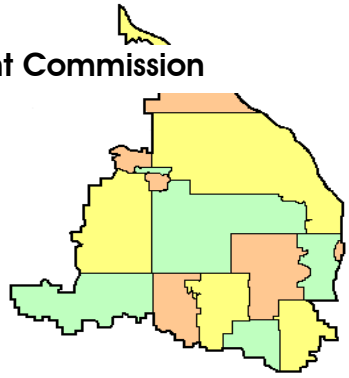
item 01

Shingle Creek Watershed Management Commission

West Mississippi Watershed Management Commission



3235 Fernbrook Lane N • Plymouth, MN 55447
Tel: 763.553.1144 • Fax: 763.553.9326
Email: judie@jass.biz • Website: www.shinglecreek.org

March 1, 2019

Commissioners
Shingle Creek and West Mississippi
Watershed Management Commissions
Hennepin County, Minnesota

The agenda and meeting packet are available to all interested parties on the Commission's website at http://www.shinglecreek.org/minutes--meeting-packets.html

Dear Commissioners:

Regular meetings of the Shingle Creek and West Mississippi Watershed Management Commissions will be held **Thursday, March 14, 2019,** at Edinburgh USA, 8700 Edinbrook Crossing, Brooklyn Park, MN. Lunch will be served at 12:00 noon and the meetings will convene concurrently at 12:45.

The Technical Advisory Committee (TAC) will convene at 11:30 am, prior to the regular meeting. Agenda will include the Cost Share applications for 1) Autumn Ridge Phase II and 2) the Speed Thru Carwash project.

Please email me at judie@jass.biz to confirm whether you or your Alternate will be attending the meeting.

Your meal choices are:

_____ Mango Chicken Salad, Bibb Lettuce, Grape Tomatoes, Cucumber, Mint, Scallion, Creamy Citrus Dressing
_____ Dressing on the side

_____ Roast Beef Sandwich, Caramelized Onions, Mushrooms, Tomato, Baby Kale, Horseradish Sauce, Focaccia

_____ Grilled Sirloin, Brown Rice, Oyster Mushrooms, Watercress, Miso Vinaigrette

_____ I will be attending but DO NOT want a meal.

_____ I will not be attending the regular meeting.

We must make final reservations by **noon, Wednesday, March 6, 2019.** Please make a reservation, even if you are not requesting a meal, so we can arrange for sufficient seating and meeting materials. Thank you.

Regards,

Judie A. Anderson
Administrator

cc: Alternate Commissioners, Metropolitan Council, Member Cites, MPCA, Troy Gilchrist, DNR, TAC Members, Wenck Associates

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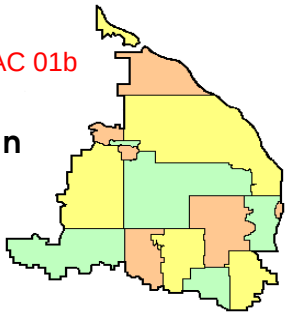
item 01b and TAC 01b

Shingle Creek Watershed Management Commission

West Mississippi Watershed Management Commission



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A combined regular meeting of the Shingle Creek and West Mississippi Watershed Management Commissions will be convened on Thursday, March 14, 2019, at 12:45 p.m. at Edinburgh USA, 8700 Edinbrook Crossing, Brooklyn Park, MN. **The Technical Advisory Committee (TAC) will meet at 11:30 a.m., prior to the regular meeting. The agenda for both meetings follows.** Agenda items are available at **http://www.shinglecreek.org/minutes--meeting-packets.html.**

TECHNICAL ADVISORY COMMITTEE MEETING

1. Call to Order.
   a. Roll Call.
   b. Approve Agenda.*
   c. Approve Minutes of Last Meeting.*
2. Cost Share Applications.
   a. Autumn Ridge Phase II.*
   b. Speed thru Car Wash.*
      1) Engineering Calcs.*
   c. Enhanced Street Sweeper.*
3. Other Business.
   a. Upcoming – Maple Grove wetlands district revisions.
4. Next TAC meeting is scheduled for _____.
5. Adjournment.

