggests that in impaired waters N rather than P is limiting.

Due to confounding habitat associations and other factors, the association between elevated N levels and lowered IBI was less clear than for P levels. Nonetheless, an association between elevated N and nuisance algal growth in N-limited situations is likely. In our own 2008 HHEI study of over 80 sites on 36 primary headwater streams in the Upper Sugar Creek watershed (adjacent to the Tuscarawas), we could see a clear relationship between the level of macroinvertebrate population and nitrates but not for phosphorus.

Response

As discussed in the previous response, there are several indicators and causative agents related to excess algae growth. Chlorophyll a is a more direct indication of the degree of the algae growth, and dissolved oxygen concentrations directly reflect the ultimate detriments to the aquatic biota due to excess algae growth.

We do not dispute that nitrogen is important, simply that both nitrogen and phosphorus are imperfect indicators. In the absence of direct measures, phosphorus has been less imperfect than nitrogen in suggesting enrichment.

Comment (3)

Nitrates have direct toxicity effects on many organisms not evaluated in the Tuscarawas TMDL. Rouse et al (1999, <http://www.ehponline.org/members/1999/107p799-803rouse/rouse-full.html>) provide a concise review of studies that document this toxicity effect for aquatic organisms.

Response

Although the organisms referred to are important, the TMDL process evaluates stressor issues leading to violations of water quality standards. These other biological communities (e.g., amphibian, riparian birds) are not evaluated in the biocriteria in the water quality standards.

Comment (3)

We propose

(1) that TMDL development for nitrate nitrogen is needed to protect the biotic integrity of the state's waters and

(2) that standards appropriate for nitrate nitrogen have already been published in /Association Between Nutrients, Habitat, and the Aquatic Biota in Ohio Rivers and Streams/ (*Ohio EPA Technical Bulletin MAS/1999-1-1, http://www.epa.state.oh.us/dsw/documents/assoc_load.pdf).*

Response

We reiterate that based on the information available to develop TMDLs in the Tuscarawas River watershed, total phosphorus is believed to be the best suited indicator for addressing the issues of nutrient enrichment.

In terms of appropriate water quality standards for nutrient concentrations, the results of the Ohio EPA nutrient study for wadeable streams and small rivers will supersede those of the Associations document.

Comment (3)

Page 42. While the total phosphorus targets for warm water habitats (WWH) are set to protect biotic function, those for modified warm water habitats (MWH)—based on median values for impaired streams—are not. The latter, too, can be impaired by nutrient enrichment, and so it would be appropriate to regulate streams already impacted by habitat impairment that have substantially elevated nutrient stressors. We propose, then, that similar phosphorus standards should be imposed on both WWH and MWH streams.

Response

A clarification is needed regarding the above statement in that the total phosphorus target established for MWH streams is based on the median value for a subgroup of the “ALL sites” dataset (used in the “Associations Document” (Ohio EPA, 1999)) having an IBI score within the range of 20 to 29. The biocriteria established for MWH-C streams (modified due to channelization) vary between 20 to 24 depending on stream size (drainage area) and ecoregion. Therefore, the median total phosphorus concentration is more reflective of MWH-C streams that are in fact attaining their biocriteria and are not impaired.

Streams or ditches that are designated MWH-C have lower expectations in terms of the quality of the biological community, based on the fact that there is persistent habitat degradation. The poor habitat alone is often sufficient to preclude a healthy warm water biological community. However, this simplified (lower quality) biological community is, in most regards, one that can also tolerate a higher level of stress due to eutrophic conditions (based on feeding habits and physiological tolerances). The total phosphorus targets for MWH are established at levels that should not preclude the type of biological community that would be present in a MWH-C stream.

Comment (3)

Not only are such standards biologically justified, but they would remove any potential incentive to degrade habitat to achieve (a) MWH status and thus be designated at a lower use. (b) a substantially increased phosphorus load allocation.

Response

It is unlikely that a higher TP target (and consequently a higher allocation) associated with MWH versus WWH would effectively spur on activities to degrade aquatic habitat quality (e.g., ditching). Aquatic life use (ALU) designations are assigned based on use attainability analyses (UAAs) which rely on the judgment of trained biologists in light of the best available stream data and understanding of the circumstances surrounding the stream (e.g., whether or not it is under ditch maintenance). In order for a stream to be designated as a modified warm water (MWH) stream, there must be long-term, persistent disturbances. This would be the case for a stream that is under a ditch maintenance program.

A one-time event where private land owners perform ditch reconstruction would not by itself constitute justification for a MWH designation since, given time, channel recovery is possible. However, if a stream is petitioned for long-term ditch maintenance, a public process is initiated in which it is likely that Ohio EPA input will be weighed in that decision process. Much of this type of environmental oversight is being established through agreement reached within a multi-party, state-wide rural drainage advisory committee and the technical guidance documentation developed as a result of these efforts. This technical guidance is to be used by local drainage authorities.

Another layer of protection for WWH streams against changes to MWH designations is that if a stream has attained a given aquatic life use (documented with a biological assessment), it cannot be changed to a lower ALU designation. This means demonstration of attainment of WWH biocriteria requires that the stream remain designated WWH and held to the applicable water quality criteria. When the WWH use has not been verified with biological data (despite being designated WWH), protections still exist through state and federal programs such as stream mitigation (401 and 404 programs) and storm water program related to construction activities. The applicability of these programs depends on the individual circumstances surrounding the project.

Comment (3)

It is also useful to remember that historically there were many cool water springs in both the Sugar Creek and Tuscarawas Watersheds clouding the issue of WWH.

Response

Potential coldwater streams are identified during the biological and water quality surveys based on the taxa collected and other indicators such as temperature and water chemistry data. The presence or absence of coldwater fish and insects determine whether a waterbody will be given a coldwater habitat (CWH) designation.

Comment (3)

Page 193 - Cost-effective nitrate removal technologies are available to point sources. consequently technical standards for POTW's with flows of >0.1 MGD should be set at ~8 mg/l.

Response

The construction/installation of more tanks is not inexpensive and addressing nutrient enrichment by addressing only one nutrient (the one most associated with being limiting) is an overall more cost effective/efficient way to improve biological quality.

References

Ohio EPA. 1999. Association Between Nutrients, Habitat, and the Aquatic Biota in Ohio Rivers and Streams. Ohio EPA Technical Bulletin MAS/1999-1-1. Columbus, OH.

Wang, L. et al. 2007. Linkages Between Nutrients and Assemblages of Macroinvertebrates and Fish in Wadeable Streams: Implication to Nutrient Criteria Development. Environ Management. 39:194–212