



## Response to Comments Summary, January 8, 2015

### Sediment Reduction Strategy for the Minnesota River Basin and South Metro Mississippi River

This document includes summaries of public comments submitted on the Sediment Reduction Strategy for the Minnesota River Basin and South Metro Mississippi River (SMMR) during the public notice and comment period, and also provides the Minnesota Pollution Control Agency (MPCA) response to those comments. The Strategy was public noticed on March 17, 2014, with a public comment period extending through April 17, 2014. The MPCA received 26 comment letters during this period. This document consolidates and summarizes comments within topic categories (A-R), and provides MPCA's corresponding responses and strategy modifications.

- A. Strategy and focus should be adjusted
- B. Need to include additional study findings
- C. Historic sediment deposition
- D. Sources and factors influencing sediment load
- E. Typos
- F. Wetlands
- G. Task force/existing authority
- H. Adaptive management/monitoring/tracking
- I. Chesapeake Bay
- J. Implementation/link to modeling
- K. Reporting
- L. Stakeholders
- M. Target achievability/milestones
- N. Voluntary implementation/enforceability
- O. Existing authority/drainage law
- P. Stormwater and Municipal Separate Storm Sewer Systems (MS4)
- Q. Background/baseline sediment deposition
- R. Local capacity/funding

## A. Strategy and focus should be adjusted

1. **Comment:** Commenter suggested that the Strategy be refined to serve as a stand-alone guide for local government units to implement sediment reduction goals. Additional comments included requests that the Strategy and the actions and practices it recommends not proceed until additional research constrains the unknowns (e.g., sources of sediment or total maximum daily load (TMDL) finalization).

**Response:** *The scope of the Strategy is intended to provide a high level overview of the issues and current understanding of problems and solutions. In response to this comment, a section was added to the Strategy related to use of this Strategy at the local watershed level. The Strategy is still not considered a stand-alone document, and instead provides numerous references to other related work.*

*This Strategy, and subsequent planning and implementation, is based on Adaptive Management. As we gain a more complete understanding of the system and as new practices and approaches are developed, these can be incorporated into the Strategy. Due to the scale of the problem, the anticipated time needed to address it, and the importance of these reductions to the system, MPCA feels it is important to initiate strategy development now rather than later. Additional research should continue to inform the process.*

2. **Comment:** Commenter noted that farmers are already good stewards of the land and wondered why unelected officials get to determine the landscape changes needed.

**Response:** *Farmers have voluntarily adopted many conservation practices over the years, but there are still areas where additional conservation practices are needed. The Strategy sets the targets and identifies general approaches and activities available to reduce sediment problems in waters. It does not prescribe the actions that need to be taken. Decisions about specific actions will be made at the local watershed level where farmer input is sought. Elected officials can additionally influence change.*

3. **Comment:** Several commenters suggested that efforts be focused on near-channel sources such as bank stabilization. Another commenter was concerned that the Strategy is dismissive of near channel bluff and ravine control, and recommended focusing on a more balanced approach to strategies for all sources.

**Response:** *The MPCA believes that the Strategy provides a balanced approach in addressing the various sources of sediment including upland and near-channel sources. The MPCA believes that the inclusion of flow targets (i.e., reducing peak flows) will provide a focus on the major contributor to the sediment problem. The investment of lots of money and resources on structural and direct fixes of near-channel sources (fixing a bluff at the base of the bluff) may not be good for the long-term if flows do not decrease. We recognize the need for additional research in the state to determine a balance between fixing near channel sources and reducing flows. The Strategy is designed to be an evolving document that is periodically updated as new information becomes available.*

4. **Comment:** One commenter suggested that the MPCA broaden its thinking with regard to drainage systems. They are not designed to just transport water rapidly, but some systems include mechanisms that help to retain water. Additionally, when installed and maintained properly, drainage systems can provide solutions to many of the problems outlined in the Strategy.

**Response:** *Controlled-drainage systems can reduce tile drainage discharge volumes, but they are used on relatively few acres in Minnesota at this time. Scenarios in the Strategy to reduce sediment by 48% or more include controlled drainage as a practice on lands with slopes less than 1%.*

5. **Comment:** One commenter expressed concern that the Strategy does not identify gaps in or analysis of the reductions achievable through current law, programs, and resources or any resulting gaps despite the large scale shifts in agricultural practices identified in the TMDL Scenario modeling.

