

July 12, 2021

Sarah Soderholm
Environmental Technician
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RE: Response to Request for Water Management Issues and Priority Concerns to be addressed in the Des Moines River Watershed One Watershed, One Plan

Dear Sarah Soderholm:

The Minnesota Pollution Control Agency (MPCA) has received your request to submit water management issues pertinent to the Des Moines River Watershed One Watershed, One Plan (Plan) development process. The MPCA appreciates the opportunity to provide input throughout the Plan development process. As part of MPCA's review, we are providing the following comments we would like to see addressed in the Plan.

The MPCA and other state agencies coordinated with local partners to gather, analyze, and summarize information to develop the Watershed Restoration and Protection Strategies (WRAPS) Report for the Des Moines River Watershed. The following pages provide a brief summary of available information from the watershed approach process. The MPCA requests you consider this information during development of the Plan.

Background Information

The State of Minnesota employs a watershed approach to restore and protect Minnesota's rivers, lakes, and wetlands. The watershed approach includes the following processes that can be used to inform water planning:

1. Watershed monitoring and assessment
2. Stressor identification (SID) of biological impairments
3. Total Maximum Daily Loads (TMDLs)
4. WRAPS

Following is a brief description of these processes and internet links for the reports associated with these efforts.

Monitoring and Assessment

In 2014, a comprehensive approach was taken to monitor and assess surface water bodies in the Des Moines River Basin (DMRB) for aquatic life, recreation, and fish consumption use support. For details on the data collected, refer to the Des Moines River Watershed Monitoring and Assessment Report (<https://www.pca.state.mn.us/sites/default/files/wq-ws3-07100001b.pdf>).

Monitoring data are used to determine if water quality is supporting a water body's designated use. During the assessment process, data on the waterbody are compared to relevant standards. When pollutants/parameters in a waterbody do not meet the water quality standard, the waterbody is considered impaired. When pollutants/parameters in a waterbody meet the standard, the waterbody is considered supporting. Data from three water quality monitoring programs inform water quality assessment and create a long-term data set to track progress toward water quality goals. These programs will continue to collect and analyze data in the DMRB as part of Minnesota's Water Quality Monitoring Strategy. Intensive Watershed Monitoring (IWM), the Watershed Pollutant Load Monitoring Network (WPLMN) and Citizen Stream and Lake Monitoring Program (CSMP and CLMP) data provide a periodic but intensive "snapshot" of water quality conditions throughout the watershed.

Within the DMRB, there are 182 impairment listings. Table 1 summarizes the listings by impairment type. Full details on the impairment listings can be found here:

<https://www.pca.state.mn.us/water/minnesotas-impaired-waters-list>.

Table 1. Summary of Impaired Waters by type for the Des Moines River Basin

Impairment Type	Number of Listings	Beneficial Use
Ammonia, un-ionized	1	Aquatic Life
Fecal Coliform; E coli	27	Aquatic Recreation
Aquatic macroinvertebrate bio assessment	40	Aquatic Life
Fish Bio Assessment	61	Aquatic Life
River Nutrients	2	Aquatic Life
Dissolved Oxygen	2	Aquatic Life
Chlorpyrifos	2	Aquatic Life
Chloride	1	Aquatic Life
Lake; Nutrient/Eutrophication	23	Aquatic Recreation
Stream; Mercury in fish Tissue	2	Aquatic Consumption
Turbidity; Total Suspended Solids	20	Aquatic Life
pH	1	Aquatic Life

Stressor Identification

SID is performed on biological impaired water bodies to determine what pollutant and nonpollutant stressors are causing impairments to the aquatic biological community. The process is described in more detail and documented in the Des Moines River Watershed SID Report

(<https://www.pca.state.mn.us/sites/default/files/wq-ws5-07100001a.pdf>) for the reaches listed for aquatic life impairments (fish, aquatic macroinvertebrate impairments). SID was completed on 56 waterbodies for biota (fish and/or macroinvertebrates) impairments in the entire DMRB. A summary of the primary stressors to the biological community by impaired reach can be found in Table 551 on Page 465 in the report referenced above. A table of stressors for each stream reach is also available in the respective stream reach sections of the report. Biologically impaired reaches in the 2018 report show primary stressors including: dissolved oxygen, nitrate, phosphorous, turbidity/total suspended solids (TSS), habitat, connectivity and altered hydrology. Primary stressors and recommended restoration priorities are summarized in Table 2.