REGULAR MEETING

		1.	Call to Order.
	SCWM	a.	Roll Call.
√	SCWM	b.	Approve Agenda.*
√	SCWM	c.	Approve Minutes of Last Meeting.*
		2.	Reports.
√	SC	a.	Treasurer's Report.*
√	SC	b.	Approve Claims* - voice vote.
√	WM	c.	Treasurer's Report.*
√	WM	d.	Approve Claims* - voice vote.
	SCWM	3.	Open forum.
		4.	Project Reviews.
√	SC	a.	SC2019-003 Windsor Ridge, New Hope.*
√	SC	b.	SC2019-004 CSAH 81, Brooklyn Park/Crystal.*
		5.	Watershed Management Plan.
		a.	Cost Share Applications. *(Refer to documents on TAC agenda.)*
√	SC	1)	Autumn Ridge Phase II.*
√	SC	2)	Speed thru Car Wash.*
√	SCWM	3)	Enhanced Street Sweeper.*
√	SCWM	b.	Initiate Minor Plan Amendment to Revise CIP Policies

	SCWM	6.	Water Quality.
√	SC	a.	Next TAC meeting – tentatively 8:30 a.m., Thursday, March 28, 2019, Crystal City Hall.
	SCWM	7.	Education and Public Outreach.
√	SCWM	a.	2018 NPDES Report.*
	SCWM	b.	Education and Outreach – update.**
	SC	c.	Environmental Initiative Nomination.*
		d.	Next WMWA meeting – 8:30 a.m., Tuesday, April 9, 2019, Plymouth City Hall.
		8.	Grant Opportunities and Updates.
	SC	a.	Section 319 Crystal Lake Management Plan - Grant Application.*
	SC	b.	Bass and Pomerleau Lakes Alum Application – verbal update.
	SC	c.	Twin Lake Carp Removal – verbal update.
	SC	d.	SRP Reduction Project – verbal update.
	SCWM	9.	Communications.
	SCWM	a.	Communications Log.*
	SCWM	10.	Other Business.
	SCWM	11.	Adjournment.

* In meeting packet or emailed ** Available at meeting ***Previously transmitted **** Available on website √ Item requires action

Shingle Creek Watershed Management Commission
West Mississippi Watershed Management Commission

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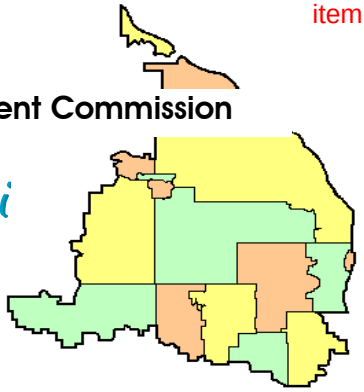


MINUTES
January 24, 2019

A meeting of the Technical Advisory Committee (TAC) of the Shingle Creek and West Mississippi Watershed Management Commissions was called to order by Chairman Richard McCoy at 8:36 a.m., Thursday, January 24, 2019, at Crystal City Hall, 4141 Douglas Drive North, Crystal MN.

Present were: Andrew Hogg, Brooklyn Center; Mitch Robinson, Brooklyn Park; Mark Ray, Crystal; Derek Asche, Maple Grove; Liz Stout, Minneapolis; Megan Hedstrom, New Hope; Ben Scharenbroich, Plymouth; Richard McCoy and Marta Roser, Robbinsdale; Diane Spector, Wenck Associates, Inc.; Judie Anderson, JASS.

Not represented: Champlin and Osseo.

Also present were: Katrina Kessler, Minneapolis; Harold E. Johnson, Osseo; Andy Polzin and Vanessa Strong, Plymouth; Rachel Olmanson, MPCA; Michelle Stockiness' and Bailey Hadnott, Barr Engineering; Chris Long, Stantec ;and Mike Harley, Environmental Initiative.

I. Motion by Ray, second by Scharenbroich to **approve the agenda.*** *Motion carried unanimously.*

II. Motion by Ray, second by Stout to **approve the minutes** of the December 13, 2018 meeting.* *Motion carried unanimously.*

III. Chloride Pilot Presentation.

Representatives from Barr Engineering were present to provide a preview of their proposed Multi-Sector Chloride Pilot. Specifically, they are requesting from the TAC:

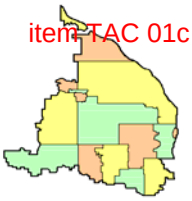
A. To consider the idea of a multi-sector chloride reduction pilot. Sectors being explored by Barr include transportation, water supply, wastewater, surface water and industrial.

