

December 1, 2022

Commissioners **and**
Technical Advisory Committee Members
Shingle Creek and West Mississippi
Watershed Management Commissions
Hennepin County, Minnesota

*The agenda and meeting packets are available on
the Commission's web site.*

<http://www.shinglecreek.org/minutes--meeting-packets.html> **and**

<http://www.shinglecreek.org/tac-meetings.html>

Dear Commissioners and Members:

Regular meetings of the Shingle Creek and West Mississippi Watershed Management Commissions will be held Thursday, December 8, 2022, in the Aspen Room at Plymouth Community Center, 14800 34th Avenue North, Plymouth, MN.

Lunch will be served at 12:00 noon and the meetings will convene concurrently at 12:45.

The Technical Advisory Committee (TAC) will meet at 11:00 a.m., prior to the regular meeting.

Please make your meal choice from the items below and email me at judie@jass.biz to confirm your attendance and your meal selection by **noon, Tuesday, December 6, 2022.**

Thank you.

Regards,

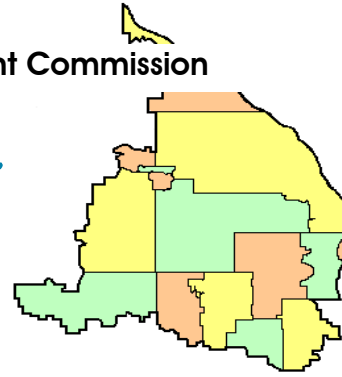
Judie A. Anderson
Administrator

cc: Alternate Commissioners Member Cites Troy Gilchrist TAC Members
Stantec Consulting Services BWSR MPCA HCEE

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Order your deli sandwich box lunch. Sandwiches come with lettuce, tomato and mayo. As an alternative you may specify your sandwich with **wheat bread or as an **unwich** (lettuce wrapped).**

- | | |
|--|--------------------------------|
| 1 Pepe – Ham and cheese | 2 Big John – Roast beef |
| 3 Totally Tuna – Tuna salad and cucumber | 4 Turkey Tom – Turkey |
| 5 Vito – salami, capocollo, cheese, onion, oil and vinegar, oregano-basil (no mayo) | |
| 6 The Veggie – double cheese, avocado spread, cucumber | |
| 14 Bootlegger Club – Roast beef and turkey | |



A meeting of the joint Technical Advisory Committee (TAC) of the Shingle Creek and West Mississippi Watershed Management Commissions is scheduled for **11:00 a.m., Thursday, December 8, 2022**, in the Aspen Room at the Plymouth Community Center.

A G E N D A

1. Call to Order.
 - a. Roll Call.
 - b. Approve Agenda.*
 - c. Approve Minutes of Last Meeting.*
2. Rules and Standards for Linear Projects.*
3. Boundary Update.
4. Highland Gables Cost Share Request.*
5. MPCA Climate Resiliency Grant.*
6. Other Business.
7. Next TAC meeting is scheduled for January 12, 2023, at ____.
8. Adjournment.

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**Technical Advisory Committee
MINUTES | November 10, 2022**

A meeting of the Technical Advisory Committee (TAC) of the Shingle Creek and West Mississippi Watershed Management Commissions was called to order by Chair Richard McCoy at 11:32 a.m., Thursday, November 10, 2022, in the Aspen Room, Plymouth Community Center, 14800 34th Avenue North, Plymouth, MN.

Present: James Soltis, Brooklyn Center; Mitchell Robinson, Brooklyn Park; Heather Nelson, Champlin; Mark Ray, Crystal; Katie Kowalczyk, Minneapolis; Nick Macklem, New Hope; Amy Riegel and Ben Scharenbroich, Plymouth; Richard McCoy and Mike Sorensen, Robbinsdale; Diane Spector, Todd Shoemaker, and Katie Kemmitt, Stantec; Kris Guentzel, Hennepin County Environment and Energy; and Judie Anderson, JASS. Not represented: Maple Grove and Osseo.

Also present: Andy Polzin, Plymouth, and Grady Bowles, Houston Engineering, and Henneh Kota and Paul Hudalla, Minneapolis, for Item III.

- I. Motion by Ray, second by Robinson to **approve the agenda.*** *Motion carried unanimously.*
- II. Motion by Ray, second by Riegel to **approve the minutes*** of the August 11, 2022, meeting. *Motion carried unanimously.*
- III. **Minneapolis Cost Share Request.***

A. Kowalczyk, Kota, Hudalla, and Bowles were in attendance to present a cost share request from the City of Minneapolis to the Shingle Creek Commission for improvements proposed adjacent to 46th Avenue and Shingle Creek. The proposed improvements would replace a failed and eroded outlet to Shingle Creek and incorporate green infrastructure to manage and convey runoff to the creek rather than through traditional pipes. The green infrastructure consists of two rain gardens, a dry swale, and a step pool system consisting of three pools discharging into the creek. The City requests the maximum cost-share amount of \$50,000.

The City prepared preliminary designs for two options with the estimated cost of the stormwater work at between \$151,000 (Option B) and \$163,000 (Option A). The higher cost of option A is because of incorporation of larger step-pools adjacent to Shingle Creek.

- B. Staff have reviewed the preliminary plans and note the following benefits of the project:
1. Replacing failed “gray” infrastructure (pipe) with the more natural aesthetic of green infrastructure.
 2. This is a “pilot project” for Minneapolis and may serve as an example for future outfall stabilization projects.
 3. Improving water quality (Table 1) for an area with no existing stormwater management.
 4. Adding green space for the surrounding community.

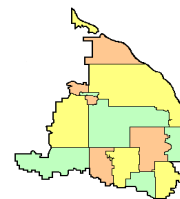


Table 1. Water quality benefits of the proposed project*

	Volume Captured (cf)	TSS Reduction (lb/yr)	TP Reduction (lb/yr)	Normalized Cost (\$/lb TP)
Proposed Green Infrastructure*	2,134	216	1.2	\$4,200-\$4,600

*Water quality benefits represent both Options A and B.

C. Staff recommend that the City address the following comments as the project proceeds to final design:

1. Document plunge pool stability:
 - a. Effect of Shingle Creek flows
 - b. Effect of pipe flows
2. Provide MIDS BMP parameters or MIDS file to confirm modeling corresponds to the design.
3. Conduct soil borings to verify design infiltration rates.
4. Provide pretreatment to ensure the functionality of the credited system.
5. Provide a reinforced EOF (emergency overflow) at the dog leg of swale for 100-yr event.
6. Provide a revegetation plan (native species recommended).
7. Verify that a public easement (or equivalent) is dedicated.
8. Execute and record an Operations and Maintenance Agreement prior to release of any funds.

[Nelson arrived 11:42 a.m.]

With the revisions recommended above, Staff recommends approval of this cost share application. If approved by the TAC and the Commission, the City would submit 90% design plans. The City will look at the velocities for a 100-year flow event to make sure the step pools are properly sized.

At January 1, 2022, the balance in the City Cost Share Fund was \$329,210.

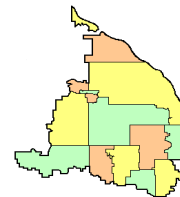
Motion by Ray, second by Robinson to recommend approval of this project. *Motion carried unanimously.*

IV. Linear Project Review Threshold.

New project review requirements are now in effect (as of October 1, 2022) for the Shingle Creek and West Mississippi Commissions. One of the changes is that linear projects that create or disturb one acre or more of impervious surface are now subject to Commission requirements. Under the previous rules, linear projects were subject to Commission requirements only if they created one acre or more of impervious surface.