**Response:** *A recommendation was added to the Strategy to evaluate existing programmatic, funding and technical capacity to implement the Strategy, and to identify gaps in current programs and solutions to those gaps.*

6. **Comment:** Concern was expressed about the lack of detailed or specific strategies needed to effectuate changes or any estimation of the degree of practices needed.

**Response:** *This document is intended to provide a high-level approach to strategic development that can be used to fine tune more specific strategies at the local level. The Strategy indicates the combinations of practices that are expected to achieve various sediment reduction targets. Future efforts at both the state and individual project levels will need to provide more specific strategies to achieve the goals.*

7. **Comment:** Another commenter was encouraged to see sediment reduction strategies and actions that included increases in perennial vegetation and wetlands, further suggesting that the Strategy include calls for a more robust biomass energy market that would allow for wider planting of perennial biomass crops. Additionally, the commenter suggested that additional modifications to drainage law be recommended in the Strategy.

**Response:** *We welcome recommendations for further research or actions that will reduce sediment loading to the rivers. The Strategy is intended to help and encourage a generation of ideas from all partners. It isn't intended to be limiting. Additions were made to the Strategy to recommend additional perennial plantings and market development. Certain elements of recent drainage law modifications are also described in the Strategy.*

8. **Comment:** One commenter suggested that we fill in ravines, level them off and incorporate them into the fields.

**Response:** *We have added a research recommendation to evaluate methods for stabilizing ravines. Ravines are formed due to various factors, but a primary factor involves the movement of water across an area and then eroding the soil to form a gully and then a ravine. Tile line discharges into current ravine areas would also tend to reform gullies if tile discharges are not managed. Filling ravines without addressing the cause of the ravine would likely not be a permanent solution.*

## **B. Need to include additional study findings**

9. **Comment:** A few commenters expressed concern over a perceived bias towards a particular group of researchers or those funded by the MPCA. Further concerns centered on perceived subjectivity regarding the mechanisms of sediment loading in the Minnesota River Basin. Commenters requested that the research presented be fair and balanced with representative research from across the spectrum.

**Response:** *The MPCA acknowledges that there are different perspectives regarding the source and magnitude of sediment problems in the Minnesota River Basin. The MPCA along with others have funded research on the sources, magnitudes, and causes of sediment problems in the basin. The Agency attempted to present the available information in a fair and balanced way to develop a Strategy that is useful in the state's effort to reduce sediment pollution. A thorough review of the published literature and available reports was completed in the development of the Strategy. Additionally, MPCA staff met with multiple key researchers prior to releasing the draft.*

**10. Comment:** Another commenter was concerned with the MPCA's acknowledgement that major land use changes will be necessary to meet water quality standards outlined in the TMDLs, and requested that the MPCA show the data that supports these estimates.

**Response:** *The content in the Strategy regarding land use changes (e.g., percentage of land in perennial vegetation) is related to the "Minnesota River Basin Turbidity TMDL Scenario Report," prepared for the MPCA in December 2009 by Tetra Tech, which is cited in the Strategy. Several scenarios were modeled with each having varying degrees of land use changes that would be necessary to meet the water quality standards proposed in the draft TMDLs. These scenarios are summarized in the strategy report. Specific data and calculations are not included in the Strategy, but it does explicitly reference the Scenario Report and the TMDLs where this information can be found.*

**11. Comment:** One group disagreed with research cited in the Strategy that "...the reduced capacity for evapotranspiration from upland sources in early spring and fall results in a greater amount of precipitation entering receiving waters through artificial drainage networks." Their concern with this research is that infiltration characteristics are not similar across the watersheds included in the study and that the increase in mean annual precipitation is the likely driver of changes in river flows.

**Response:** *The Strategy devotes a section to the discussion of precipitation versus drainage practices as the drivers of altered hydrology. Precipitation patterns have changed in Minnesota, particularly in the late summer and fall periods, and we do not discount that in the Strategy. We further point out in the Strategy that flows have increased over time and that regardless of the main drivers, we need to adopt practices that will keep water on the land and mediate its delivery or timing to the rivers. The Strategy allows for flexibility to adapt as scientific understandings improve.*

## C. Historic sediment deposition

**12. Comment:** Commenters would like to know how the MPCA defines historical rates and unprecedented rates of near-channel erosion. Additionally, a commenter claimed that the estimation of whole-lake sediment accumulation rates in Lake Pepin is misleading. An additional question was posed regarding the natural progression of Lake Pepin to accumulate sediment.

