



LOWER MINNESOTA RIVER WATERSHED DISTRICT

Executive Summary for Action

Lower Minnesota River Watershed District Board of Managers Meeting

Wednesday, February 20, 2019

Agenda Item

Item 6. G. - Project Reviews

Prepared By

Linda Loomis, Administrator

Summary

i. Burnsville - Kraemer Mining

Kraemer Mining and Materials Inc. (KMM) has submitted an application for a Concept Stage Planned Unit Development Amendment to the City of Burnsville for a reconfiguration of the mining boundary to include an additional approximately 72 acres on the easterly and southwesterly areas of the site located at 1020 Cliff Road West. LMRWD staff has initially reviewed the proposal.

The District is interested in the environmental review process and how KMM would address direct, indirect, and cumulative effects of proposed alternatives on the water and natural resources. Of particular interest is how each of the alternatives might affect the current groundwater pumping scheme as well as the resulting groundwater and surface water levels and quality.

The current groundwater pumping operation at the quarry lowers groundwater underneath the adjacent Freeway Landfill, preventing contact with the waste material. If the pumping ceases, groundwater levels would rise, make contact with waste material in the landfill, and potentially cause contaminants to leach into groundwater and eventually the Minnesota River.

ii. Dakota County - MN River Greenway

On January 18th, I attended a kick-off meeting for the Eagan segment of this trail. An alignment for the trail has been determined and the goal for this year is to get approval from Union Pacific Railroad for a crossing for the trail.

iii. City of Shakopee - Jackson Township AUAR

The City is preparing the Jackson Township Development Area Alternative Urban Areawide Review (AUAR) in response to increasing development interest in the area and at the request of the Metropolitan Council. A map is attached showing the boundaries of the AUAR study area within Jackson Township. The AUAR will evaluate the environmental impacts of two different development scenarios based on the City's 2030 and 2040 Future Land Use Plans.

As part of the early coordination process, consultants for the city are seeking input from stakeholder agencies on any known issues of concern or sensitive resources within or in close proximity to the AUAR study area. The LMRWD provided the consultant with GIS data regarding the Steep Slope Overlay Zone and the High Value Resource Areas.

iv. City of Burnsville - CenterPoint Energy Lyndale Valve Replacements Project

CenterPoint Energy Natural Gas Operations (CenterPoint Energy) is proposing to perform maintenance on existing natural gas pipelines and facilities at their Dakota Station in the City of Burnsville. This project is in one the LMRWD's High Value Resource Areas. The area of the project has been previously disturbed. It was confirmed that the project is outside wetlands and no dewatering is planned. A City of Burnsville Grading Permit will be obtained for the project.

v. City of Eden Prairie - C. H. Robinson

LMRWD Staff has been working with the Engineers for this project to determine if LMRWD standards are being met. Storm water management for this parcel is part of an overall management system developed as part of the Hennepin Village 2nd Addition. The current project is Phase 4 of the Eden Bluff Development. Initial Stormwater BMPs were constructed with the fully built out development in mind and met the rules at that time. Therefore, the new construction would not have to meet rate control or nutrient reduction requirements as long as it was consistent with the original design. The current development does have to meet the 1 inch of volume abstraction requirement and by doing so would meet the nutrient reduction requirements.

Engineers for the project have asked the LMRWD to concur with the City's position that the existing ponds were designed and built to accommodate the impervious surfaces of the proposed development, per the standards at that time, and that rate control requirements are met.. LMRWD staff is still working to confirm that this meets District standards and currently has no recommendation.

vi. City of Burnsville - Burnsville Sanitary Landfill

Burnsville Sanitary Landfill Inc has submitted an application for a Concept Stage Planned Unit Development Amendment to increase disposal capacity of the landfill adding up to 26 million cubic yards of municipal solid waste and raise the elevation of the landfill to a height of 1,082 feet above mean seal level or about 260' above the currently permitted height located at 2650 Cliff Road W.

Staff has reviewed the documents received and there are no initial comments on this plan. The LMRWD will have other opportunities to comment during the approval process. A new wetland delineation will have to be made. It is likely the District will have comments then. A public hearing before the Burnsville Planning Commission has been scheduled for February 25, 2019.

FYI, a proposal to remediate the Freeway Landfill is to remove material from Freeway Landfill and transfer it to the Burnsville Sanitary Landfill.

vii. City of Carver - Surface Water Management Plan (SWMP)

LMRWD staff has reviewed the Carver SWMP and recommends Board approval of the plan subject to conditions listed in the Technical Memorandum, which will be an attachment to Resolution 19-02. Both are attached for Board review and approval.

viii. City of Eden Prairie - Peterson Wetland Bank

No new information to report since last update

ix. City of Chanhassen - TH 101 Improvements

LMRWD staff has been meeting with project engineers (Kimley-Horn), the City and Riley/Purgatory/Bluff Creek Watershed District to address storm water management for the planned realignment of TH 101 between Pioneer Road and CSAH 61. The proposed realignment has the potential to impact Bluff Creek and steep slopes within the LMRWD Steep Slope Overlay Zone. There have been several slope failures near to the project area.

x. City of Savage - 12113 Lynn Avenue

No new information to report since last update

- xi. Cities of Richfield/Bloomington - TH 77 & 77th Street underpass**
No new information since last update
- xii. MPCA - MN River TSS TMDL - Sediment Strategy**
The MPCA has been working on the Sediment Reduction strategy and asked the LMRWD to review work it has done and the approach they intend to use for the next step.