Under the new requirement, most neighborhood street projects could come to the Commissions for review because they almost always disturb more than one acre. Staff recommends maintaining the threshold for Commission review – when a linear project creates more than one acre of new impervious surface. This clarification can be made to the Rules as a housekeeping update with no plan amendment required.

Discussion centered on two issues – the differentiation between “create” and “disturb,” and the impact of underlying soils.



Riegel recommended following MPCA guidance. It was also recommended that definitions be added to the rules; otherwise, they should remain as currently written.

This discussion will be continued at the December meeting.

V. Chloride Management Requirements for Project Applicants.*

A. The Shingle Creek and West Mississippi TAC and Commissions have a thorough understanding of how road salt (chloride) use for winter safety can negatively impact water bodies. Shingle Creek is impaired for chloride and its condition has not improved since the Shingle Creek Chloride TMDL was published. Road salt can contaminate drinking water, have negative impacts on aquatic organisms, and corrode infrastructure, among other impacts.

To help minimize sources of chloride in the watershed, the TAC and Commissions have been more frequently recommending to cities approval of development projects pending submittal of a chloride management plan from developers. The purpose of a chloride management plan is to ensure proper winter maintenance BMPs are used for developments in the watershed to minimize the amount of excess chloride applied to pavement and to reduce the amount of chloride that makes its way to water bodies in the watersheds.

B. There are some difficulties with requiring chloride management plans from project applicants. The entity submitting project plans for permitting often doesn't have a strong relationship with the entity who will ultimately be doing winter maintenance, making it difficult to ensure management plans get upheld and implemented. Winter maintenance crews are often contracted out especially for large developments. Requiring chloride management plans, however, may help increase awareness of chloride issues in the watershed and be an additional tool to educate people on the negative impacts of salt use.

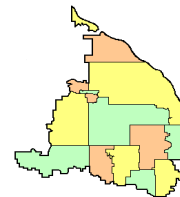
Staff have researched chloride management plan requirements from various cities and watersheds in the Metro Area to understand what is currently being done, what is working well, and what options exist for Shingle Creek and West Mississippi to require a chloride management plan with project applications. They reviewed chloride management requirements from Nine Mile Creek and Coon Creek Watershed Districts, Mississippi Watershed Management Organization, and the cities of Edina, Bloomington, and Plymouth, as well as the draft Winter Maintenance Management Plan templates created for the Hennepin County Chloride Initiative by Fortin Consulting (included in the meeting packet). Chloride management plans, as a requirement for development, are a relatively new idea and haven't been implemented in many places, so there was not much overall feedback from the watersheds and cities on how requiring chloride management plans have been going.

C. Based on the review described above, Staff propose four potential options for the Commissions to implement a chloride management requirement with project submittals ranging from 1 (easier to implement) to 3 (more difficult/resource intensive to implement):

1. Do not add a chloride management plan requirement and instead continue efforts on chloride education and outreach in the watersheds.

2. Require project applicants to name an individual or multiple individuals responsible for winter chloride management onsite.

3. Require project applicants to submit a Chloride Management Plan using the templates provided in the Winter Maintenance Management Plan created for the Hennepin County



Chloride Initiative by Fortin Consulting. Project applicants would use the calculator to choose which template to use: basic, intermediate, or detailed.

4. Add chloride management requirements to the Operations and Maintenance agreements between the site owner and the City.

Staff recommend Option 1, the Commission refrain from adding any additional requirements to project review submittals and continue to focus on chloride education and outreach in the watersheds.

The members concurred. This topic will be addressed as part of the “Low Salt No Salt” campaign next year and added to the 2023 Work Plan.

VI. MPCA Climate Resilience Grants.*

A. The Minnesota Pollution Control Agency (MPCA) is now taking applications for Planning Grants for the Stormwater, Wastewater, and Community Resilience program.* \$395,000 is available to support climate-planning projects in communities across Minnesota. This funding will help communities assess vulnerabilities and plan for the effects of Minnesota’s changing climate in three areas: (1) Improving stormwater resilience and reducing localized flood risk; (2) Improving the resilience of wastewater systems; and (3) Adapting community services, ordinances, and public spaces.

B. This was a new grant program in 2021, and the Commission approved submitting a grant application to use the Shingle Creek HUC8 model to estimate the potential impacts of future precipitation patterns. The application was not funded. Supposedly the DNR is currently doing some modeling for at least some parts of the West Mississippi watershed, but Staff have not seen it and can’t say whether it is suitable for such a modeling exercise.

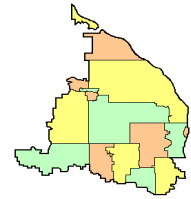
C. Staff recommend that Shingle Creek reapply this year using the same general work plan as last year. Last year the grant program funded grants to a few other WMOs and cities to undertake essentially the same activities:

1. Model and map midcentury precipitation scenarios to create projected flood inundation areas for the 1%+ 24-hour rainfall event and the 1%+ 10 day event. A ‘plus’ is a rainfall depth taken from the 90th percentile estimate for the given rainfall frequency. FEMA often evaluates not only the 1% storm event but also the 1%+ storm event as a way to provide perspective on the range of values one COULD expect in the 1% event. The State Climatology Office also suggests using the 90th percentile as a proxy for midcentury precipitation.

2. Identify potential future flooding risks in the watershed by reviewing known flooding areas, infrastructure, structures, and emergency vehicle routes in or in close proximity to predicted future hazardous flood conditions.

3. Develop policy recommendations for using the scenario data. For example, this modeling could be used to help the cities and county better understand how to properly design new infrastructure such as culverts, bridges, etc. that would be expected to have a mid-century useful life.

It should be noted that completing this type of resiliency modeling is called out in the Fourth Generation Plan as a priority implementation action. The cost of undertaking this work was estimated last year at just under \$25,000, with a grant request of about \$22,000 and a 10% local match of about \$2,500. Staff have not yet updated the estimate but believe it will be in that ballpark.



Applications are due January 12, 2023. If the TAC recommends and the Commission approves, pursuing this grant, Staff will bring a draft workplan and application to the Commission at the December 8, 2022, meeting. The level of effort to prepare the application and associated documents will be minimal since much of what was prepared last year can be reused.

Motion by Riegel, second by Kowalczyk to recommend proceeding with this application .
Motion carried unanimously.

VII. WBIF Update. Spector reported that the Shingle Creek and West Mississippi Convene Groups' recommendations have been submitted to the Board of Water and Soil Resources (BWSR), which is currently reviewing the associated work plans.

VIII. Other Business.

A. Riegel announced that the City of Plymouth will be hosting a Smart Salting Workshop on November 30.

B. The **next TAC meeting** is scheduled for 11:00, Thursday, December 8, 2022, prior to the regular Commission meetings.

C There being no further business, the TAC meeting was adjourned at 12:41 p.m.

Respectfully submitted,

A handwritten signature in black ink, reading "Judie A. Anderson".

Judie A. Anderson
Recording Secretary
JAA:tim

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To: Shingle Creek/West Mississippi WMC TAC

From: Todd Shoemaker PE

Date: November 30, 2022

Subject: Linear Project Review

**Recommended
Commission Action**

Approve updated Rule A (Definitions) and “Project Review Thresholds.”

INTRODUCTION

During the November 10, 2022 meetings, the TAC and Commissions discussed implementation of new thresholds for linear projects that became effective on October 1, 2022. TAC and Commission members agreed that review of linear projects would be conducted by the Commission for projects that create one or more acres of new impervious surface. Member cities would review projects that fully reconstructed one or more acres of new impervious surface. This is consistent with past implementation of Commission project reviews.