**Response:** *The research cited in the Strategy defines the historical period as prior to European settlement. The time-scale reference in the Strategy was clarified to specify the mid-1800s. Regarding the "unprecedented rates," the Strategy references a study in a well-respected peer-reviewed journal that used radioisotope analysis of sediment cores to determine post-settlement sediment accumulation rates. Normalization of sediment accumulation rates to a whole-lake average is explained in more detail in the original study. The study definitively concluded that the post-settlement rates of sediment accumulation in Lake Pepin are greater than pre-settlement rates.*

**13. Comment:** One commenter stated that the "...labeling of figure 1.4 as 'whole-lake sediment accumulation rate' is extremely misleading."

**Response:** *Figure 1.4 was reprinted with permission from the lead author. Extrapolation of sampled cores to areal estimates is quite common in lake sediment studies, however, additional detail on the methodology can be found in the original study.*

**14. Comment:** One commenter stated that the historical condition of the Minnesota River was fully characterized and that historical evidence indicates that the river has always been turbid due to high sediment loads.

**Response:** *Various studies have shown increasing sediment loads as compared to historical conditions. The Strategy describes the evidence indicating that increasing peak flow has accelerated rates of erosion. The Strategy states: "This is not to say that land use needs to go back to what it was in the 1800s. Practices are available to store water and conserve soil, which can be used to bring peak flows down to increase resilience and decrease vulnerability of the system." History provides a reference but not a target or goal.*

**15. Comment:** One commenter stated that the MPCA should provide more detail on Lake Pepin's transport capacity and increasing sediment loading rates to downstream receiving waters.

**Response:** *A recommendation was added to the Strategy to track changes in sediment loading rates to waters downstream of Lake Pepin, to better understand the relationship between sediment loading to Lake Pepin and effects on downstream waters.*

## **D. Sources and factors influencing sediment load**

**16. Comment:** A few questions were raised regarding the magnitude of field versus non-field sources of sediment as well as the causes of each.

**Response:** *The Strategy presents research findings on these issues. While some questions remain, the main drivers of sediment in our rivers are understood well enough to move forward with reduction strategies. Further implementation delays will result in further degradation of the resources.*

**17. Comment:** Concern was raised that the Strategy stated that "Artificial drainage networks are designed to quickly remove water" and that quickly is not the goal of the drainage networks. It was further pointed out that agriculture is the primary economic driver in virtually the entire non-metro portion of the Minnesota River Basin and that much of the region's agricultural productivity is dependent on the farmer's ability to manage and remove excess water during the growing season.

**Response:** *The Strategy was edited by stating that "many conventional" tile drainage systems are designed to quickly remove "standing water and excess soil water." The MPCA recognizes that management of excess water during the growing season is critical to much of the agricultural productivity in Minnesota. As such, the goal of the Strategy is not to eliminate artificial drainage, but to promote the use of drainage conservation practices to provide adequate drainage for crop production while reducing channel erosion.*

**18. Comment:** One commenter pointed out the research being conducted regarding leaf litter from trees suggests that this source constitutes part of the total suspended solids (TSS) load. Additional comments centered on the lack of focus on urban environments with regard to sediment sources and required reductions.

**Response:** *Leaf litter from trees can be a component of the TSS load; however, it would be part of the organic fraction of TSS. The organic fraction of TSS is represented by total volatile suspended solid (TVSS) concentrations. TVSS has been measured to be 16-34% of the TSS concentrations in the Le Sueur River and less than 12% of the TSS in a study of 15 tributaries to the Minnesota River. These studies are discussed in the Strategy. Leaf litter constitutes only a fraction of the organic matter represented by TVSS. Sediment as the inorganic portion of TSS is the bigger component of concern. The Strategy emphasizes that reductions need to come from many areas. Although city contributions to the Minnesota and Mississippi Rivers represent a relatively small fraction of the overall load, these sources also need to be managed. Cities that are designated as Municipal Separate Storm Sewer Systems (MS4) are required to manage their storm water by permit and are required to develop stormwater pollution prevention plans.*

**19. Comment:** One commenter expressed concern that downstream areas can do nothing to reduce runoff and sedimentation if the increases in sediment and hydraulic loads from upstream remain unchecked.