Table 2. Recommended prioritization of restoration activities relative to the stressors contributing to the biological impairments in the Des Moines River Basin

Stressor	Priority	Comment
Habitat	High	Re-establish quality riparian corridor to increase woody debris, stream stability, and stream shading. Protect streambanks, reduce erosion and overall stream sedimentation.
DO and Eutrophication	High	Utilize a variety of nutrient reducing BMPs including but not limited to: cover crops, nutrient management, saturated buffers, etc.
Nitrate	High	Utilize a variety of nutrient reducing BMPs including but not limited to: cover crops, nutrient management, saturated buffers, etc.
Flow Alteration/Connectivity	High	Increase storage and infiltration of water in locations with flow alteration stressors and solicit DNR recommendations for streams with existing connectivity stressors and/or determine if restoration is appropriate. Further monitoring may be needed to better determine the impact that this stressor may be having on many of the reaches especially in the headwaters of these watersheds.
Suspended Sediment	Medium	Focus on reducing sediment input from riparian corridor (cattle pastures) and immediate stream channel (stream banks).

Total Maximum Daily Loads

The Clean Water Act requires that TMDLs be developed for waters that do not support their designated uses. A TMDL provides the allowable pollutant loading, as well as needed reductions, to attain and maintain water quality standards in waters that are not currently meeting standards. The TMDL reports containing impaired waterbodies and pollutant reductions located in the watershed can be found here:

Des Moines River - Headwaters Watershed River Eutrophication TMDL Report (2020 completion)

<https://www.pca.state.mn.us/sites/default/files/wq-iw7-56e.pdf>

Des Moines River Basin Watersheds TMDL Report (2020 Completion)

<https://www.pca.state.mn.us/sites/default/files/wq-iw7-54e.pdf>

A TMDL was approved in December 2008 that addressed bacteria, turbidity, pH, and excess nutrients. An implementation plan for this TMDL was approved in September 2009.

West Fork Des Moines River - Multiple Impairments TMDL Report

<https://www.pca.state.mn.us/sites/default/files/wq-iw7-13e.pdf>

Amendment to the West Fork Des Moines River Watershed Multiple Impairments TMDL

<https://www.pca.state.mn.us/sites/default/files/wq-iw7-13l.pdf>

West Fork Des Moines River and Heron Lake TMDL Implementation Plan

<https://www.pca.state.mn.us/sites/default/files/wq-iw7-13c.pdf>

Watershed Restoration and Protection Strategies

In each cycle of the watershed approach, rivers, lakes, and wetlands across the watershed are monitored and assessed, waterbody restoration and protection strategies and local plans are developed, and conservation practices are implemented. Much of the information presented in the WRAPS report was synthesized from the Monitoring and Assessment, SID, and TMDL reports. However, the WRAPS report presents additional data and analyses including watershed-scale models and tools, detailed analyses and output from these work products, and a set of potential strategies for point and nonpoint source pollution that will cumulatively achieve, or otherwise make significant progress toward, water quality targets. The Des Moines River Basin WRAPS Report can be found here:

<https://www.pca.state.mn.us/sites/default/files/wq-ws4-52a.pdf>.

To ensure the WRAPS strategies and other analyses appropriately represent the DMRB, Cottonwood, Jackson, Lyon, Martin, Murray, Nobles and Pipestone county and SWCD staff, and state natural resource and conservation professionals (referred to as the WRAPS Local Work Group) were convened to inform the report and advise technical analyses. Two key products of this WRAPS report are the strategies table and the priorities section, each developed with the WRAPS Local Work Group.

Goals and 10-year Targets

Among the required elements of WRAPS are timelines for achieving water quality targets and interim milestones within 10 years of strategy adoption. The DMRB goals and targets were developed by the WRAPS Local Work Group and are found in Table 3. Further descriptions of the goals and targets are found in Section 2.1 (Page 31) of the WRAPS report. It is the intent of the implementing organizations in the watershed to make steady progress in terms of pollutant reduction. However, needed pollutant load reductions are generally high and will require significant adoption of conservation practices. Factors that may mean slower progress include limits in funding or landowner acceptance, challenging fixes, (e.g., unstable bluffs and ravines, invasive species) and unfavorable climatic factors. Conversely, there may be faster progress for some impaired waters, especially where high-impact fixes are slated to occur or where the watershed is subject to focused efforts.