TAC members discussed in more depth, however, the definition of “fully reconstructed” and how the Commission standards may apply, specifically related to project disturbance area, disconnected project locations, mill and overlay projects, and full depth reclamation projects. Staff has reviewed Commission rules, definitions, and available guidance and notes the following considerations and recommendations.

CONSIDERATIONS

The “Project Review Thresholds” document serves as a “cheat sheet” for the Commission rules. That document had not been updated based on the new rules, and therefore, still referenced using disturbed area as the threshold for linear projects. An updated version is attached to this memo and now specifically identifies that linear project review thresholds are based on impervious area.

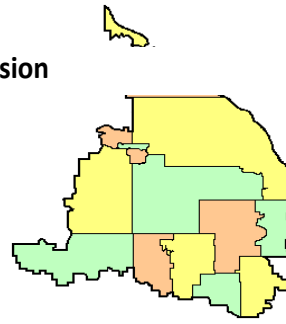
Staff also reviewed definitions stated in the October rules. We suggest a few refinements to improve clarity regarding linear projects: fully reconstructed impervious; full depth reclamation; and a figure to better show the differences between mill & overlay, full depth reclamation, and full reconstruction.

Another clarification requested by the TAC was regarding a project that may disturb several disconnected locations (i.e., bus stops for a new bus route or a linear utility project). Collectively, the

locations could exceed the Commission project review threshold but not individually. Staff added the Minnesota Pollution Control Agency's "Common Plan of Development" definition to Rule A (attached).

RECOMMENDATION

Staff recommends Commission approval to clarify the current versions of Rule A and "Project Review Thresholds" in accordance with the attached documents.



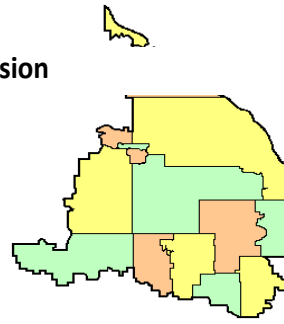
PROJECT REVIEW THRESHOLDS

Table 1: Project review site size and disturbance area thresholds for all land uses except detached single-family residential.

All Land Uses Except Detached Single-Family Residential			
Development Projects			
City Project Review (site size)			Commission Project Review (site size)
0.5 acres to- < 1 acre	≥ 1 acre to < 5 acres		≥5 acres
Abstract 1.1” runoff from all impervious surface	Meet Commission rate, volume, and water quality requirements for the entire site		Meet Commission rate, volume, and water quality requirements for the entire site
Redevelopment Projects			
City Project Review (disturbance area)			Commission Project Review (disturbance area)
0.5 acres to < 1 acre	≥ 1.0 acres to < 5 acre		≥5 acres
-Incorporate permanent water quality BMPs	<50% disturbed	Meet Commission rate, volume, and water quality and requirements for the disturbed area	Meet Commission rate, volume, and water quality requirements for the entire site
	≥50% disturbed	Meet Commission rate, volume, and water quality requirements for the entire site	
Linear Projects			
City Project Review			Commission Project Review
≥ 1.0 acres new and fully reconstructed impervious area if < 1.0 acres new impervious area OR ≥ 1.0 acres fully reconstructed impervious area			≥ 1.0 acres new impervious area
Meet Commission rate, volume, and water quality requirements for the new and/or fully reconstructed impervious area			Meet Commission rate, volume, and water quality requirements for the new and/or fully reconstructed impervious area

Table 2: Project review site size and disturbance area thresholds for detached single-family residential developments.

Detached Single-Family Residential Land Uses		
Development Projects		
City Project Review (site size)		Commission Project Review (site size)
≥ 1 acre to < 15 acres		≥15 acres
Meet Commission rate, volume, and water quality requirements for the entire site		Meet Commission rate, volume, and water quality requirements for the entire site
Redevelopment Projects		
City Project Review (disturbance size)		Commission Project Review (disturbance area)
≥ 1 acre to < 15 acres		≥15 acres
Redevelopment projects		Redevelopment projects
<50% disturbed	Meet Commission rate, volume, and water quality requirements for the disturbed area	Meet Commission rate, volume, and water quality requirements for the entire site
≥50% disturbed	Meet Commission rate, volume, and water quality requirements for the entire site	



PROJECT REVIEW THRESHOLDS

Other Project Review Thresholds:

1. ~~Linear projects that create or disturb one acre or more of impervious surface must meet Commission requirements.~~
- 2.1. Plans of any land development or individual site development adjacent to or within a lake, wetland, or a natural or altered watercourse as listed in the final inventory of Protected Waters and Wetlands for Hennepin County, as prepared by the DNR. Projects impacting wetlands where the Commission acts as LGU for Wetland Conservation Act administration must be reviewed by the respective Commission regardless of size.
- 3.2. Plans for any land development or site development within the 100-year floodplain as defined by the Flood Insurance Study for the member city.
- 4.3. Plans of any land development or site development regardless of size if such review is requested by a member city.

RULE A - DEFINITIONS

For the purposes of these Rules, unless the context otherwise requires, the following words and terms shall have the meanings set forth below. References in these Rules to specific sections of the Minnesota Statutes or Rules include amendments, revisions, or recodifications of such sections. The words “shall” and “must” are mandatory; the word “may” is permissive.

Abstraction. Removal of stormwater from runoff, by such methods as infiltration, evaporation, transpiration by vegetation, and capture and reuse, such as capturing runoff for use as irrigation water.

Agricultural Activity. The use of land to produce agronomic, horticultural or silvicultural crops, including nursery stock, sod, fruits, vegetables, flowers, cover crops, grains, Christmas trees, and grazing.

Alteration or Alter. When used in connection with public waters or wetlands, any activity that will change or diminish the course, current, or cross-section of public waters or wetlands.

Applicant. Any person or political subdivision that submits an application to the Commissions for a project review under these Rules.

Best Management Practices (BMPs). Techniques proven to be effective in controlling runoff, erosion and sedimentation including those documented in the Minnesota Construction Site Erosion and Sediment Control Planning Handbook (BWSR 1988), Protecting Water Quality in Urban Areas (MPCA 2000), and the Minnesota Stormwater Manual (MPCA 2005) as revised.

Biofiltration. Using living material to capture and/or biologically degrade or process pollutants prior to discharging stormwater, such as directing runoff through a vegetated buffer or to a rain garden or vegetated basin with an underdrain.

Bioretention. A terrestrial-based (upland, as opposed to wetland) water quality and water quantity control process. Bioretention employs a simplistic, site-integrated design that provides opportunity for runoff infiltration, filtration, storage and water uptake by vegetation.

Buffer Strip. An area of natural, unmaintained, vegetated ground cover abutting or surrounding a watercourse or wetland.

BWSR. The Minnesota Board of Water and Soil Resources.

Commission. The Shingle Creek or West Mississippi Watershed Management Commission, as applicable.

Commissioners. The Board of Commissioners of the Shingle Creek or West Mississippi Watershed Management Commissions.

Compensatory Storage. Excavated volume of material below the floodplain elevation required to offset floodplain fill.

Common Plan of Development. A common plan of development or sale means a contiguous area where multiple, separate and distinct land disturbing activities may be taking place at different times, on different schedules, under one proposed plan. A “common plan” may consist of non-contiguous separate projects. In this case, for discrete construction projects that are located within a larger common plan that are at least one fourth mile apart, each project (e.g., individual structure) can be treated as a separate plan of development or sale provided no land disturbing activity is proposed between the projects.

County. Hennepin County, Minnesota.

Dead Storage. The permanent pool volume of a water basin or the volume below the runout elevation of a water basin.

Detention Basin. Any natural or manmade depression for the temporary storage of runoff.

Development. The construction of any structure on or the subdivision of land.