**Response:** *The Strategy recommends a collaborative effort from many partners in the Minnesota River Basin so that the upland hydraulic and sediment loads are also addressed.*

**20. Comment:** Commenters suggested that the influence of infrastructures such as the effect of the Rapidan Dam and levees be explained or quantified.

**Response:** *Manmade structures can influence flow and sediment loading. The Rapidan Dam has trapped sediment as indicated by the fact that it has little capacity left for sediment storage. The Strategy was developed based on existing published science. The specific determination of the effects of these structures was not considered critical for moving forward with the large-scale direction provided in the Strategy. Future adaptations of the Strategy will be made as needed and supported by future research.*

## E. Typos

**21. Comment:** A few typographical errors were identified in the draft Strategy.

**Response:** *These were corrected. Additionally, the entire report was reviewed and edited for clarity and organizational improvements.*

## F. Wetlands

**22. Comment:** Commenter questioned the claim in the Strategy that "...nearly 90% of the wetlands in Minnesota have been drained." Additional comments referenced a recent Minnesota Department of Natural Resources (DNR) report on the Status of Wetlands in Minnesota that states wetlands in Minnesota are stable.

**Response:** *On page 2 of the DNR report, the DNR states: "It has been estimated that Minnesota has lost approximately half of its original presettlement wetlands due to draining and filling for agriculture and development, with some regions of the state having lost more than 90 percent of their original wetlands". This report cites another study by Anderson and Craig (1984). We have modified the Strategy to state that 90% of the wetlands in some areas of Minnesota have been drained. We further acknowledge that while the DNR finds that wetland acreage has been stable over the last few years, they are concerned with the overall quality of wetlands that have emerged.*

**23. Comment:** Commenter feels the discussion on pre-settlement prairie vegetation should be removed due to lack of relevance.

**Response:** *Describing pre-settlement land use characteristics with prairie vegetation helps provide context regarding trends in evapotranspiration which is a factor that can affect changing flows and near-channel sediment sources.*

## G. Task force/existing authority

**24. Comment:** The Sediment Reduction Strategy includes reference to the creation of an inter-agency Sediment Reduction Task Force as a potential way to facilitate planning and implementation. Commenters made a number of suggestions regarding the roles of this Task Force. Suggestions included charging the Task Force with reviewing monitoring and assessing data and information at regular intervals to evaluate progress, identify new research, and recommend shifts in the Strategy based on these new data and information. One commenter also noted that it is appropriate for the MPCA to administer and support the Sediment Reduction Task Force.

**Response:** *The MPCA will retain commenters' suggestions for the roles of the Sediment Reduction Task Force for consideration when a task force develops. The Strategy suggests that the task force regularly (i.e. every two years) evaluate new information, progress in reducing sediment, and needed changes to the Strategy.*

## H. Adaptive management/monitoring/tracking

**25. Comment:** One commenter suggested that the concept of Adaptive Management be applied to water quality standards in addition to the implementation strategies.

**Response:** *Although Adaptive Management is a term not typically associated with water quality standards, in a somewhat similar way water quality standards are regularly reviewed, and are revised as new information and science becomes available. Use Attainability Analyses and site-specific water quality standards are also tools that are available to modify water quality standards.*

**26. Comment:** While information such as that collected through water quality monitoring efforts and best management practice (BMP) tracking efforts will be used to inform the Adaptive Management Process, one commenter stated that tools, such as eLINK, referenced in the Strategy, are effective at tracking new practices as they are implemented in the landscape, but cannot accurately measure progress as they lack the context of concrete milestones and long-term goals. The commenter noted that the Strategy does not provide the monitoring framework to measure progress. The commenter also suggested that a comprehensive monitoring framework be included in the Strategy with a method to adjust actions required to meet water quality goals due to changes in land management.