B. To provide additional ideas for chloride reduction across the watershed. *It was suggested that Barr take their presentation to the BWSR chloride focus group of eleven watersheds. Can't go statewide until there is a local impact/project. Try to get all metro watersheds on the same level. Try to get Hennepin County as a partner – reach out to Karen Galles. Support with grant applications – LCCMR deadline is April 15. If the liability issue is resolved in the Legislature, private applicator training could become mandatory.*

C. To provide insight on specific needs of Shingle Creek. *Other sectors discussed by the members included salt on private surfaces and water softeners. They noted that as a mature watershed Shingle Creek has seen very little impact from current load-reduction efforts.*

IV. Cost Share Projects.

A. The City of **New Hope** is requesting funding through the Commission's Partnership Cost Share for Private Projects program for the Speed Thru Carwash project located at 7201 Bass Lake Road. The system will use five 20,000-gallon tanks to collect and store stormwater from the site. The storage tanks will be treated by aerobic bacteria. All petroleum-based products will be consumed and the only byproducts will be CO_2 and water. The bacteria-treated water will be further purified using a reverse osmosis system before being dispensed in the car wash tunnel. The City is re questing $50,000. Total project cost is $309,971.



Motion by Ray, second by Scharenbroich to table action on this request pending answers to a number of questions raised by the members. *Motion carried unanimously.*

B. Two questions regarding the use of City Cost Share funds have arisen at recent meetings.

1. Equipment. Should the purchase of maintenance equipment be eligible for cost share, and to what extent? As an example, the practice of enhanced, more frequent street sweeping with a regenerative air sweeper has been shown to be an effective BMP, especially in developed areas where there are limited opportunities for structural BMPs. Can a City apply for cost share to help fund the up cost of replacing a broom sweeper with a regenerative air sweeper? What about funding a new sweeper? Any other types of equipment? The members agreed that funding equipment "above and beyond" should be eligible for the Cost Share Program. The members had also previously discussed an application to fund brine tanks. Staff will discuss the eligibility for such projects with Karen Galles at Hennepin County.

2. Cost Share v. CIP. At the last meeting the members discussed whether projects could be eligible for both CIP participation and City Cost Share and had agreed that it should be one or the other. The current Cost Share Program Guidelines* were included in the meeting packet. The following language was proposed to be added to guidelines 3:

> *3. Projects should cost less than $1000,000; projects costing more than $100,000 should be submitted to the CIP. Projects cannot receive funding from both the CIP and the Cost-Share Program.*

3. After further discussion, motion by Asche, second by Ray to allow projects costing more than $100,000 to be eligible for the City Cost-Share program but that the maximum Commission contribution continue at $50,000. *Motion carried unanimously.* This recommendation will be forwarded to the Commissions at their February meeting.

4. The members also agreed to continue Commission funding of lake and stream internal load projects at 100%.

As a reminder, total funds available in the City Cost-Share program are: Shingle Creek - $240,000, and West Mississippi - $235,000. Applications are accepted until funds are encumbered.

V. CIP and Annual Levy Limits.*

A. In 2007 the Commissions adopted a Major Plan Amendment to their Second Generation Watershed Management Plan. That amendment established the Cost Share Policy for Commission participation in capital improvement projects up to a maximum of 25% of the actual project cost up to $250,000. The policy also voluntarily limited the maximum annual levy request to the County to $500,000 for each Commission. In 2011, as the Commissions were developing the Third Generation Plan, this policy was reviewed by City Managers, who recommended no changes.

B. At the last TAC meeting and at the Commissions' January meetings there was discussion regarding the self-imposed limits on the annual levy. The Commissions requested the TAC to review and discuss this issue and bring back a recommendation to the February meeting. Any change would require a Minor Plan Amendment.