Drain or Drainage. Any method for removing or diverting water from waterbodies, including excavation of an open ditch, installation of subsurface drainage tile, filling, diking, or pumping.

Erosion. The wearing away of the ground surface as a result of wind, flowing water, ice movement, or land disturbing activities.

Erosion and Sediment Control Plan. A plan of best management practices (BMPs) or equivalent measures designed to control runoff and erosion and to retain or control sediment on land during the period of land disturbing activities in accordance with the standards set forth in these Rules.

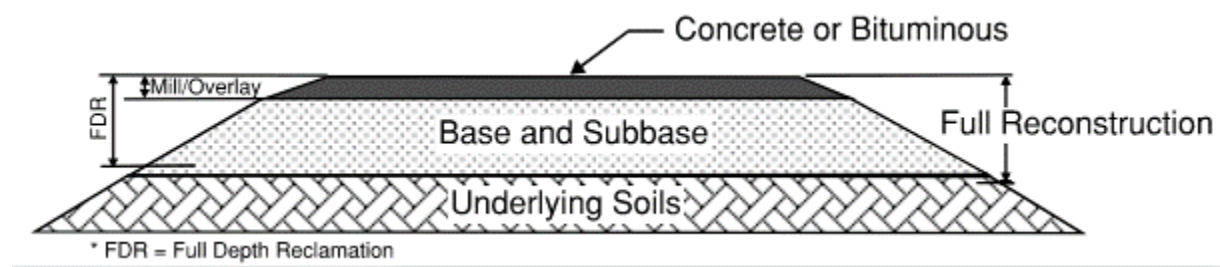
Excavation. The artificial removal of soil or other earth material.

Fill. The deposit of soil or other material by artificial means.

Filtration. A process by which stormwater runoff is captured, temporarily stored, and routed through a filter bed to improve water quality and slow down stormwater runoff.

Floodplain. The area adjacent to a waterbody that is inundated during a 100-year flood.

Fully Reconstructed Impervious. —Areas where impervious surfaces have been removed down to the underlying soils. Activities such as structure renovation, mill and overlay projects, [full depth reclamation projects](#), and other pavement rehabilitation projects that do not expose underlying soils beneath the structure, pavement, or activity are not considered fully reconstructed ([see figure below](#)). Maintenance activities such as catch basin repair/replacement, utility repair/replacement, pipe repair/replacement, lighting, and pedestrian ramp improvements are not considered fully reconstructed.



Full Depth Reclamation. [A rehabilitation method in which the full thickness of the asphalt pavement is pulverized and blended with a predetermined portion of underlying materials \(base and/or subbase\) to provide an upgraded, homogeneous material.](#)

Impaired Water. A waterbody that does not meet state water quality standards and that has been included on the MPCA Section 303(d) list of Impaired Waters of the state.

Impervious Surface. A surface compacted or covered with material so as to be highly resistant to infiltration by runoff. Impervious surface shall include roads, driveways and parking areas, whether or not paved, sidewalks greater than 3 feet wide, patios, tennis and basketball courts, swimming pools, covered decks and other structures. Open decks with joints at least ¼ inch wide, areas beneath overhangs less than 2 feet wide, and sidewalks 3 feet or less wide shall not constitute impervious surfaces under these Rules.

Infiltration. The passage of water into the ground through the soil.

Infiltration Area. Natural or constructed depression located in permeable soils that capture, store, and infiltrate the volume of stormwater runoff associated with a particular design event.

Interested Party. A person or political subdivision with an interest in the pending subject matter.

Land Disturbing Activity. [Any activity on property that results in a change or alteration in the existing ground cover \(both vegetative and non-vegetative\) an/or the existing soil topography.](#) Land disturbing activities include, but are not limited to: development, redevelopment, demolition, construction, reconstruction, clearing, grading, filling, stockpiling, excavation, and borrow pits. The use of land for agricultural activities shall not constitute a land disturbing activity under these Rules. Routine vegetation management, and pavement milling/overlay activities that

do not disturb the material beneath the pavement base will not be considered land disturbance or fully reconstructed impervious surface.

Landlocked Basin. A basin that is 1 acre or more in size and does not have a natural outlet at or below the 100-year flood elevation as determined by the 100-year, 10-day runoff event.

Linear project. Linear projects are projects with construction of new or fully reconstructed roads, trails, sidewalks, or rail lines that are not part of a common plan of development or sale.

Low Opening. The low opening is the lowest elevation of an enclosed area, such as a basement, that allows surface water to into the enclosed area. Examples of low openings, include but are not limited to doors and windows. Foundation wall cracks, drainage seepage through drain tile, and sewer backup elevations are not low openings.

Member City. Any city wholly or partly within the Commission's boundary that has executed the Joint Powers Agreement.

MnDOT. The Minnesota Department of Transportation.

MPCA. The Minnesota Pollution Control Agency.

Municipality. Any city wholly or partly within the Commission's boundary.

NPDES. National Pollutant Discharge Elimination System.

NRCS. The Natural Resource Conservation Service.

NURP. The Nationwide Urban Runoff Program developed by the Environmental Protection Agency to study stormwater runoff from urban development.

Ordinary High Water Level (OHW). The elevation delineating the highest water level which has been maintained for a sufficient period of time to leave evidence upon the landscape. The ordinary high-water level is commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial. For watercourses, the OHW level is the elevation of the top of the bank of the channel. For reservoirs and flowages, the OHW level is the operating elevation for the normal summer pool. For Public Waters and Public Waters Wetlands, the Minnesota Department of Natural Resources (DNR) determines the OHW.

Owner. The owner of a parcel of land or the purchaser under a contract for deed.

Parcel. A parcel of land designated by plat, metes, and bounds, registered land survey, auditor's subdivision, or other accepted means and separated from other parcels or portions by its designation.

Person. Any individual, trustee, partnership, unincorporated association, limited liability company or corporation.

Political Subdivision. A municipality, county or other political division, agency or subdivision of the state.

Project. A space, parcel, or parcels of real property owned by one or more than one person which is being or is capable of being developed or redeveloped as a single project.

Public Health and General Welfare. Defined in Minnesota Statutes, Section 103D.011, Subdivisions 23 and 24.

Public Waters. Any waters as defined in Minnesota Statutes, Section 103G.005, Subdivision 15.

Public Waters Wetland. Any wetland as defined in Minnesota Statutes, Section 103G.005, Subdivision 15a.

Redevelopment. Land-disturbing activity that creates or replaces impervious surface on a parcel that is fully or partially occupied by buildings and/or impervious surface except for Linear Transportation Projects.

Runoff. Rainfall, snowmelt or irrigation water flowing over the ground surface.

Sediment. Soil or other surficial material transported by surface water as a product of erosion.

Sedimentation. The process or action of depositing sediment.

Shoreland Protection Zone. Land located within a floodplain or within 1,000 feet of the OHW of a public water or public waters wetland.

Site. A space, parcel, or parcels of real property owned by one or more than one person which is being or is capable of being developed or redeveloped as a single project.

Standard. A required level of quantity, quality, or value.

Stormwater Management Plan. A plan for the permanent management and control of runoff prepared and implemented in accordance with the standards set forth in these Rules.

Structure. Anything manufactured, constructed, or erected which is normally attached to or positioned on land, including portable structures, earthen structures, roads, water and storage systems, drainage facilities and parking lots.

Subdivision or Subdivide. The separation of a parcel of land into two or more parcels.

TMDL. The Total Maximum Daily Load is the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. “TMDL” can also refer to a study that calculates that load, or to the allocation of that allowable load to its various sources. An Implementation Plan may be part of the TMDL study, or it may be a separate document that sets forth the steps that will be taken to achieve the TMDL.