**Response:** *The MPCA recognizes the need for adequate tracking mechanisms and the need for present tools to be used and further developed.*

*A summary of the Watershed Pollutant Load Monitoring Network was added to the Strategy. This monitoring program will provide river monitoring information that will be used to help evaluate progress. The MPCA's [Watershed Pollutant Load Monitoring Network](#) is designed to measure and compare regional differences and long-term trends in sediment and nutrients among Minnesota's major rivers and streams. The program couples site-specific stream flow data from the United States Geological Survey and DNR gaging stations with intensive water quality data sets to compute annual pollutant loads at over 200 stream and river monitoring sites across Minnesota. Monitoring sites span three ranges of scale: 1) Basin (Mississippi, Minnesota, Rainy, Red, St Croix rivers); 2) Major Watershed (8 digit HUCs); and 3) Subwatershed (drainage areas of approximately 300-500 mi<sup>2</sup> within 8 digit HUCs). Water quality and flow data are collected and loads calculated on an annual time scale for the Basin and Major Watershed sites. Subwatershed sites are only monitored during the open water season; pollutant loads for these sites are calculated seasonally.*

**27. Comment:** Another commenter suggested tracking the cumulative results of implementation at key downstream sites.

**Response:** *Metropolitan Council has conducted long-term sediment monitoring near the mouth of the Minnesota River (Jordan and Fort Snelling) and relatively close to the upstream side of Lake Pepin (Lock and Dam 3). These sites will be important for evaluating long term flow-adjusted trends. The Strategy did not provide details of proposed monitoring and tracking efforts. Rather, it limited the discussion to general approaches that can eventually be developed into more specific plans.*

*However, we recently added to the Strategy the findings of river sediment trends at key downstream locations, based on monitoring during the past few decades.*

## I. Chesapeake Bay

**28. Comment:** Commenters both supported and questioned the comparison of the Chesapeake Bay pollutant reduction efforts to those of the Minnesota River Basin.

**Response:** *Several differences exist between the Chesapeake Bay and the Minnesota River Basin water quality projects. Yet there are also many similarities in terms of the magnitude of the problem and complexities with implementation. We removed references to the Chesapeake Bay TMDL in one part of the Strategy (milestones section) where the example may have created confusion with our intended efforts in Minnesota. We kept references to the Chesapeake Bay project in section 4 of the Strategy under the heading "Learn from Successes and Failures at Other Large Scale Implementation Efforts."*

## J. Implementation/link to modeling

**29. Comment:** A number of commenters asked to include additional details regarding the computer modeling completed in association with the development of the Minnesota River Basin and SMMR TMDLs.

**Response:** *Discussion of the computer modeling scenarios in the Strategy was limited to an overview of the modeling. Additional information about the BMPs needed to achieve the modeled sediment reductions was added to Figure 2.7 of the Strategy. Further detail can be found in the documents, such as the Minnesota River Basin Turbidity TMDL Scenario Report and the original 2009 Modeling Report which are referenced in the Strategy and are available on-line.*

**30. Comment:** A number of commenters questioned the TMDL Scenario Report and the specific practices included in modeled scenarios that showed how significant sediment reductions can be achieved through BMPs and landscape changes.

**Response:** *Part of the TMDL development process was to develop model scenarios, which, if the practices were implemented, would result in meeting water quality standards. Part of the value of a model is that it predicts changes in water quality for given BMP implementation and land use changes. The scenarios that were developed, in cooperation with the TMDL stakeholder group, indicate that decreases in sediment are possible with the implementation of management measures or land use changes.*

*Scenarios 1 through 4 were designed primarily to test the sensitivity of responses to various management alternatives proposed by stakeholders. The fifth scenario explicitly sought to achieve compliance with water quality standards, building upon the information obtained from the first four scenarios. The stakeholder advisory committees are listed in the TMDLs and represented agriculture, urban, watershed and environmental interests. Other levels of reduction will be analyzed in future iterations of the Strategy and in specific watersheds through the Watershed Restoration and Protection Strategy (WRAPS) process.*



*Modeling is used as a tool to evaluate estimated effects of various practices, such as: putting 20% of the land in perennial vegetation, increasing water storage, stormwater source reduction, in-line ditch treatment, etc. It is important to emphasize that the practices used in these scenarios were intended to represent broad categories of options (e.g. source reduction, hydrologic storage, interception, etc.) and not a precise narrow list. While scenario practices, such as increasing perennial vegetation to 20% of the watershed, is in no way a requirement or regulatory initiative, these scenario practices provide an idea as to the large scale of management practice implementation necessary to meet water quality standards.*