Table 3. Des Moines River Basin goals and 10-Year targets as identified by the WRAPS Local Work Group

Parameter (Pollutant/ Stressor)	Basin-Wide Goal (average/surrogate for watershed)	Range of Subwatershed Goals (Estimated only when TMDL or MSHA data available)	10-year Target (for 2030)	Years to Reach Goal (from 2020)
Degraded Habitat	45% increase in MSHA habitat score	Protection and up to a 214% increase	20%↑	40
Phosphorus/ Eutrophication	45% reduction in lake and stream concentrations/loads	Protection and up to a 76% reduction	Lakes - 7%↓ Streams - 15%↓	Lakes - 50 Streams - 40
Sediment	30% reduction in stream concentrations/loads	Protection and up to a 80% reduction	5%↓	60
Nitrogen	30% reduction in stream concentrations/loads	Not estimated (TMDLs not completed on this parameter)	10%↓	40
Altered Hydrology	20% reduction in peak & annual stream flow	Not estimated (TMDLs not completed on this parameter)	2.5%↓	100
	Increase dry season stream base flow where ID'd in SID by enough to support aquatic life		Small Improvement	50
Connectivity	Address human-caused issues (dams, culverts) as identified in SID and where practical/feasible	Not estimated (TMDLs not completed on this parameter)	6 Barriers Removed	20
Bacteria	50% reduction in stream concentrations/loads	Protection and up to a 86% reduction	10%↓	50
Chloride	Protect (restore the one impaired reach)	Protection and up to a 33% reduction	Meet permit requirements (impaired reach is point source driven)	
Parameters that are impacted/addressed by the above pollutants and stressors				
Fish (F-IBI)	Each parameter's goal is to meet the water quality standard and support downstream goals. Because these parameters are a response to (caused by) the above pollutants/stressors, the above watershed- wide goals are the (indirect) goals for these parameters.	Not estimated (TMDLs not completed on these parameters)	Meet other 10- year targets	60
Macroinverts (M-IBI)				60
DO				40
pH				50

WRAPS Strategies

A set of restoration and protection strategies were developed to achieve water quality targets for waterbodies addressed in the WRAPS report that covers the Plan planning area. The strategies are provided in Table 21 (Page 82) organized by parameter, and Table 22 (Page 83) organized by landuse/source type in the WRAPS report. The strategies tables outline high level strategies necessary to restore and protect water bodies in the Watershed, including social strategies that are key to achieving the physical strategies. Where possible, the strategies were derived through quantitative methods; however, in other cases, only more qualitative characterization of actions was feasible. The chief goal of providing this information is to inform local planning. Specifically, by providing an overall set of actions needed to meet the goals (over some period of years or decades), local planners can focus on a subset of actions to take on for their shorter-term (e.g., 10-year) planning cycle. This provides a means to gauge a plan’s ability to make progress over time as well as make adjustments through adaptive management.

Prioritizing and Targeting

Several tools are included throughout the WRAPS report that can be used to help identify priority areas. These include the goals maps, Hydrologic Simulation Program – Fortran (HSPF) model maps, and GIS

estimated altered hydrology maps. Table 23 (Page 86) in the WRAPS report identifies priority areas that were determined by the WRAPS Local Work Group along with data sources and specific examples. The MPCA recognizes that some restoration practices, particularly soil health practices, will need to be implemented basin-wide to achieve water quality goals. However, MPCA also highly recommends focusing efforts on some of the priority sub-watersheds that were identified by the WRAPS Local Work Group.

Civic Engagement for WRAPS Work

Two different civic engagement projects took place in the DMRB during the watershed approach, one in East Fork Des Moines River Watershed, and one in West Fork Des Moines River Watershed. Even though the two projects took different approaches, the purpose of the projects were to identify community/landowner opportunities, obstacles, and opinions on land management, and provide information about the water quality in the watershed. As a result, constraints and opportunities were discovered, along with additional civic engagement work recommendations. Detailed project information including project reports and attachments can be found in the Des Moines River Watersheds Civic Engagement Project Summary <https://www.pca.state.mn.us/sites/default/files/wq-tmdl2-08.pdf>. The MPCA recommends the results from the civic engagement efforts are taken into account and used to inform implementation planning efforts.