Underlying Soils. Material located beneath the base and subbase layers of a road reconstruction project. Material located beneath the subbase could be native soils or fill material.

Volume Management. The retention and abstraction of a certain volume of stormwater runoff onsite through techniques such as infiltration, evapotranspiration, and capture and reuse.

Water Basin. An enclosed natural depression with definable banks capable of containing water that may be partly filled with public waters.

Waterbody. All water basins, watercourses and wetlands as defined in these Rules.

Watercourse. Any natural or improved stream, river, creek, ditch, channel, culvert, drain, gully, swale, or wash in which waters flow continuously or intermittently in a definite direction.

Water Resources Management Plan. The watershed management plan for the Commission adopted and implemented in accordance with Minnesota Statutes, Section 103B.231.

Watershed. Region draining to a specific watercourse or water basin.

Wetland. Land transitional between terrestrial and aquatic systems as defined in Minnesota Statutes, Section 103G.005, Subdivision 19.

Wetland Conservation Act (WCA). Minnesota Wetland Conservation Act of 1991 as amended.

To: Shingle Creek/West Mississippi WMC TAC & Commissions

From: Todd Shoemaker, PE

Date: November 30, 2022

Subject: SC/WM legal boundary revision update and contract amendment request

Requested Action

For discussion. Each Commission should by motion approve the contract amendment and allocate funds from their respective Cost Share Project accounts.

UPDATES

- Bassett Creek WMC issued their concurrence letter on November 16, 2022.
- An amendment to the Bassett Creek WMC letter may be necessary due to a forthcoming City of Robbinsdale project.
- Staff completed final boundary edits based on comments from the City of Champlin and the Elm Creek WMC.
- We expect the Elm Creek WMC will consider the boundary update at their December 14th meeting.
- We expect the Mississippi WMC will consider the boundary update at their January 10th meeting.
- After preparation by legal counsel, we will distribute concurrence letter templates to affected cities and request official action.
- After receipt of all watershed and municipal concurrence letters, the boundary update will be submitted to Hennepin County, so the County can update the watershed's special taxing district. Submittal by July 1st of an updated boundary map and a list of parcels within the new boundaries will ensure the update is included in the following year's taxes.

CONTRACT AMENDMENT

Updating the legal boundary has required more time than originally budgeted by staff. Therefore, we request the TAC and Commission consider authorizing an additional \$10,000 to complete the update.

At the June 2022 meeting, the SC and WM Commissions authorized a scope of work and budget of \$27,900, split equally between each Commission, for the legal boundary update. The approved budget included \$19,000 for the boundary analysis and reporting and was based on adjusting approximately 200-300 parcels. Upon completion of the analysis, though, the actual number of parcels evaluated was

between 1,000 and 1,500. Related to that number, we found more discrepancies than expected between the existing hydrologic boundary for the Shingle Creek and Elm Creek WMCs. These two factors, in turn, resulted in more time to evaluate “micro” features between hydrologic boundaries:

- Areas with storm sewer intersecting the defined hydrologic boundary,
- Discrepancies/gaps between neighboring hydrologic boundaries,
- Outlets not clearly identified,
- Pumped systems, and
- Multiple storm sewer lines with an unclear drainage direction.

Should the Commissions approve this amendment, staff recommend that the additional \$10,000 cost be split equally between the two watersheds and funds be reallocated from each Commission’s Cost Share Projects accounts, both of which are carrying balances well above the maximum recommended by the Cost Share Policy. (Shingle Creek has about \$330,000 and West Mississippi has about \$390,000).

To: Shingle Creek WMC TAC/Commissioners

From: Todd Shoemaker PE
Lucas Clapp, EIT

Date: December 1, 2022

Subject: Cost Share Request by Metro Blooms for the construction of two rain gardens and a natural playground at Highland Gables.

**Recommended
Commission Action**

Approval of cost-share request

Metro Blooms submitted a Partnership Cost Share Program application on behalf of Dwell Management Group for improvements at Highland Gables Apartments (Figure 1). The proposed improvements include two rain gardens and a playground constructed out of natural products (Figure 2). Metro Blooms requests a cost-share amount of \$49,992.67.

The cost of the nature playground is \$12,524.00 and includes the removal of 480 square feet of turf lawn for native plantings in the nature play area. Metro Blooms considers the nature play area integral for families and youth to be able to connect with nature and learn through play and realizes that 100% of the mulch, edging, and fabric don't pertain directly to a storm water BMP, but Metro Blooms is hoping the Commission will consider funding these items as part of broader goals of community engagement and education. The cost for the construction of the two raingardens and community engagement is \$37,468.67.

Stantec has reviewed the preliminary plans and notes the following benefits of the project:

- Improving water quality (Table 1) by capturing untreated impervious area.
- Community engagement and outreach.
- Project is in the "most vulnerable area" of the Human Vulnerability map in the Hennepin County Climate Change plan.

Table 1. Water quality benefits of the proposed project.

	Volume Captured (cf)	TSS Reduction (lb/yr)	TP Reduction (lb/yr)	Normalized Cost (\$/lb TP)
Two Raingardens*	2,000	140	0.74	\$1700**

*Double counted roof area was recalculated using MIDS

**Assumes cost-share is limited to raingarden construction and community engagement (\$37,468.67).

Stantec recommends approval with the following conditions:

1. Conduct soil borings to verify design infiltration rates.
2. Execute and record an Operations and Maintenance Agreement prior to release of any funds.

With the conditions noted above and the concurrence of the TAC, staff recommends approval of this cost share application with the amount to be determined based on TAC and Commission discussion. The balance in the Partnership Cost Share Fund is \$104,000.

Figure 1. Project Location



The site plan illustrates the layout of the 10000th Avenue development. Key features include:

- Buildings:** BUILDING 1 (5,300 SF) divided into PART A (3,300 SF to Raingarden D), PART B (2,300 SF to Raingarden C), and PART C (1,117 SF to Raingarden C). A COVERED GARAGE (9,117 SF to Raingarden C) is also shown.
- Landscaping and Green Spaces:**
 - Nature Playground:** A green area with a yellow path, labeled 'NEW NATURE PLAY' (1,409 SF).
 - Raingardens:** RAINGARDEN A (1,117 SF), RAINGARDEN B (1,117 SF), RAINGARDEN C (1,117 SF), RAINGARDEN D (1,117 SF), and RAINGARDEN E (1,117 SF).
 - Other Green Spaces:** NEW NATIVE PLANTING (265 SF), NEW ENGINEERED WOOD MULCH (1,000 SF), NEW PLASTIC PLAYGROUND EDGING (140 LF), NEW PLASTIC PLAYGROUND LOGGING (180 LF), and NEW ENGINEERED WOOD MULCH (1,000 SF).
- Parking and Driveways:** A PARKING LOT (12,144 SF to Raingarden A) and several DRIVEWAYS are shown.
- Other Features:** EX. CHILDREN'S PLAY STRUCTURE, EX. SEATING STRUCTURE, COVERED SEATING (888 SF), and EX. LAWN (10' x 10').
- Drainage:** Blue arrows indicate the flow of water from the buildings and parking areas towards the raingardens and other drainage features.

Legend: Drainage arrows

To: Shingle Creek/West Mississippi WMO Commissioners/TAC

From: Todd Shoemaker, PE
Diane Spector

Date: December 1, 2022

Subject: MPCA Climate Resilience Grants

**Recommended TAC/
Commission Action**

Discuss and suggest any revisions. TAC consider making a recommendation to the Shingle Creek Commission regarding submittal of the application. Commission consider authorizing staff to submit the application.