LMRWD reviewed the information provided and staff comments are attached.
- xiii. City of Bloomington - MN Valley State Trail**
The City of Bloomington sent a Notice of Application for the Minnesota Valley State Trail, Bloomington Segment 1A, Wetland Replacement. The City deemed the Application as complete upon review of the BWSR Checklist. The project includes impacts to wetland within the Minnesota River Valley between Lyndale Ave. and 1.7 miles to the east. The impacts to wetlands result from the construction of a multi-use trail and have been previously reviewed for wetland boundaries in 2017 and 2018.

The City is planning a Technical Evaluation Panel (TEP) meeting in early March to review the application. The LMRWD is a member of the TEP.
- xiv. Hennepin County - CSAH 61/Flying Cloud Drive**
The December 29th inspection is linked to below. LMRWD staff planned to visit the February 4th.
- xv. MNDOT - I494/TH 5/TH 55 Mill & Overlay project**
The District received a request from the DNR for comments regarding an application for a culvert construction, repair or replacement in connection with this project. LMRWD staff reviewed the project and did not have any concerns. This is part of the reconfiguration of the storm water drainage for the I-494 Bridge that LMRWD staff previously reviewed and commented on.
- xvi. MNDOT - I35W Bridge Replacement**
No new information to report since last update
- xvii. MNDOT - I494 from TH169 to Minnesota River**
A meeting to discuss stormwater management plans for this project has been set for March 5th. LMRWD staff has reached out to the Nine Mile Creek Watershed District and the Richfield/Bloomington Water Management Organization to share concerns and look for opportunities to work together to improve stormwater management. A meeting is planned, but no date has been set.
- xviii. City of Shakopee - Amazon Fulfillment Center drainage**
The LMRWD received a Feasibility Study to Reroute Stormwater to Protect Historic Sites near the Amazon Distribution Center in Shakopee. The feasibility study is linked to below for Managers information. A stakeholder meeting is scheduled for February 20th.

The City applied for and received a Minnesota Historical and Cultural Heritage Grant to be used to protect the Historic site.
- xix. MAC/LMRWD/MCWD boundary realignment**
No new information to report since last update
- xx. Fort Snelling - Dominion Housing**
The LMRWD received the hydrology report and plan set for the proposed housing development. Staff reviewed the information received and requested additional information, which has been provided. This project is in an unincorporated area of Hennepin County, so LMRWD is the Local Governmental Unit (LGU) for this project. One issue that has come up with this project is the maintenance of the stormwater Best Management Practices (BMPs) that will be implemented. Staff is exploring options for maintenance and who will be the responsible party for long term BMP maintenance.

xxi. **USACOE/USFWS - Bass Ponds, Marsh & Wetland Habitat Rehabilitation and Enhancement Project (HREP)**

LMRWD staff reviewed the Feasibility Study and Integrated Environmental Assessment. Staff comments have been provided to the USACE and are attached.

Attachments

Jackson Township AUAR study area map and schedule

Resolution 19-02 - Approving the Surface Water Management Plan for the City of Carver