1. It was agreed to eliminate the $250,000 maximum contribution on any one CIP.

item TAC 01c

2. The members also agreed to raise the annual levy request from $500,000 to $750,000 and to increase that amount to $1,000,000 by the time of the Fourth Generation Plan in 2022.

Motion by Ray, second by Scharenbroich to approve these two recommendations. *Motion carried unanimously.*

VI. Other Business.

A. Ed Matthiesen is currently presenting the **biochar project** to the PCA. It is also featured in *Stormwater Magazine.*

B. **Topics** for the next Technical Advisory Committee meeting include additional information on the New Hope project and Autumn Ridge Phase II. The next meeting is scheduled for 8:30 a.m., Thursday, February 28, 2019, at Crystal City Hall.

C. The meeting was adjourned at 10:29 a.m.

Respectfully submitted,

Judie A. Anderson
Recording Secretary

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Technical Memo

WENCK ASSOCIATES

Responsive partner.
Exceptional outcomes.

To: Shingle Creek WMO Commissioners
Shingle Creek/West Mississippi WMO TAC

From: Ed Matthiesen, P.E.
Diane Spector

Date: March 8, 2019

Subject: Autumn Ridge Apartments Cost-Share Program Application

Recommended Commission Action	Review and discussion by the TAC. Commission consideration of TAC recommendation.

The City of Brooklyn Park has submitted a Partnership Cost Share application on behalf of Sherman Associates and Metro Blooms for Phase II of improvements on the Autumn Ridge multi family housing site at 63rd and Boone Avenues North. The amount requested is $50,000. The proposed project is additional on-site water quality treatment, including 7-8 new rain gardens, additional pollinator habitat, and educational signage. The west half of the multifamily complex drains directly to the Cherokee Wetland and Bass Creek, while the east half drains through storm sewer on 63rd Avenue to a channel that discharges into wetland 639W.

The attached application describes the proposed project more fully and includes an overview of the results of Phase 1, which was partly funded by a $50,000 Partnership Cost Share grant from the Commission. In Phase 1 of the project, 5 rain gardens and a pollinator garden were added to the site. Three ash trees were removed and 8 new trees (5 shade trees and 3 ornamental trees in conjunction with planned stormwater BMPs) were planted. These BMPs provide an estimated volume reduction of 62.74% of rainfall runoff annually from a 4.9-acre sub-catchment area.

The project also includes extensive resident education and participation, both in the design process and in installation and planting. In addition, the project includes Smart Salting education and training for the on-site property managers.

Staff recommends that the TAC and Commission approve the application. The Partnership Cost Share account has the following balance. The Commission has on hand approximately $100,057 (2018 audit hasn't been completed), with another approximately $50,500 levied to be received in 2019.

2017 Year End Audited Balance	$99,557
2017 pay 2018 levy (un audited)	$51,035
Autumn Ridge Phase 1	($50,000)
Estimated Unencumbered Balance	$100,057
2018 pay 2019 levy	$50,500


Cherokee Wetland
Bass Creek
Boone Avenue
Autumn Ridge
63rd Avenue
Bottineau Blvd
Twin Creek
MAC Crystal Airport
Meadow Lake

item TAC 02a

Shingle Creek Watershed Management Commission

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Shingle Creek
Watershed Management Commissions
Partnership Cost-Share Program Guidelines

The Shingle Creek Watershed Management Commission will from time to time make funds available to its member cities to help fund the cost of Best Management Practices (BMPs) partnership projects with private landowners. The following are the guidelines for the award of cost-share grants from this program:

1. Projects on private property must be for water quality improvement, and must be for improvement above and beyond what would be required to meet Commission rules. Only the incremental cost of "upsizing" a BMP above and beyond is eligible.
2. Priority is given to projects in a priority area identified in a subwatershed assessment or TMDL.
3. Commission funds may reimburse up to 100% of the cost of the qualifying BMP.
4. The minimum cost-share per project is $10,000 and the maximum is $50,000.
5. Projects must be reviewed by the Technical Advisory Committee (TAC) and recommended to the Commissions for funding.
6. Cost-share is on a reimbursable basis following completion of project.
7. The TAC has discretion on a case-by-case basis to consider and recommend to the Commissions projects that do not meet the letter of these guidelines.
8. Unallocated funds will carry over from year to year and be maintained in a designated fund account. Any balance in said account in excess of $100,000 will be transferred to the City Cost Share Program Account.
9. The property owner must dedicate a public easement or equivalent sufficient to install and maintain the BMP.
10. The Member City must obtain a recordable maintenance agreement from the property owner that specifies maintenance requirements and schedule; authorizes the City to inspect the BMP and order maintenance and improvement; and authorizes the City to undertake ordered maintenance and improvement not completed by the property owner, and assess the cost that work to the property.
11. The standard Commission/Member Cooperative Agreement will executed prior to project construction.

Adopted November 2015
Revised February 9,2017

item TAC 02a

Shingle Creek Watershed Management Commission

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Shingle Creek Watershed Management Commissions
Partnership Cost-Share Program Application

City:	Brooklyn Park
Contact Name:	Brooklyn Park: Mitch Robinson (City Engineer); Sherman Associates: Denise Flood (Regional Director of Property); Metro Blooms: Laura Scholl (Associate Director)
Contact Phone:	763-493-8291
Contact Email:	Mitchell.Robinson@brooklynpark.org; dflood@sherman-associates.com; laura@metroblooms.org
Project Name:	Phase II Autumn Ridge Apartments Stormwater Retrofit
Total Project Cost:	$149,490.00
Amount Requested:	$50,000.00
Project Location:	Autumn Ridge Apartments
Owner:	Sherman Associates
Address:	8516 63rd Ave North
City, State, Zip:	Brooklyn Park, MN 55428
Phone:	612-337-2633 (Denise Flood, Regional Director of Property); 218-230-4376 (Laura Scholl, Associate Director, Metro Blooms)
Email:	dflood@sherman-associates.com; laura@metroblooms.org

1. Describe the BMP(s) proposed in your project. Describe the current condition and how the BMP(s) will reduce pollutant loading and/or runoff volume. Note the estimated annual load and volume reduction by parameter, if known, and how they were calculated. Attach figures showing project location and BMP details including drainage area to the BMP(s).

Autumn Ridge Apartments is a 17 acre, a 366-unit affordable housing complex in Brooklyn Park owned by Sherman Associates. The site is highly impervious (71%, approximately 12 acres). This proposal will help fund phase II of a 5-phase stormwater retrofit project developed by Residents at Autumn Ridge, Sherman Associates, Metro Blooms, and the City of Brooklyn Park. Additional funding has already been secured from Hennepin County. Phase I was installed in 2018.

Autumn Ridge Apartments drains directly to Shingle Creek. Shingle Creek, from its headwaters in Brooklyn Park at the junction of Bass Creek and Eagle Creek to its confluence with the Mississippi River in Minneapolis, is impaired for aquatic life due to excessive levels of chloride and phosphorus. The critical condition for the impairment in Shingle Creek is stormwater runoff. The proposed project will continue to address the chloride and phosphorus impairment through runoff volume reduction and provide maintenance training for Autumn Ridge landscape staff and contractors, including Smart Salting training.

As the Emerald Ash Borer moves through Brooklyn Park, re-foresting Autumn Ridge with a sustainable tree canopy continues to be an integral part of ecological site design. Proposed practices improve water

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quality, mitigate localized flooding on site, create pollinator habitat, enhance livability and provide ongoing education and job training opportunity for facilities and maintenance staff and interested residents.

Residents at Autumn Ridge, Sherman Associates, Metro Blooms, ACER (African Career and Education Resource Inc) and the City of Brooklyn Park will continue working collaboratively to improve quality of life through outdoor spaces. Project goals and principles are to:

- Center the voices and ideas of those most impacted by the project
- Build Trust, Build Capacity, and Build Social Capital
- Capture Stormwater Runoff and Pollutant Reduction
- Increase Environmental Literacy & Increase Environmental Stewardship
- Nurture Grassroots Community Leadership

Phase I focused on installing stormwater BMPs at the "Front Door" area, the most central and visited part of the site that includes the mailbox pickup area, a playground and public and school bus stops along Boone Avenue.