*Implementation of sediment reduction strategies are expected to be a long-term effort. Both existing and future monitoring will need to be able to detect progress. Local governments and other land owners will need to adopt practices to reduce flow and erosion. As monitoring continues, and evaluation of progress toward meeting targets continues, the need for additional BMPs can be evaluated and may be adjusted as needed. The modeling indicated that sediment reductions will be achieved through large-scale adoption of a combination of practices, including the addition of more perennial vegetation in key areas. Changing certain land into perennial vegetation is not the sole practice for the Strategy, but one of several important practices. Effective combinations of practices will decrease upland erosion and will also reduce stream flow and subsequently reduce sediment contributions from near channel sources.*

## K. Reporting

**31. Comment:** One commenter asked about the MPCA's approach to reporting on sediment reduction progress over time.

**Response:** *Reporting requirements are already in statute (Minn. Stat. § 114D.26 subd. 2). The statute requires that, beginning July 1, 2016, and every other year thereafter, the MPCA must report on its website the progress toward implementation milestones and water quality goals for all adopted TMDLs and, where available, WRAPS. MPCA already reports water quality monitoring information at watershed outlets on its website.*

## L. Stakeholders

**32. Comment:** Numerous comments were made about stakeholder involvement in the TMDLs and the Strategy. A number of commenters across a number of affiliations (from farmers to governmental agencies) requested more expansive inclusion of stakeholders as this process moves forward.

**Response:** *Stakeholder involvement has been a priority to the MPCA during TMDL development and continues to be a key component of this Sediment Reduction Strategy. Stakeholder Advisory Committees were created to support the development of both the Minnesota River Basin and SMMR TMDLs. These committees were made up of representatives from agriculture (including farmers), municipalities, watershed and environmental groups, and local government and state agencies. The MPCA has also sought input during the development of the Sediment Reduction Strategy from a number of groups including scientists, environmental organizations, Soil and Water Conservation Districts, Watershed Management Organizations, and farmers.*

*Stakeholder involvement will continue to be essential as this process continues to move forward. MPCA's intent in developing this Sediment Reduction Strategy is to establish an initial framework within which sediment reduction planning and implementation can move forward. MPCA does not intend to – nor can it – move forward on its own. Rather, the MPCA will be looking to partners with the expertise and first-hand*

*knowledge of needs and issues at the local level to develop the tools, local planning efforts, and, ultimately, the adoption of sediment reduction practices needed to meet these sediment reduction goals, and ultimately, water quality standards.*

**33. Comment:** Commenters had suggested more involvement of representatives from the Minnesota Department of Agriculture; agricultural representatives, farmers, individual producers, producer organizations, commodity groups, and agribusinesses; along with Watershed Districts, and other local agencies.

**Response:** *The MPCA agrees with these suggestions and plans to incorporate additional communication with these groups as efforts, such as the development and organization of a Sediment Reduction Task Force, move forward.*

**34. Comment:** One commenter expressed concern that the public forums for the Strategy were held only during the daytime.

**Response:** *It is a challenge to find a time when the most people can attend meetings. We will keep evening meetings in mind for the future.*

## **M. Target achievability/milestones**

**35. Comment:** A number of commenters questioned the sediment reduction targets included in the Strategy and the achievability of these targets.

**Response:** *The reduction target percentages identified in the Strategy were developed through the TMDL process. TMDLs are a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards. While MPCA acknowledges meeting these targets will be challenging, these are the sediment reductions that are needed to achieve the water quality standards as required by the Clean Water Act. The Sediment Reduction Strategy was developed to provide a framework for the development of implementation efforts to meet the TMDL targets. The Strategy now notes substantial reductions in TSS concentrations from sediment monitoring data (i.e. 20 to over 50 percent) during the past one to two decades. While these results are promising, they are preliminary, and continued monitoring is needed to determine whether these reductions are reflective of long-term sediment reduction potential.*

**36. Comment:** Another commenter suggested that more cost information be included with the TMDL modeling effort.

**Response:** *The practices that were incorporated into the various TMDL modeling scenarios were “intended to represent broad categories of options (e.g. source reduction, hydrologic storage, interception, etc.) and not a precise narrow list of the only things that will work.” The TMDLS did contain very generalized cost estimates for addressing the impairments. However, refined estimates of implementation costs can best be completed as more specific implementation strategies and plans are developed at the local level.*

**37. Comment:** Support for adopting flow-related milestone targets was conveyed in several comments. One commenter specifically asked for an immediate effort to quantify landscape water storage volumes needed to reach the flow-related targets, emphasizing that a single state agency with the requisite technical skills should provide the storage volume estimates for each major watershed.