Carver SWMP Review

Metropolitan Council Carver SWMP Plan Review Letter

Sediment Reduction Strategy - Final MPCA Memos Review

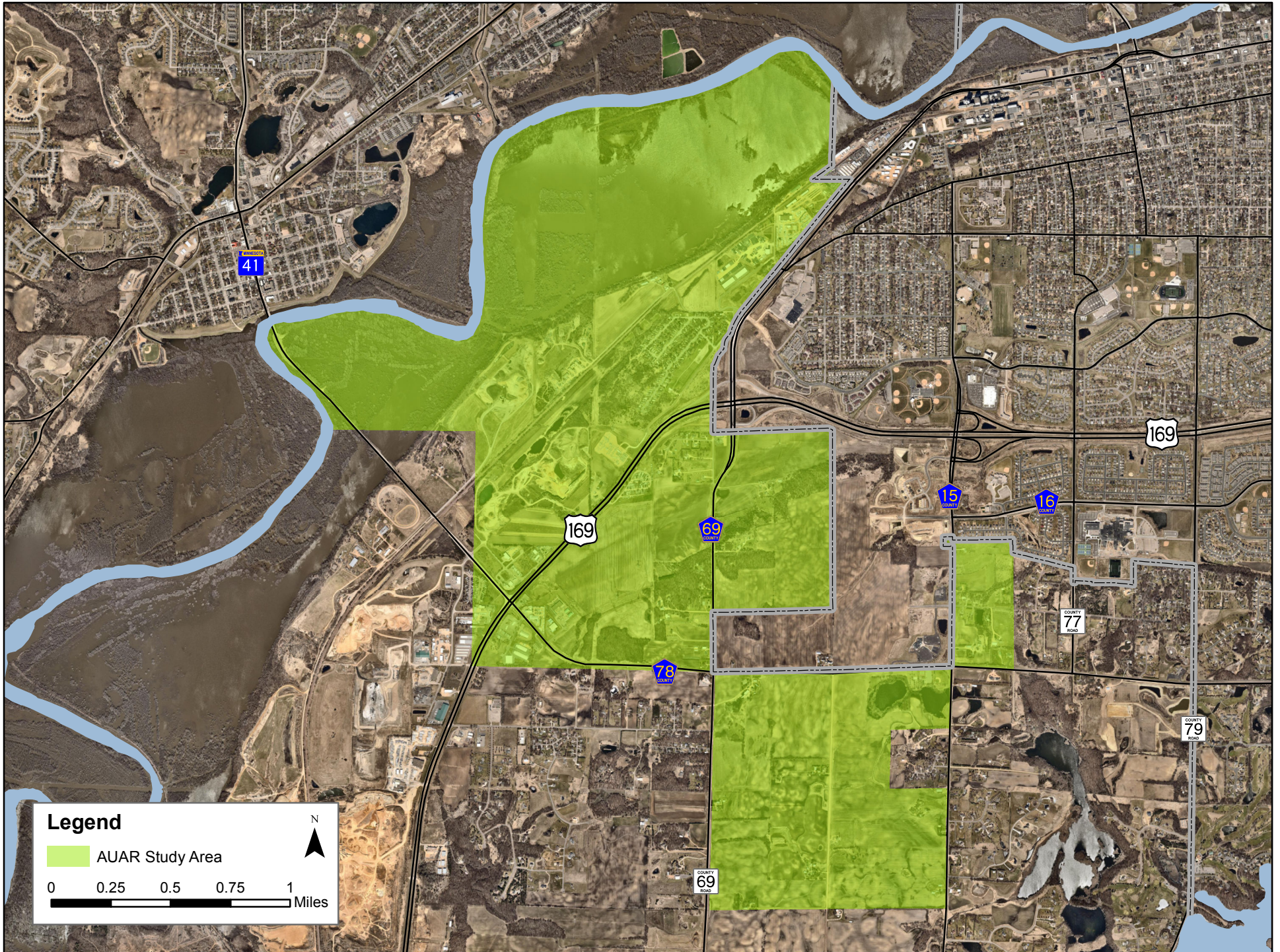
[CSAH 61/Flying Cloud Drive December 29, 2018 inspection report](#)

[Feasibility Study to Reroute Stormwater to Protect Historic Sites - Amazon Distribution Center](#)

LMRWD staff comments regarding the HREP Feasibility Study & Integrated Environmental Assessment

Recommended Action

Motion to adopt Resolution 19--02 - Approving the Surface Water Management Plan for the City of Carver



Legend

 AUAR Study Area

0 0.25 0.5 0.75 1 Miles



City of Shakopee AUAR Proposed Schedule

	Sept-Dec	January	Februaruy	March	April	May	June
Task 1: Project Management							
Bi-weekly check-ins	* *	* *	* *	* *	* *	* *	* *
Watershed meeting		*					
Traffic meeting		*					
Budget and invoice review		*		*	*	*	*
Task 2: AUAR Preparation							
Issue Agency Coordination Letters	*						
Agency Response		*					
Process Agency Response Information							
Conduct evaluation and draft AUAR document*							
City review AUAR							
SRF revise AUAR							
Task 3: Document Publication and Distribution							
Order the AUAR (City Council action)					*		
Release the draft AUAR and Mitigation Plan						*	
Comment Period							
Respond to Comments							
Release the final AUAR and Mitigation Plan							*
Adopt the AUAR (City Council action)							*

Manager _____ introduced the following resolution and moved its adoption:

LOWER MINNESOTA RIVER WATERSHED DISTRICT

RESOLUTION 19-02

RESOLUTION APPROVING THE SURFACE WATER MANAGEMENT PLAN FOR THE CITY OF CARVER

WHEREAS, the Lower Minnesota River Watershed District ("LMRWD") is a special purpose unit of government, established in accordance with Minnesota Statute 1013D; and

WHEREAS, On October 24, 2018, the LMRWD adopted a Watershed Management Plan (LMRWD Plan) under Minnesota Statutes 103B.231 subdivision 10, which as amended, details the existing physical environment, land use and development in the watershed and establishes a plan to manage water resources and regulate water resource use to improve water quality, prevent flooding and otherwise achieve goals of Minnesota Statutes Chapters 103B and 103D; and