The opportunities identified from civic engagement projects include:

- Citizens were interested in slowing the flow of water, as well as working toward controlling surface water ponding to meet both water quality and land management needs and keeping water on the landscape upstream
- Participants wanted more information about baseline water quality levels and what is being done to regulate runoff from municipalities
- Interest in ditch channel storage, holding ponds, and two stage ditches
- Need for existing storage areas to be cleaned out more often
- Interest is growing in cover crops and programs are starting that provide cost share money in this watershed for residents to try cover crops
- Restoration efforts should target specific key areas
- There is interest in reduced tillage, nutrient application/timing, crop rotation, feedlot compliance and groundwater protection
- It is believed that water resources are important and that landowners are the most responsible for the water quality in the watershed
- The water resources are important for both agricultural production (drainage and livestock watering) and recreational use such as hunting and fishing to boating and swimming
- There is interest in additional training events that include implementation opportunities in the watersheds and implementation policies

The constraints identified from civic engagement projects include:

- In general, people felt existing programs, such as CRP and cover crops, were too restrictive and had too long of timeframes
- Not enough controlled drainage
- Not enough education of BMP implementation
- Frustration with existing programs, such as CRP and cover crops, finding enough cooperators
- Research findings have not been presented to groups
- Financial incentives have not been adequate

- Not one size fits all to find solutions
- The largest obstacle to implementing conservation BMPs are the associated costs
- Concern about the loss of agricultural production acres
- Some citizens do not believe a water quality problem exists

Some of the identified constraints can be addressed through additional civic engagement work, which will require cooperation among many partners. The following are some examples of what could be done locally.

- Local partners work with community leaders to start building leadership and create a unified vision around water quality issues of importance.
- Local partners, community leaders, state agency staff, and local business partners could work together to develop new funding opportunities to address costs.
- Local partners and agency staff could work together to develop easier and efficient programs to suit landowner interest and need, which would help alleviate program restrictions.
- Local partners could seek new opportunities focused on subwatersheds based on local priorities and landowner interest. Exploring future opportunities to expand face-to-face conversations and education activities regarding water quality to reach a new audience and provide missing information to existing ones. Conversations during the civic engagement projects like these lead to greater interest and involvement in local conservation programs.

MPCA Water Management Priorities

The MPCA recommends focusing on the following priorities in the Des Moines River Watershed One Watershed, One Plan planning process. Additional information on each of these priorities can be found in the previously referenced Des Moines River Basin WRAPS, TMDLs, SID report, Civic Engagement reports, and Monitoring and Assessment report.

Biota (Aquatic Life)

Address the stressors to aquatic life in the Plan. Aquatic life use impairments within the watershed are complex. Biotic impairments are a result of nonpoint source pollution and localized stress linked to poor habitat condition, excessive nutrients, altered hydrology, low dissolved oxygen and suspended sediments. Stabilizing hydrology, increasing riparian buffer width, and stabilizing stream banks would greatly help the in-stream habitat.

Turbidity and Total Suspended Solids

Reduce and control sediment entering the water bodies of the watershed. TSS and turbidity (measure of water clarity affected by sediment, algae, and organic matter), are common impairments and stressors to aquatic life in the watershed. Reducing TSS will also likely reduce the means by which other pollutants are conveyed (phosphorus and bacteria).

Nutrients

Reduce nutrient delivery to the watershed. High levels of nutrients (phosphorus) are driving nuisance algae blooms in the watershed's impaired lakes, and threatening other lakes that are on the verge of becoming impaired. Algae blooms can deprive lakes of their oxygen as the algae die off and decay, causing fish kills. High levels of algae cause increased levels of turbidity, degrading aquatic recreation and aquatic life. Blue-green algae can also cause serious health issues for humans and pets. In addition to lake eutrophication impairments, the Des Moines River from Windom to Jackson is impaired for river

eutrophication and reducing nutrient inputs to the watershed will improve this reach. Heron Lake Outlet is also impaired for river eutrophication and reducing the nutrients in the Heron Lake complex will improve this stream reach. Management plans that appropriately value the nutrient worth of manure and previous crops and focus on the timing and intensity of the fertilizers and manure applications will help reduce the amount of phosphorus and nitrogen reaching the river. Nutrient reductions would also aid in the low dissolved oxygen problems present in some parts of the watershed.