The MPCA is now taking applications for the Planning Grants for Stormwater, Wastewater, and Community Resilience program (attached). \$395,000 is available to support climate-planning projects in communities across Minnesota. This funding will help communities assess vulnerabilities and plan for the effects of Minnesota's changing climate in three areas:

- Improving stormwater resilience and reducing localized flood risk
- Improving the resilience of wastewater systems
- Adapting community services, ordinances, and public spaces

This was a new grant program in 2021, and the Commission approved submitting a grant application to use the Shingle Creek HUC8 model to estimate the potential impacts of future precipitation patterns. Unfortunately, it was not funded. In November you authorized development of an application for submittal this year using the same general work plan as last year. Last year the grant program did fund grants to a few other WMOs and cities to undertake essentially the same activities:

1. Model and map midcentury precipitation scenarios to create projected flood inundation areas for the 1%+ 24-hour rainfall event and the 1%+ 10 day event. A 'plus' is a rainfall depth taken from the 90th percentile estimate for the given rainfall frequency. FEMA often evaluates not only the 1% storm event but also the 1%+ storm event as a way to provide perspective on the range of values one COULD expect in the 1% event. The State Climatology Office also suggests using the 90th percentile as a proxy for midcentury precipitation.
2. Identify potential future flooding risks in the watershed by reviewing known flooding areas, infrastructure, structures, and emergency vehicle routes in or in close proximity to predicted future hazardous flood conditions.
3. Develop policy recommendations for using the scenario data. For example, this modeling could be used to help the cities and county better understand how to properly design new infrastructure such as culverts, bridges, etc. that would be expected to have a mid-century useful life.

One modification to last years' application added to the attached draft is some planning time to work with city Diversity and Inclusion (D & I) coordinators to conduct outreach to vulnerable communities

that may be more at risk from potential future flood risk. This grant prioritizes (but is not limited to) communities with higher concentrations of low-income residents, people of color and non-English speakers, including tribal communities. As you recall, much of the lower watershed including large parts of Minneapolis, Brooklyn Center, Brooklyn Park, Robbinsdale, Crystal, and New Hope are located in these MPCA-identified areas for Environmental Justice. Hopefully adding some more active outreach to better understand needs and impacts will be the oomph this application needs to be selected for funding.

Completing this type of resiliency modeling is called out in the Fourth Generation Plan as a priority implementation action. The cost of undertaking this work is estimated as \$29,710, with a grant request of \$26,200 and a local match of \$3,510. (A minimum 10% match is required.)

Applications are due January 12, 2023. Staff suggests the TAC recommend and the Commission approve submittal of the grant application.

Planning Grants for Stormwater,
Wastewater, and Community ResilienceApplication
FY 2023

Doc Type: Grant Application

Instructions: Read the complete *Request for Proposal (RFP)* and other associated documents before submitting this application.

Check the [SWIFT Supplier Portal](#) and the Minnesota Pollution Control Agency (MPCA) [Planning Grants for SWC Resilience](#) webpage for the most recent updates.

Applications are due no later than 4:00 p.m. Central Time (CT) on Thursday, January 12, 2023.

Submit application, workplan and budget (as Microsoft Word and Excel documents) per the instructions listed in Section 7 and 8 of the RFP.

1. Project information

Organization name: Shingle Creek Watershed Management Commission

Organization address: 3235 Fernbrook Lane N

City: Plymouth

State: MN

Zip code: 55447

County: Hennepin

Contact name: Judie Anderson

Title: Administrator

Phone: 763-553-1144

Email address: judie@jass.biz

Organization type: ☐ Tribal government

☒ Local/Regional government (plus select one below)

☐ City

☐ County

☐ Town/Township

☐ Soil and Water Conservation District

☒ Watershed Management Organization

☐ Watershed District

☐ Regional Development Commission

☐ Metropolitan Council of the Twin Cities
Region

Project focus area (choose one): ☒ Stormwater Resilience Planning

☐ Community Resilience Planning

☐ Wastewater Resilience Planning

Grant requested: \$ 26,210

+ Matching funds: \$ 3,510

= Total project cost: \$ 29,710

Yes No

1. Is applicant the sole source of matching funds for this project?

☒ ☐

If **no**, is supporting documentation of commitment for cash or in-kind matching funds from outside organizations involved in the project attached?

☐ ☐

If **no**, explain:

2. Is applicant in compliance with Minnesota's tax and environmental regulatory requirements?

☒ ☐

If **no**, explain:

Project Title: Shingle Creek Resiliency Flood Modeling and Mapping

2. Project Details

2. What is the purpose of this project and with whom will you share the results: *The purpose of this project is to identify areas and infrastructure in the Shingle Creek watershed in Hennepin County that could be vulnerable to future flooding due to changing precipitation patterns, to start a community conversation about those future risks, and to identify and prioritize actions to increase stormwater climate resiliency. The results will be shared with the nine cities having land in the watershed, other government and institutional stakeholders, and potentially impacted property owners.*

3. What is the need for this project, and how will the planning that is proposed make a meaningful difference to the community in preparing for Minnesota's changing climate, including human health impacts? *The Shingle Creek Watershed Management Commission in partnership with the Minnesota DNR recently updated flood mapping for the Shingle Creek HUC 8 watershed. The proposed project would build on that work and add a climate resilience dimension by undertaking additional modeling to map two additional precipitation scenarios to represent the current best estimate of midcentury precipitation depths. The current watershed model is used to regulate and manage flood risk in the watershed and to identify infrastructure in need of protection or replacement. While the 44.5 square mile watershed is almost entirely developed, the nine cities in the watershed are continuously updating and replacing public infrastructure such as roads and utilities as well as facilities such as parks and trails. These investments will have a useful life of 50 years or more. As changing precipitation patterns accelerate, to protect public investment and maximize that useful life it is valuable to project where future flood risks may influence engineering decisions made today. A culvert being replaced today may need to be upsized to accommodate tomorrow's 1% streamflow event. Identifying where those future impacts might be and where priority actions should be considered will allow public, institutional, and private stakeholders to properly plan for the future.*

4. How will information about current Minnesota climate trends and projections of future climate conditions affecting the general location of the project be used in the methodology of this planning project: *The applicant's engineer has been in contact with Dr. Kenny Blumenfeld of the State Climatology Office, who has provided the state's best advice for predicting midcentury precipitation. Based on this input we have selected two additional precipitation events to model to "bracket" the potential midcentury risk area.*

5. Using the [MPCA's criteria and interactive mapping tool](#) (recently updated on the MPCA website with data from a five-year 2016-2020 summary of the American Community Survey), will the geographic area specifically addressed by the proposed planning project include one or more MPCA identified environmental justice (EJ) areas of concern, or an environmental justice area? ☒ Yes ☐ No

If yes:

a. Will the planning to be undertaken by this project yield benefits for communities within these EJ areas of concern? ☒ Yes ☐ No