WHEREAS, Minnesota Statute 103B.235 Local Water Management Plans (LWMPs) require that local government units having land use planning and regulatory responsibility for territory within the watershed shall prepare or cause to be prepared a local water management plan, capital improvement program and official controls as necessary to bring local water management into conformance with the LMRWD Plan. Local Plans must meet the requirements of the LMRWD Plan as well as the general requirement of Minnesota Statutes 103B.235 and Minnesota Rules Chapter 8410; and

WHEREAS, the City of Carver ("City") lies partially within the LMRWD and therefore must meet the requirements of the LMRWD Plan; and

WHEREAS, the City prepared and submitted its SWMP to the LMRWD on December 27, 2018; and

WHEREAS; the LMRWD has reviewed the plan and hereby determines that the plan has been prepared in accordance with the requirements of Minnesota Statutes, Section 103B.235 and Minnesota Rules 840.0160 and 8410.0170, and contains the requirements for local plans; and

WHEREAS, Minnesota Statutes, Section 103B.235, Subd, 3 authorizes the watershed district to review and approve local water management plans and to take other actions necessary to assure that the local plan is in conformance with the LMRWD's plan and standards set forth therein.

NOW, THEREFORE, BE IT RESOLVED by the Board of Managers of the LMRWD hereby approved the SWMP for the City of Carver, dated December 2018 with the conditional understanding that:

- 1) Update the agreement between the City and the LMRWD to implement the water management policies, standards and criteria of the LMRWD.

- 2) The City shall make corrections, amendments and additions to the SWMP as noted in the Metropolitan Council review letter and the Technical Memorandum prepared by Young Environmental Consulting Group, LLC, on behalf of the LMRWD, attached.
- 3) In accordance with Minnesota Statutes, Section 103B.235, Subd. 4, the Carver plan shall be adopted and implemented by the City within 120 days of this action, and the City shall amend its official controls in accordingly within 180 days.
- 4) Pursuant to Minnesota Statutes, Section 103B.235, Subd. 5 and consistent with the Lower Minnesota River Watershed Management Plan, the City shall submit amendments to the local water management plan to the LMRWD for review and approval in accordance with State Statutes and Minnesota Rules.
- 5) The LMRWD Managers believe that regulation is most properly performed by the local governmental unit (LGU), provided that regulation by the LGU is consistent with the goals and policies of the LMRWD Plan. The city of Carver shall implement water management policies, standards and criteria as least as strict as those in the LMRWD Plan, as amended, on all projects within the boundaries of the LMRWD in the City of Carver.
- 6) For properties that are split between the LMRWD and any other watershed management organization, the most restrictive water management policies, standards and criteria will be implemented.

Adopted by the Board of Managers of the Lower Minnesota River Watershed District this 20th day of February, 2019.

Jesse Hartmann, Vice President

ATTEST:

David L. Raby, Secretary

The motion for the adoption of the foregoing resolution was seconded by Manager _____ and upon a vote being taken thereon, the following voted in favor thereof: Hartmann and Frey; and the following voted against the same: None. Whereupon said resolution was declared passed and adopted, this 20th day of February, 2019, signed by the President and his signature attested by the Secretary/Treasurer

Technical Memorandum

To: Linda Loomis, Administrator

From: Tusha Devjani Barman, Staff Environmental Engineer
Della Schall Young, CPESC, PMP

Date: February 8, 2019

Re: City of Carver Surface Water Management Plan Review

The City of Carver Surface Water Management Plan (CSWMP) was reviewed on behalf of the Lower Minnesota River Watershed District (District). The review compared the CSWMP to the District's Watershed Management Plan (Plan) to better understand how the District and the City of Carver (City) can work together to protect, preserve, and manage water and natural resources within the District.

As it relates to protecting water and natural resources, the District's standard in Appendix K must be followed, or equivalent or stricter standards must be implemented. The City has opted to adopt Appendix K by reference and incorporate the appendix into the CSWMP as Appendix C. This approach is commendable.

Below are some additional comments on the CSWMP and the Metropolitan Council's comment.

Comment No.	CSWMP Page Number	CSWMP Text	Comment
1	8	<i>The City has an existing agreement with the Lower Minnesota River Watershed District (LMRWD) to implement the water management policies, standards, and criteria of the LMRWD. Therefore, the City holds the regulatory responsibility on behalf of the LMRWD for areas within the jurisdiction of the LMRWD.</i>	This agreement between the District and the City needs to be updated. The new agreement being proposed by the District will be a general permit. The District is in the process of developing its watershed management rules, and the general permit will be developed as part of