Phase I Challenges: the presence of heavy clay soils resulted in the need to change some elements of the original design plans due to reduced infiltration rates. Changes include eliminating permeable pavement, decreasing the depth of Raingarden A and B from 9-inches to 3-inches, eliminating the trench drain at raingarden A and replacing trench drain with concrete swale at Raingarden B. (see 2018 As Builts)

Phase I Results: there are now 5 raingardens and a pollinator garden on site. 55 ash trees remain on site. 3 were removed and 8 new trees (5 shade trees and 3 ornamental trees in conjunction with planned stormwater BMPs) were planted. An estimated volume reduction of 62.74% of rainfall runoff annually (from a 4.9-acre sub-catchment area).

Newly installed practices modeled to be capturing:

- 2.93 acre feet (953,758.82 gallons,127,499 Cu Ft) of stormwater runoff and annual loads of
- 1, 592.36 lbs of Total Solids
- 5.90 lbs of Total Phosphorus. (results modeled in WinSLAMM)

In addition, we anticipate a significant reduction in chlorides leaving the Autumn Ridge property. In 2018, Metro Blooms GreenCorps member, who is Level I certified to provide Smart Salting support, completed a five-hour training at Mississippi Watershed Management Organization(MWMO) that delivered practical advice to those managing parking lots and sidewalks. She facilitated training for the Autumn Ridge staff to help them identify proactive, cost-effective and environmentally conscious choices in their parking lot and sidewalk. The training will be an additional resource for Autumn Ridge in reducing environmental impacts from chloride in their sidewalk and parking lot.

item TAC 02a

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Phase II picks up where Phase 1 left off, expanding the presence of raingardens at the farthest site entrance at the northwest at Boone Avenue, and farthest site entrance to the southeast at 63rd Avenue North. These "Book End" raingardens further expand the presence of additional BMPs that will be experienced by both residents, staff and visitors of Autumn Ridge and individuals traveling along Boone Avenue (10,000 average daily trips) and 63rd Ave North (6,700 average daily trips). Additional raingarden will be designed and installed around Building #4, identified by Autumn Ridge as a priority area due to erosion and settling of concrete next to the building.

Metro Blooms plans to continue to work with General Contractor Nelco Landsacpeing LLC who installed the 2018 BMPs and is familiar with the site, project team and residents. This will eliminate the bidding process. Taking lessons learned from the 2018 installation, we will work together to complete the 2019 phase II design.

Phase II 2019 Grant Request - This proposal would help fund the installation of the following practices on site:

1. Concrete swale and 2 raingardens with pretreatment structures at the northwest entrance on Boone Avenue.
2. Trench Drain and Concrete swale and 2 raingardens with pretreatment structures at the southeast entrance on 63rd Avenue North
3. 3 to 4 raingardens to address erosion areas within the complex between the buildings and parking lots of Building #4.
4. Assessment of Ash trees around Building #4, Removal of 2 Ash and addition of 3 understory trees and 2 shade trees
5. The combined raingardens and surrounding areas will create 6,575 Sq Ft of additional pollinator habitat
6. Installation of Educational Signage

The total area treated by the proposed Phase II Stormwater BMP's is 3.57 acres that contains an average of 80.1% impervious surfaces that drain directly to the storm sewer system. Stormwater modeling indicates the proposed stormwater BMPs in Phase II will capture an estimated 2.3 pounds of Phosphorous, 993 pounds of Total Solids and 2.27 Acre-feet (98,956 Cubic feet or 740,242 gallons) of runoff. Smart salting training will continue in 2019 to continue the reduction of chlorides leaving this 17-acre property.

Metro Blooms anticipates working more closely with Ed Matthieson, Wenck Associates to determine the best course of design to address the Phase I challenges that were encountered prior to installation so future best management practices do capture maximum amounts of runoff and treat the runoff most effectively to ensure optimal environmental impact on the health of the watershed and its stakeholders. We believe additional pollutant reduction will be achieved through the use of pre-treatment structures which is not identified by the stormwater modeling.

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2. If this request is for cost share in "upsizing" a BMP, explain how the upsize cost and benefit were computed.