**Response:** *The Strategy includes flow reduction targets. However, the needed scientific evaluations to determine how the flow reduction targets can be achieved were not available for inclusion into the Strategy. The MPCA intends to work with experts in this field to evaluate how flow-related targets can be achieved so that additional technical guidance can be provided to local watersheds in the future.*

**38. Comment:** Some comments were supportive of the Strategy including a measure of accountability through the use of milestones. Commenters felt these should be specific and short-term metrics with contingencies in place should they not be met.

**Response:** *The development of short term milestones (e.g., two year milestones) should occur at a smaller scale than the overall strategy. The broad scope of the Sediment Reduction Strategy is best suited to the longer-term milestones included in the Strategy.*

**39. Comment:** One commenter suggested that reporting on progress toward implementation benchmarks should occur.

**Response:** *Progress reporting is included as part of the Strategy. By providing regular updates on progress, agencies and the public can assess whether or not adequate improvement to water quality is being achieved. This reporting will occur in conjunction with the two-year Clean Water Accountability Act reporting.*

## **N. Voluntary implementation/enforceability**

**40. Comment:** Numerous comments were received regarding the Strategy's reliance on voluntary implementation of sediment reduction practices and the lack of enforcement capability, accountability, or contingency plan to address the situation if those practices fail to achieve pollutant reduction goals. A number of commenters noted that voluntary programs have been in place for decades and yet needed pollutant reductions have not been achieved. These commenters expressed doubt that continuing this approach will succeed in reaching water quality goals.

Several commenters also noted that the Strategy relies on local water management entities to accomplish stream flow reduction targets by integrating flow and storage targets into drainage system design and development. These commenters did not believe that there is ample evidence suggesting that such entities will be willing to make changes in the time frame of the Strategy.

**Response:** *Additional technical and financial assistance will likely be required for local planning and implementation efforts to achieve success. This includes evaluating ways to improve the accountability of all sectors in implementing measures to address their contributions to pollutant load. Tracking progress and adaptive management processes are central to this Strategy and its long-term success. If sufficient progress is not being made, then the Strategy will need to be re-evaluated and potentially revised.*

**41. Comment:** Several commenters provided suggestions with regard to implementation approaches, as follows:

- Using an agricultural accountability mechanism, such as the Agricultural Management Area concept referenced in the Minnesota Water Sustainability Framework. Such a program could serve as the starting point for the development of effective accountability at the local level.
- Establishment of outfall-specific sediment limits, increased monitoring, and enforcement and penalties for exceedances to encourage remedial action, and making such enforcement a top priority.
- Coordination with drainage authorities to encourage support of the flow and water-storage targets for their watersheds. This could involve: additional study; incorporation of additional flow-retarding or water storage features into system design; and, because the cost of these systems may increase as a result, addressing impediments to raising funds for planning and implementing effective drainage system enhancements (administrative changes, rule modifications, etc.).
- Include stronger incentives to encourage local units of government to begin to systematically integrate flow and storage targets into drainage system planning. This could involve education and technical assistance and access to funding for demonstration projects.

- Modification of drainage rules if voluntary measures combined with enhanced funding and other incentives do not stimulate significant change.

**Response:** *These suggestions, as well as many others, have been added to a list for discussion in the implementation of the Strategy. Much work remains in the evaluation of the best supporting policy and assistance for Strategy Implementation. The Sediment Strategy Task Force recommended in this Strategy should be one entity to further consider such recommendations made by commenters.*

## O. Existing authority/Drainage law

**42. Comment:** Some commenters questioned the adequacy of existing MPCA authority to develop and implement this Strategy while the South Metro Mississippi TSS TMDL and the Minnesota River Turbidity TMDLs are not finalized.