Comment No.	CSWMP Page Number	CSWMP Text	Comment
			that process.
2	9	<i>The LMRWD 64 mi² boundary includes the Minnesota River Valley from Carver, Minnesota, at the west, to the confluence with the Mississippi River at historic Fort Snelling, near the airport, at the east.</i>	The District is 80 square miles. Modifications to the boundary are being considered by the District.
3	9	<i>The District boundaries adjoin five other watershed districts, four water management organizations, and portions of fifteen communities in <u>four metropolitan counties</u>.</i>	The District boundaries include five counties, but only four of them are represented in the District's board.
4	9	<i>The LMRWD is charged with the following: 1. Protecting groundwater and surface water systems; 2. Improving water quality; 3. Establishing governmental policies to manage water resources; 4. Preventing erosion into surface waters 5. Working with the Army Corps of Engineers to maintain the river for commercial barge navigation; 6. Protecting fish and wildlife habitat; and 7. Affording recreational opportunities.</i>	This information is incorrect. See the District Plan on page 3-1, Section 3.1.1, for the District's mission.
5	10	<i>The current LMRWD Watershed Management Plan was <u>approved</u> by the watershed board on October 24, 2018.</i>	The District's current Plan was approved by the Board of Water and Soil Resources on September 26, 2018, and "adopted" by the watershed board on October 24, 2018.
6	14	<i>Requirements for Local Water Plans are identified in Section 5 of the LMRWD WMP.</i>	Requirements are also in Appendix K of the District's Plan.
7	14	<i>A. Lower Minnesota River Watershed District: Carver has an existing agreement with the Lower Minnesota River Watershed District to implement the water management policies, standards, and criteria of the LMRWD. A copy of this agreement is included in Appendix C.</i>	See comment #1.

Comment No.	CSWMP Page Number	CSWMP Text	Comment
8	18,19	<p><i>Table 6.3: Stormwater Issues and Possible Corrective Actions</i></p> <p><i>Stormwater Issues: Pond MR-P1 not currently sized to accommodate future development; Degraded wetlands within the study area, as identified in the 2002 Wetland Inventory and Assessment and Development activities occurring in areas beyond the City's trunk stormwater conveyance system</i></p>	The District is listed as a potential funding partner for the listed projects. However, those projects are not in the District's Plan. The City is encouraged to contact the District to discuss what would be needed to consider funding the projects.
9	20	<i>Policies of Floodplain Management</i>	How does the City propose to address compensatory storage for filling in the floodplain that causes a rise in water surface elevation?
10	21	<i>The City will administer the rules and regulations of the Lower Minnesota River Watershed District regarding water quality.</i>	The District requires no net increase from existing conditions in total phosphorus and total suspended solids to the receiving water bodies. This requirement should be included here, in Appendix B.
11	22	<i>At a minimum, peak flow rates after development shall not exceed predevelopment peak flow rates for the 2-year, 10-year, and 100-year recurrence interval precipitation events.</i>	The precipitation events must be for the 24-hour duration using Atlas 14 nested distribution.
12	23	<i>NPDES permit requirements</i>	Are these requirements for the Construction Stormwater Permit or the Municipal Separate Storm Sewer System permit?

Comment No.	CSWMP Page Number	CSWMP Text	Comment
13	23	<i>E. Wetlands</i>	The District's standards do not include wetland management. The District relies on the local government units, MN Department of Transportation, and US Army Corps of Engineers to administer the Wetland Conservation Act within its boundary. This wording should be modified to reflect the information provided.
14	27	<i>Table 8.1 City Code Implementation Actions</i>	Does the City have a schedule for when it will review the official controls? Please notify the District of the review and provide a summary of review findings.
15	30	<i>An existing agreement between the Lower Minnesota River Watershed District and the City of Carver is already in place giving the City the authority to implement the stormwater goals and policies of the LMRWD for the LMRWD, unless otherwise described in the agreement. A copy of this agreement is included in Appendix C.</i>	See comment #1.
16	32	<i>Table 8.3: Stormwater System Implementation Projects and Activities</i>	The City should include its capital improvement program for the next ten years, ongoing programming and capital projects, how the program would be funded, and provide expected revenue sources.
17	35	<i>J. Financing</i>	What are the City's revenue expectations?
18	<i>Appendix C</i>	<i>Stormwater Agreement between the City of Carver and the LMRWD</i>	See comment #1.

Comment No.	CSWMP Page Number	CSWMP Text	Comment
19	<i>Appendix E</i>	<i>LMRWD LWP Rules</i>	The appendix should be titled "LMRWD Local Water Plan Requirement and Standards." This District is developing its rules.

January 28, 2019

Linda Loomis, Administrator
Lower Minnesota River Watershed District
112 E. 5th Street, #102
Chaska, Minnesota 55318

RE: Carver Surface Water Management Plan
Metropolitan Council Reviews File No. 22165-1

Dear Mrs. Loomis:

The Metropolitan Council (Council) has completed its review of the City of Carver's (City) *Surface Water Management Plan* (Plan). The Plan was reviewed for consistency with Minnesota Rules Chapter 8410 and the Council's *2040 Water Resources Policy Plan*.