Bacteria

Control pathways delivering human and livestock feces to the Des Moines River Watershed. High levels of bacteria are widespread across the watershed. The abundance of feedlots, feedlot runoff, improper manure management, and over-grazed pastures in the watershed may correlate with this finding. High bacteria levels are also attributed to noncompliant septic systems.

Altered Hydrology

Seek changes to the landscape that reduce the volume, rates, control surface water runoff and increase the base flows needed to address existing and prevent additional impairments, and still meet land management needs. Other pollutants (sediment, nutrients, bacteria, etc.) are delivered because of altered hydrology. Managing the hydrology to provide a consistent base flow is imperative for the survival of the aquatic biological communities in the watershed. Increasing rainfall infiltration and water retention, and improving vegetative cover are activities that are needed to stabilize hydrology and reduce impairments.

Watershed wide practice implementation

While geographic targeting of specific practices and funding is important, some practices will need to be implemented at the major watershed scale. The MPCA recommends some of the implementation funding for the DMRB is flexible and available watershed wide, to provide options for landowners to try soil health and cover crop practices, work with SWCD staff, and communicate with other landowners who are implementing these practices. The MPCA recommends developing a network of local staff and operators who can provide technical, financial, and practical assistance to landowners implementing soil health principles.

Drainage Watershed Management

The MPCA recommends the Plan identify an approach for addressing petitions for drainage improvement projects in the DMRB. Currently, drainage improvement projects have limited input from local staff to aid in the integration of conservation practices that would help to alleviate hydrology concerns and downstream impacts from increases in water volume. The MPCA recommends early coordination with landowners, SWCD staff, agencies, and engineers to develop improvement projects that account for volume increases.

Previous engineering reports have indicated that drainage improvement projects are a TMDL implementation practice. The current WRAPS and TMDL reports as well as the previous TMDL implementation plan do not include drainage improvement projects as a means for improving water quality. The MPCA encourages the planning group to discuss watershed drainage management and consider water quality with an emphasis on finding ways to store and/or reduce the increased volume of water by working with land owners in areas where drainage improvement will eventually be considered.

Priority Areas

As indicated above in this letter, Table 23 (Page 86) in the WRAPS report identifies suggested priority areas that were determined by the WRAPS Local Work Group. These include protection of supporting waters such as First and Second Fulda Lakes; barely impaired waters such as Fox, Shetek, Bloody, Currant, Yankton, and Bright Lakes; highly hydrologically altered watersheds including Okabena Creek, Jack Creek, Heron Lake Outlet, and most of East Fork Des Moines; the waters needing most improvements including Talcot, Sarah, Pierce, North Oaks and Temperance Lakes, the Lower Des Moines subwatersheds and Beaver Creek for phosphorus, Okabena Creek, Jack Creek and Beaver Creek for sediment, and East Fork Des Moines and Okabena Creek for nitrogen; and areas contributing water or risks to drinking water and ground water resources such as Drinking Water Supply Management Areas in the watershed.

Continued Civic Engagement

During the WRAPS public notice period, comments were received regarding cattle exclusion and improved pasture management, primarily in the Beaver Creek Subwatershed. These practices should be considered for inclusion in the Plan. The MPCA encourages the planning group to actively gather concerns, potential improvement projects, and continued civic engagement efforts and include the results in the Plan.

Through the WRAPS development process, there were civic engagement projects that resulted in gathering great insight into the watershed and its residents. The MPCA encourages local partners to continue civic engagement work through activities such as one-on-one interviews with citizens and development of a networking group.

Modeling considerations

The MPCA requests that any modeling efforts for implementation utilize HSPF model output and WPLMN data to calibrate pollutant load and flow estimates. This would allow for reduction calculations to be comparable to WRAPS goals and targets for load and flow reductions. If additional analyses are completed for protection and restoration efforts of waterbodies, consider explaining differences between load and/or flow reduction estimates in the Plan and the WRAPS.

The MPCA recognizes all of the cooperation and work from the local partners within the Des Moines River Watershed, and offers our continued support in local water planning. Thank you for the opportunity to provide comments during the planning process. If we may be of further assistance, please contact Katherine Pekarek-Scott at katherine.pekarek-scott@state.mn.us or 507-476-4281 or Bryan Spindler at bryan.spindler@state.mn.us or 507-344-5267.

Sincerely,

Katherine Pekarek-Scott

This document has been electronically signed.

Katherine Pekarek-Scott
Environmental Specialist
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KPS:jdf