- i. If yes, describe these communities and how they will benefit: *The MPCA Interactive Environmental Justice Mapping Tool indicates that approximately half of the Shingle Creek watershed in the cities of north Minneapolis, Brooklyn Center, Brooklyn Park, Robbinsdale, Crystal, and New Hope fall within areas defined with high concentrations of poverty and or percentage of BIPOC residents. Properties in these communities tend to be older with a higher percentage of rentals. Infrastructure also tends to be older and originally designed to convey only the 1-2 year rain event whereas newer suburbs design to at least the 10 year event. This means increasingly intense precipitation will put those older communities at higher risk of critical infrastructure and private property flooding. Identifying those areas of increased risk well in advance of that change will provide the communities with a head start at planning and being proactive rather than reactive.*
 - ii. If yes, describe how the planning completed for this project will address concerns about equitable resilience for these communities compared with others within the geographic area covered by the project: *As noted above, the areas of EJ concern are often older with less resilient infrastructure compared to areas within the same watershed that may have more recently developed. Identifying those areas of increased risk well in advance of that change will provide the communities with a head start at planning and being proactive rather than reactive.*
 - b. Will these communities be provided the opportunity to have a voice in decision-making through substantive engagement as part of the planning completed for this project? ☒ Yes ☐ No
If yes, describe specifically how this will be done; if no, explain why not: *Several of the cities that are members of the joint powers WMO have D & I coordinators, and we will rely on their expertise and experience to reach out to affected EJ communities in a way that they have found works best within their communities.*
6. What are the potential barriers or challenges for this planning project, and how will they be addressed? *We do not foresee and significant barriers.*
 7. How will this planning project result in assignment of responsibility for follow-up action(s) to increase local resilience: *One of the deliverables is a prioritized list of potential actions with an assignment of responsibility. The Shingle Creek Watershed Commission is a Joint Powers Organization comprised of and driven by nine member communities. This group is accustomed to joint planning and have worked together successfully on a number of surface water management projects. The Commission recently developed its Fourth Generation Watershed Management Plan, which establishes four priorities for 2023-2032, including:*
 - **Engage and educate.** *Expand the public education and outreach program to reach more stakeholders, including vulnerable communities and historically underrepresented groups.*
 - **Develop climate resiliency and sustainability.** *Anticipate and proactively work to understand and minimize adverse impacts from changing environmental and climate conditions.*
 8. How will this project position a tribal/local government to pursue funding as needed to do follow-up implementation of the resilience project(s) for which planning was completed: *The outcome is a prioritized list of the most cost effective actions that could be taken, assuring funders that the actions proposed would have the biggest and most effective impact and support of stakeholders.*

3. Experience and qualifications

1. Describe **applicant's** experience and qualifications related to the applicant's role in the proposed planning project: *The Shingle Creek Watershed Management Commission has an ongoing contract with a consulting engineer to provide technical services as necessary, including serving as the Watershed Engineer as well as other services. Stantec Consulting Services, and formerly Wenck Associates, now part of Stantec, completed the HUC-8 EPA SWMM model update for the Shingle Creek watershed as well as some other watersheds in the Metro Area. Hydrologic and hydraulic*

modeling is a core service provided by staff in Stantec's Twin Cities offices. Several professional engineers in the local Water Resources group are Certified Floodplain Managers or are in the process of earning that certification. The project team are very familiar with the Shingle Creek watershed and have served that watershed for nearly 20 years. The proposed project manager is Todd Shoemaker, PE, CFM with lead modeler Erik Megow, PE, who completed the HUC-8 model update. Other modelers and GIS professionals will assist with the work.

2. Will anyone outside your organization be responsible for work performed? ☐ Yes ☒ No

If yes, provide name of organization(s) and contact information, experience, and qualifications related to the proposed project, and describe the role of the outside organization(s) in the project:

3. Provide detailed information about the qualifications and experience – including with similar projects – of all the specific people who will work on this project, both within the applicant organization and from outside organization(s):

Todd Shoemaker, PE, CFM. Mr. Shoemaker is the Watershed Engineer for Shingle Creek and West Mississippi and has nearly 20 years of experience in water resources and environmental engineering. His water resources expertise includes watershed and stormwater management, hydrologic/hydraulic and water quality computer modeling, floodplain management and regulation, wetland restoration and permitting, as well as streambank stabilization.

- **Shingle Creek Watershed Commission.** Used the updated EPA SWMM HUC8 model to test various scenarios evaluating emergency pumping options from a pond system and a lake with no natural outlet to develop an emergency pumping plan that minimized lake level impacts on a downstream receiving water.
- **City of Dubuque, IA.** Mr. Shoemaker developed a 600-acre hydrology and hydraulics model using XP-SWMM to investigate flooding of a land-locked basin. He used 1D and 2D elements of the model to simulate surface flow into and out of the land-locked basin, which was used to show neighbors the source of flooding and where water went when it overflowed.
- **City of Davenport, IA.** Developed a 65-square mile hydrology and hydraulics model using the EPA SWMM computer model to predict high water levels, flow rates, and velocities for current and anticipated future land use conditions. The model was used to identify stream reaches with high erosion potential and may serve as an update to the City's Flood Insurance Rate Map produced by FEMA.
- **Coon Creek Watershed District (CCWD).** Mr. Shoemaker worked with GIS staff to update the existing CCWD HydroCAD model subwatershed maps and integrated the new GIS maps with an XP-SWMM model. The XP-SWMM model allows the CCWD to more accurately predict the high water elevations due to additional capabilities of XP-SWMM compared to HydroCAD.

Erik Megow, PE. Erik is a Water Resources Engineer with over twelve years of experience as a consulting engineer. His primary expertise is stormwater best management practice design, regulatory review, hydraulic and hydrology modeling, stream restoration and stabilization design, floodplain analysis, stormwater management, and surface water mixing zone modeling. Erik has experience and is proficient using XP-SWMM, PC-SWMM, EPA-SWMM, HydroCAD, HEC-RAS, HY8, CORMIX, P8, MIDS, Qual2k, ArcMap (GIS), & ArcGIS Pro.

- **Shingle Creek Watershed Commission.** Converted the Commission's existing XP SWMM model to EPA SWMM and completed the required HUC-8 flood risk assessment update.
- **Elm Creek Watershed Commission.** Revised the Commission's draft HUC8 model to better reflect current conditions and improve calibration and completed the required HUC-8 flood risk assessment update.
- **Minnehaha Creek Watershed District.** Converted the Commission's existing XP SWMM model to EPA SWMM and completed the required HUC-8 flood risk assessment update.

Planning Grants for Stormwater, Wastewater, and Community Resilience Budget

Doc Type: Grant Application

			I.	II.	III.	IV.	V.
Cost category	Cost (\$/unit)	Quantity (Qty/Unit)	Grant funds	Budgeted cash match	Budgeted in-kind match	Total budgeted match (II + III)	Total budget (I + IV)

Task 1 of 3:

Task 1: Model Scenarios and Mapping								
Project Manager	\$220.00	hour	2	hour	\$440.00		\$0.00	\$440.00
Engineer	\$178.00	hour	8	hour	\$1,424.00		\$0.00	\$1,424.00
Modeler	\$145.00	hour	32	hour	\$4,640.00		\$0.00	\$4,640.00
GIS	\$145.00	hour	40	hour	\$5,800.00		\$0.00	\$5,800.00
							\$0.00	\$0.00
Total 1a					\$12,304.00	\$0.00	\$0.00	\$12,304.00
Task 1 - Total					\$12,304.00	\$0.00	\$0.00	\$12,304.00

Task 2 of 3: Vulnerability and Risk Assessment

Subtask 2a: Identification of At-Risk Infrastructure								
Project Manager	\$220.00	hour	4	hour	\$880.00		\$0.00	\$880.00
Engineer	\$178.00	hour	8	hour	\$1,424.00		\$0.00	\$1,424.00
Modeler	\$145.00	hour	2	hour	\$290.00		\$0.00	\$290.00
Field Tech	\$139.00	hour	12	hour	\$1,668.00		\$0.00	\$1,668.00
							\$0.00	\$0.00
Total 2a					\$4,262.00	\$0.00	\$0.00	\$4,262.00
Subtask 2b: Prioritizing Future Flood Hazard Mitigation Needs								
Project Manager	\$220.00	hour	20	hour	\$4,400.00		\$0.00	\$4,400.00
Engineer	\$178.00	hour	16	hour	\$2,848.00		\$0.00	\$2,848.00
Modeler	\$145.00	hour	4	hour	\$580.00		\$0.00	\$580.00
Planner	\$195.00	hour	16	hour		\$3,120.00	\$3,120.00	\$3,120.00
							\$0.00	\$0.00
Total 2b					\$7,828.00	\$3,120.00	\$0.00	\$10,948.00
Task 2 - Total					\$12,090.00	\$3,120.00	\$0.00	\$15,210.00