The review was based on the following characteristics specific to the city:

- Carver is a rural community located within the bluffs of the Minnesota River Valley.
- The City has experienced an influx of new development during the recent decades following expansion of the Twin Cities metropolitan area and Highway 212.
- The City is within the jurisdictional boundaries of two watershed districts: the Carver County Watershed Management Organization and the Lower Minnesota River Watershed District. The stormwater from the City drains into the Minnesota River through either Carver Creek or Spring Creek.
- The major water bodies within the City include a diverse mix of wetlands, Spring Creek, Carver Creek and their tributaries, and the Minnesota River.
- The primary water resource issues within the City are impairments of the Minnesota River, Carver Creek and Spring Creek for turbidity, nutrients, and bacteria.

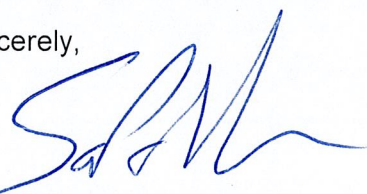
The Plan generally fulfils the requirements for a local water management plan and provides a good overall framework for the city of Carver to successfully manage its water resources.

However, in order to be fully consistent with Minnesota Rules Chapter 8410 and the Council's 2040 Policy, the Plan is required to include responsibility, schedule, and funding source for each implementation project and activity in Table 8.3. Similarly, the City's other priority implementation projects and programs should be also listed in tables that clearly show who is responsible for the project or program, when the project or program will be scheduled, and the estimated cost and funding source for project and program.

In addition to the required element listed above, Council staff recommends that the Plan include a table with areas and percentages of the existing and 2040 land uses in addition to the maps, which can help understand current and future land uses, and their changes over the planning period. The City should also consider adopting MPCA Minimal Impact Design Standards (MIDS) for new developments. MIDS is concerned with keeping the raindrop where it falls and mimicking natural hydrology in order to reduce flooding, minimize pollutants entering our waterbodies, and recharge groundwater.

Thank you for the opportunity to comment on the city's plan. If you have any questions about the Council's comments, please contact Hong Wang at 651-602-1079 or at hong.wang@metc.state.mn.us. After the city adopts the plan, a final copy should be forwarded to the Council for our records along with the dates on which the watersheds approved the plan and the city adopted the final plan.

Sincerely,



Sam Paske
Assistant General Manager, Environmental Services Division

cc: Brent Mareck, Manager, City of Carver
Paul Moline, Manager, Carver County WMO
Joshua Stier, Bolton & Menk, Inc.
Deb Barber, Metropolitan Council District 4
Angela Torres, Metropolitan Council Sector Representative
Peter Grafstrom, Metropolitan Council Community Relations Specialist
Raya Esmaeili, Metropolitan Council Referrals Coordinator
Hong Wang, Water Resources Section

Technical Memorandum

To: Linda Loomis, Administrator

From: Della Schall Young, CPESC, PMP

Date: February 9, 2019

Re: Sediment Reduction Strategy —Final Minnesota Pollution Control Agency Memos Review

The Lower Minnesota River Watershed District (District) reviewed the following memos as requested: Characterization of Flows that Create Elevated TSS (Total Suspended Solids) Concentrations in the Minnesota River Basin, Sediment Strategy Objective 2A; HSPF (Hydrological Simulation Program – FORTRAN) Model Analysis of Flow and Near Channel Sediment Losses in the Minnesota River Basin Sediment Strategy, Objective 2B; Interflow and Tile Flow Analysis for the Minnesota River Basin, Objective 2 Task C; Field-Scale Modeling Plan for Use in Multiple Work Orders; and Sediment Strategy Task 3 Scenarios. Dr. Lorin Hatch was retained to review the memos. His review focused on answering these questions: (1) Is the reasonableness of the science and outcomes sound? Technical memos 2A, 2B, and 2C were evaluated late last year; the present evaluation provides review of the final versions. (2) How do results documented in the memos pertain to potential impacts on the District?

Below is a summary of Dr. Hatch’s comments and his summary of the past and present problems facing the Minnesota River. The comments are presented in a manner consistent with the order in which the topics are presented in the report.

Memo #1: Characterization of Flows that Create Elevated TSS Concentrations in the Minnesota River Basin; Sediment Strategy Task 2A (Project 100-IWM-T36278-15); January 1, 2019. 68 pp. FINAL.

I have no substantial comments on the final version compared to my review of the draft document submitted November 20, 2018. The final version is scientifically sound and

serves as good background material for the overall sediment reduction strategy for the Minnesota River Basin.

Memo #2: HSPF Model Analysis of Flow and Near Channel Sediment Losses in the Minnesota River Basin; Sediment Strategy Objective 2B (Project 100-IWM-T36278-15); January 3, 2019. 41 pp. FINAL.

As with the memo above, I have no substantial comments on the final version compared to my review of the draft document submitted November 20, 2018.

Memo #3: Interflow and Tile Flow Analysis for the Minnesota River Basin; Sediment Strategy Objective 2 Task C (Project 100-IWM-T36278-15); January 2, 2019. 16 pp. FINAL.

As with the memos above, I have no substantial comments on the final version compared to my review of the draft document submitted November 20, 2018.