**Response:** *The MPCA initiated the development of the Sediment Reduction Strategy despite the TMDLs not yet being approved by U.S. Environmental Protection Agency. Regardless of the final targets issued in the TMDL, there will be large reductions needed to meet water quality standards. Therefore, the MPCA believes that development of this high-level strategy is a starting point for discussions and moving voluntary sediment reduction actions forward. Responding to TMDL comments and addressing contested case hearing requests takes time. While finalizing the TMDLs is a priority for the Agency, MPCA felt it was important to initiate sediment reduction planning and coordination even as efforts to finalize the TMDLs continue.*

*Regarding authority to develop the strategy, the development of the document follows the drafting of the South Metro Mississippi River TSS TMDL and the Minnesota River Turbidity TMDL. Minn. Stat. § 114D.20 provides for developing regional and watershed TMDL's and TMDL implementation plans. Many of the targets in the Strategy are set at the major watershed scale. The MPCA has worked at the basin and watershed levels to influence local decisions for decades as local partners have requested technical assistance, grant and loan funding.*

**43. Comment:** Commenters suggested making further use of existing authorities already in statute or law.

*The Strategy now references and discusses existing authorities, including drainage authorities and soil loss ordinance authorities. Changes in approach or modifications to these policies will require conversations and coordination outside the scope of the development of the Sediment Reduction Strategy. Various state and local agencies are, and will continue to be, involved in discussions of how existing laws can be more effective for improving water quality.*

**44. Comment:** Some commenters noted that certain issues, such as crop insurance and the development of markets, should not be pursued by the MPCA alone.

**Response:** *The Strategy, while authored by the MPCA, is intended to address opportunities for reducing sediment delivery to Minnesota waters through the efforts and participation of local, state, and federal government programs along with non-government organizations and programs. The Strategy was revised to note that development of these actions would occur through the appropriate authorities, organizations, and individuals.*

## P. Stormwater and Municipal Separate Storm Sewer Systems (MS4)

**45. Comment:** A couple of commenters noted the lack of discussion for required TSS reductions by MS4s communities.

**Response:** *The Strategy references sediment reduction needs by MS4 communities in relation to the requirements of their National Pollutant Discharge Elimination System permit. It should also be noted that the Strategy document focused on the unregulated needs for nonpoint source sediment reduction, since those sources are overwhelmingly the largest remaining sources.*

## Q. Background/baseline sediment deposition

**46. Comment:** Commenters requested that the MPCA provide more information on how increased river flows are accelerating near-stream erosion rates in excess of what would occur under natural conditions and that natural background sources of sediment should be properly calculated.

**Response:** *The Strategy provides a summary of the existing information regarding increased flows and near-channel erosion with citations of the information sources.*

*The Strategy outlines general strategies and actions for local watershed managers to utilize in the development of individualized action plans to reduce sediment. Additional research will continue to inform sediment sources, priorities and implementation needs. Waiting for this and other research information would delay implementation of practices that are needed regardless of source attribution. Action can be taken now, and as new information becomes available, the actions and priorities can be adapted.*

## R. Local capacity/funding

**47. Comment:** Several commenters requested that additional detail be added to the Strategy regarding potential funding, increasing local capacity, and policy that can be used to ensure sediment reduction planning and implementation occurs.

**Response:** *The MPCA decided not to include additional details regarding funding, local capacity, local planning, and implementation. Instead, the Strategy provides an overall framework for facilitating additional coordination and efforts to determine how approaches, such as expanding existing authority, can result in additional sediment reductions. Changes to policies and increasing local capacity will occur outside of the Strategy. This may include making adjustments to programs and policy if progress is not made. The authority of the MPCA remains the same with or without the Strategy. The Strategy identifies sediment sources, sets targets, and provides a suite of broad-based strategies aimed at sediment reduction (some of which are voluntarily based) on which landowners, governmental agencies, and other entities will need to take appropriate action.*

**49. Comment:** Commenters stated that the local capacity is not in place and that it needs to be increased to get the actions to occur and that organizations with the appropriate authority be established to compel the needed changes.

*Adequate local capacity is not in place in all locations and it will be essential to the successful implementation and achievement of sediment reduction targets. Meeting local capacity needs will require continuing efforts by many organizations and people.*