Task 3 of 3: Final Reporting

Task 3: Final Report and Project Deliverables								

Cost category	Cost (\$/unit)		Quantity (Qty/Unit)		Grant funds	Budgeted cash match	Budgeted in-kind match	Total budgeted match (II + III)	Total budget (I + IV)
Engineer	\$178.00	hour	2	hour	\$356.00			\$0.00	\$356.00
Modeler	\$145.00	hour	8	hour	\$1,160.00			\$0.00	\$1,160.00
GIS	\$145.00	hour	2	hour	\$290.00			\$0.00	\$290.00
Planner	\$195.00	hour	2	hour		\$390.00		\$390.00	\$390.00
								\$0.00	\$0.00
Total 3a					\$1,806.00	\$390.00	\$0.00	\$390.00	\$2,196.00
Task 3 - Total					\$1,806.00	\$390.00	\$0.00	\$390.00	\$2,196.00

Totals					\$26,200.00	\$3,510.00	\$0.00	\$3,510.00	\$29,710.00
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Planning Grants for Stormwater, Wastewater, and Community Resilience

Project workplan

Doc Type: Grant Application

Project title:

Shingle Creek Resiliency Flood Modeling and Mapping

Statement of project details

The purpose of this project is to identify areas and infrastructure in the Shingle Creek Watershed that could be vulnerable to future flooding due to changing precipitation patterns, to start a community conversation about those future risks, and to identify and prioritize actions to increase stormwater climate resiliency.

Goal statement, project deliverable(s), tasks, and subtasks

Goal statement: The goal of this project is to develop hydrologic and hydraulic tools using the latest data and midcentury precipitation scenarios from the State Climatologist's Office to identify public, institutional, and private infrastructure that may be vulnerable to future flooding, to help the cities in the watershed and other stakeholders effectively plan, prioritize, and protect critical infrastructure before those issues occur.

Project deliverables: Updated flood modeling using the latest models and topographic data and maps showing potential future vulnerabilities for each of the proposed precipitation scenarios. A list of critical areas needing updated planning and design standards and/or infrastructure improvements to increase resilience and a prioritized plan of action.

Task 1 of 3: Model Scenarios and Mapping

The Shingle Creek HUC-8 watershed in Hennepin County has updated hydrologic/hydraulic models and preliminary flood hazard maps that reflect the most up to date conditions and Atlas 14 precipitation depths. While these tools can be used to assess current flood risk, they are backward-looking, using past precipitation records to attempt to predict future conditions. This task is using those H & H tools to undertake resiliency modeling and mapping to plan for future precipitation scenarios. Planning for pre-hazard mitigation projects will reduce long term flood associated costs along with providing a safer and more enjoyable environment for residents and property owners. The deliverables for this task include updated flood modeling and maps showing potential future flooding vulnerable areas for each of the proposed precipitation scenarios.

Subtask 1: Midcentury Flood Scenario Modeling and Mapping

Brief description of activities involved: Hydrologic and hydraulic modeling and projected flood inundation areas mapping for the 1% and 0.2% rainfall events from the EPA SWMM model have been recently updated for the Shingle Creek HUC-8 watershed. Atlas 14 rainfall depths are expressed as a range, with the commonly used "1%" and "0.2%" events actually the midpoint of that range of precipitation depths. This task is modeling and mapping midcentury precipitation scenarios to create projected flood inundation areas for the "1%+" 24-hour rainfall event and for the "1%+" 10-day event. A "plus" indicates a rainfall depth taken from the 90th percentile estimate for the given rainfall frequency. FEMA often evaluates Special Flood Hazard Areas for not only the 1% storm event but also for a 1%+ storm event as a way to provide perspective on the range of values one COULD expect in the 1% event. The State Climatology Office also suggests using the 90th percentile as a proxy for midcentury precipitation when planning and designing long-lived transportation projects. This is how resiliency and risk will be evaluated for this project – a range of values rather than just one precipitation depth point. The HUC8 modeling determined that the 10-day snowmelt event is the critical event for Shingle Creek, so modeling the 10-day+ event will help to bracket the future risk.

Timeframe: Project Inception (assumed April 2023) – August 2023

Name and Title of person(s) responsible: Consulting engineers – Todd Shoemaker, P.E. Watershed Engineer; watershed Technical Advisory Committee (TAC)

Task 2 of 3: Vulnerability and Risk Assessment

This task is the review of the flood mapping results with community stakeholders to identify and inventory potential infrastructure impacts and other vulnerabilities and risks and to discuss potential future actions by cities and other stakeholders and a preliminary plan of action. The deliverable for this task is a prioritized list of critical areas that would benefit from infrastructure improvements or further planning to increase resilience.

Subtask 2a: Identification of At-Risk Infrastructure

Brief description of activities involved: The updated flood maps for each of the four midcentury precipitation scenarios (1% and 0.2% unchanged; 1%+ 24-hour and 1%+ 10 day event) will be the starting point for identifying potential future vulnerabilities and flooding risks in the watershed. Critical infrastructure, structures, and emergency vehicle routes will be added to the maps in GIS. This will reveal where there are facilities in or in close proximity to hazardous flood conditions. The watershed Technical Advisory Committee (TAC), which is comprised of engineering and water resources professionals from each of the nine cities in the watershed, will also contribute information regarding known flooding areas in their communities. Where necessary, field surveys will ground truth this data. Where structures are potentially impacted, low floor elevations will be surveyed.

Timeframe: August 2023 – December 2023

Name and Title of person(s) responsible: Consulting engineers – Todd Shoemaker, P.E. Watershed Engineer; watershed TAC, city staff

Subtask 2b: Prioritizing Future Flood Hazard Mitigation Needs

Brief description of activities involved: This task is the identification of structural and nonstructural actions the Watershed Commission and other stakeholders could take. These actions might include options such as floodproofing or relocation of critical infrastructure, stream restoration and stabilization, modifications to future land use planning or zoning, or sizing information for future culvert, bridge opening, or other infrastructure updates. In this task we will also work with city D & I coordinators to undertake outreach to vulnerable communities that might be disproportionately impacted by that future flood risk to better understand their needs, concerns, and options. The final step is developing policy and technical guidance for the cities and Watershed Commission to guide improvement actions, community outreach needs, and development or redevelopment in those potential future higher risk areas. These actions will be prioritized (for example: immediate need, 5-15 years out, 20-30 years out), and responsible party(ies) and funding sources identified.

Timeframe: October 2023 – April 2024

Name and Title of person(s) responsible: Consulting engineers – Todd Shoemaker, P.E. Watershed Engineer; watershed TAC, city staff

Task 3 of 3: Final Report and Project Deliverables

Subtask 3: Final Grant Report and Submit Project Deliverables

Brief description of activities involved: Prepare a consultant's report detailing the modeling conducted, how future precipitation was incorporated into the model, and conclusions and recommendations. Prepare a final grant project report using the MPCA template approximately one month prior to the end of the grant agreement or at completion of the project, whichever occurs first. Respond promptly to any requests by the MPCA authorized representative for additional information and/or corrections to the report. Provide electronic files of all project deliverables to the MPCA authorized representative prior to the end of the grant agreement on June 30, 2024, or at the completion of the project, whichever occurs first.

Timeframe: May – June 2024

Name and Title of person(s) responsible: Consulting engineers – Todd Shoemaker, P.E. Watershed Engineer