Conclusions for Memos #1, #2, and #3

There are no conclusions from the three memos that would inform the District's efforts with regard to significant sediment mitigation efforts. However, it was not the intent of the memos to do so. Rather, the memos provide an understanding of basin-level processes (e.g., large rivers/streams, streambank erosion, overall impact of tile drainage) that need to be accounted for when efforts are made to examine finer-scale sediment reduction assessments (e.g., field and/or small watershed scales) to take place in the near future.

Memo #4: Field-Scale Modeling Plan for Use in Multiple Work Orders (Project 100-IWM-T36278-15); October 12, 2018. 8 pp. FINAL.

The memo describes how the authors intend to utilize Agricultural Policy/Environmental eXtender (APEX) models to simulate baseline conditions without baseline sediment best management practices (BMPs) in the Minnesota River Basin. The APEX model is a field/small watershed scale model that provides modeling features lacking in the existing Minnesota River Basin HSPF models. Detailed agricultural management practices are simulated in the APEX model, which then feed into the HSPF model. One APEX model is proposed to be developed for each of the nine watersheds in the Minnesota River Basin. Such models will generate unit area outputs of flow, sediments, and nutrients for current conditions as well as BMP scenarios. Model inputs are adequately described.

APEX model simulations are to be run for the same time periods as the current HSPF models (1995–2012). Results are to be compared to the 11 Discovery Farms data.

Overall, the memo is scientifically sound and serves its purpose to describe how the APEX model will be utilized.

**Memo #5: Sediment Strategy Task 3 Scenarios (Project 100-IWM-T36278-15);
January 23, 2019. 23 pp. DRAFT.**

This memo describes the strategy to model six landscape BMPs in the Minnesota River Basin Hydrologic Unit Code (HUC) 8 watersheds of the Le Sueur River, the Cottonwood River, and the Middle Minnesota River. The BMPs include fall cover crops, riparian stream buffers, conservation tillage, treatment wetlands, incorporation of perennials into crop rotations, and ravine mitigation. The field scale APEX model (described above) will use the field scale to refine expected agricultural BMPs and their representation in the basin-scale HSPF models.

The bulk of the memo addresses the approach for each BMP, including expected performance, suitability for application to specific areas, and model assumptions for implementation. One area that is not addressed in the modeling work is applied fertilizers (besides manure). For each BMP the authors provide introductory material, expected performance (e.g., pollutant removal efficiencies), suitability, and model assumptions. The following section focuses on the model assumptions.

Model Assumptions

- 1. Fall Cover Crops:** An annual rye crop is planted right after the corn or soybean harvest; rye is simulated with the APEX model. The cover crop is killed prior to corn or soybean planting, and all residue is left in the field. Modeling will occur using both conventional and conservation tillage.
- 2. Riparian Buffers:** Assume that 100 percent of upland drainage area is treated by the buffer. The area within an applicable buffer width (50 or 16.5 feet) will be transferred from cropland to grassland use. The area of cropland within 108 feet of the buffer will have loads reduced according to the APEX model output; there will be no load reduction beyond 108 feet.
- 3. Conservation Tillage:** Note that conservation tillage is already included in the calibrated HSPF models. Conservation tillage fractions will be adjusted based on University of Minnesota satellite-based analyses. Assume conservation tillage will be highly adopted on suitable acres.
- 4. Treatment Wetlands:** Assume wetlands are placed such that each can treat 20 percent of the cropland in a given subbasin. Wetlands will be constructed to CP 526 requirements. Wetlands will receive surface and tile flows (represented as interflow), but not groundwater.

- 5. Perennials:** Switchgrass will be used on a six-year rotation, with annual biomass harvest and replanting every sixth year. Areas converted to ryegrass will begin with poorly drained soils and extend to better drained soils only when necessary to achieve the 20 percent conversion target.
- 6. Ravine Mitigation:** Note that ravines have already been simulated in the existing Le Sueur River HSPF model as a separate land use. For HUC 8 watersheds other than the Le Sueur, the models will assume a similar rate of sediment reduction can occur in the gully erosion output.

In sum, the approaches described in Memo #5 are scientifically sound. The proposed work is very exciting, representing a significant step toward understanding how the different BMPs can be utilized to potentially provide sediment and nutrient reduction in the Minnesota River Basin. Results from these modeling simulations may provide valuable input (e.g., for future capital improvement projects and/or landowner incentives) for the District where any of the six simulated BMPs can be implemented.

CC: Lorin Hatch, PhD



Young Environmental Consulting
Group, LLC

Technical Memorandum

To: Linda Loomis, Administrator

From: Sarah Duke Middleton, Water Resource Scientist
Della Schall Young, CPESC, PMP

Date: February 6, 2019

Re: USACE Bass Ponds, Marsh, and Wetland Habitat Rehabilitation and Enhancement Project (HREP) — Review of the Feasibility Study and Integrated Environmental Assessment

The United States Army Corps of Engineers (USACE) Feasibility Study and Integrated Environmental Assessment on the Bass Ponds, Marsh, and Wetland Habitat Rehabilitation and Enhancement Project (HREP) was reviewed, as requested, by the Lower Minnesota River Watershed District (District).

The feasibility study and integrated environmental assessment details the need for restoring a series of interconnected lakes, marshes, and wetlands within the Minnesota Valley National Wildlife Refuge, specifically Blue Lake, Fisher Lake, Rice Lake, and the Continental Grain Marsh. Climate change and land-use practices have altered the hydrology of this area, resulting in habitat degradation. As a result, the lakes retain several feet of water throughout the dry season instead of naturally drawing down. Rehabilitation and enhancement will increase the diversity and percent cover of desirable emergent and submergent aquatic plant species and provide quality habitats for migratory waterbirds.

The plan formation for the Bass Ponds HREP was conducted in accordance with *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (1983) and the *Planning Guidance Notebook* (ER 1105-2-100). Using these guidelines, the project team identified problems and opportunities, assessed existing conditions, and compiled a list of measures that could achieve the project objectives. The measures were developed into the following alternative plans.

1. No Action: This alternative acts as a baseline for the purpose of comparison and is required by the National Environmental Policy Act.

2. Water Level Management (WLM): This would entail the installation of structures at key points in the system, to enhance aquatic habitat through the regulation of water levels.
3. Habitat Dredging: This would increase water depth and improve winter conditions for centrarchids. This was primarily considered for Blue Lake (Rice and Fisher Lake have known shallow water depths), but bathymetry data found the lake to have predominately shallow water. Significant dredging would be needed for this measure to be effective. It also did not meet objectives for improving habitat and aquatic vegetation and was screened from further consideration.
4. Access Dredging: This would facilitate access to areas to construct project features or facilitate water flow to WLM structures.
5. Floodplain Forest Creation/Enhancement: This was screened from further consideration as there are no identified opportunities to create a floodplain forest restoration within the study area.

These options were reviewed at length, and a Tentatively Selected Plan (TSP) was chosen. The plan is tentative because it was selected and recommended by the USACE chief commander and United States Fish and Wildlife Service (USFWS) but still needs to be approved by the Mississippi Valley Division of the USACE prior to construction. The TSP meets all project objectives by restoring lake and marsh habitats through WLM. Proposed structures would be installed at key points in the lake chain, which would allow for manual adjustment of water levels. The TSP is 100 percent federally funded, with an estimated cost of \$5,129,000. The USFWS will be responsible for operation and maintenance.

USACE incorporated the following conditions to guide the alternatives development, also known as the plan formulation process. The conditions included but were not limited to: (1) avoid or minimize impacts to flood stages and navigation; (2) ensure construction measures are consistent with federal, state, and local laws; and (3) avoid impact to the adjacent trout stream, Eagle Creek, and cultural resources. The TSP, as outlined, appears to meet the established planning boundaries conditions.

As required, an environmental assessment of the existing conditions and the TSP were evaluated. Below is a summary of its findings.

- Short-term impacts during construction:
 - Excavation or dredging would increase turbidity. Best management practices to minimize impacts will be used. Minor impacts to geology and soils are expected. The replacement of existing features will have minor impacts on soils because they are being constructed within the same footprint as the old structure. Dredging channels near the control structure will remove accumulated soils while keeping native soils in place.

- Noise levels associated with heavy equipment will be present.
- Minor, temporary increases in airborne particulates are anticipated due to the construction equipment.
- Minor and temporary impacts on fish and wildlife species are anticipated. However, the long-term impacts of the project are positive for wildlife such as waterfowl, shorebirds, turtles, beavers, fish, muskrat, and other species that use the area.
- Water quality and aquatic resources may be impacted.
- Short-term regional benefit:
 - The TSP will provide employment opportunities.
- Long-term benefits:
 - The TSP will benefit aquatic vegetation by allowing the refuge to quickly remove floodwater and conduct drawdowns, which will increase the density and distribution of aquatic plant species and improve migratory bird habitats.
 - The yearly drawdowns outlined in the TSP will create a more robust native plant community. Invasive species are less likely to establish and spread when native species are abundant.
 - Recreational and aesthetic resources will improve as more native plant communities establish and wildlife populations increase.
 - The TSP will enhance over two thousand acres of lake and wetland, contributing 283 average annual habitat units over a fifty-year period. The proposed water control structures can be used to effectively manage water levels long-term, maintaining a high-quality wetland habitat.

The anticipated HREP Project schedule is:

- May 2019 — Acquiring construction approval by the Mississippi Valley Division USACE
- May – September 2019 — Plan development
- September 2019 — Award construction contract
- December 2019 — Commence construction
- Construction period — 2020 – 2021

Conclusions:

The HREP Project, as proposed, has objectives and outcomes that align with the District's mission and adopted strategies to provide high-quality wetland habitats and protect trout streams. The federal government is not obligated to comply with the District's requirements; however, as a valued partner, the District is encouraged to continue tracking the process of the project and to regularly monitor construction activities.