Not Applicable

3. Show total project cost and the amount of cost share requested.

See attached budget

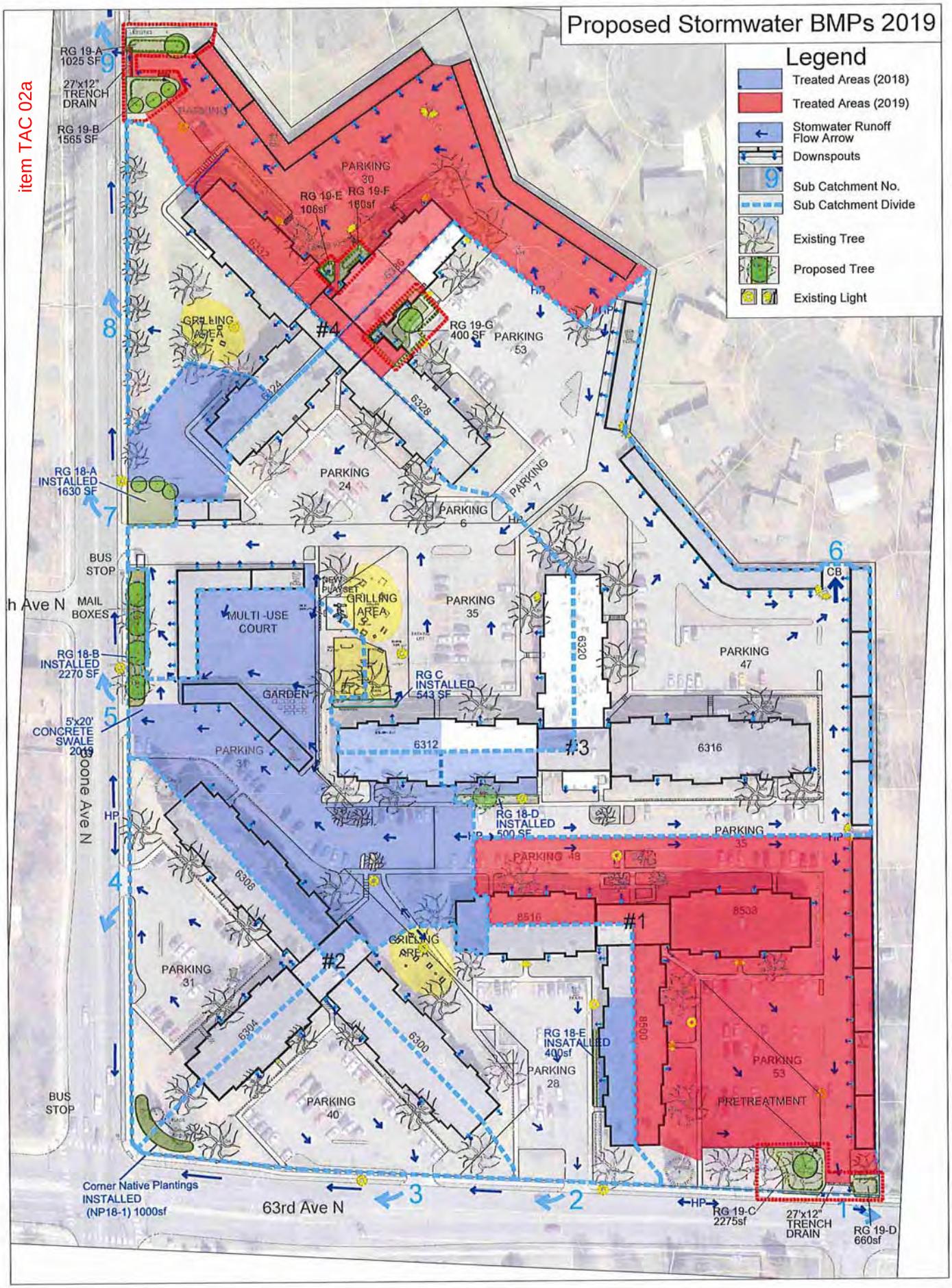
4. What is the project schedule, when will work on the BMP(s) commence and when will work be complete?

1) Phase II (2019 current grant request)
    a) February - April 2019: Project Planning and Design Development
    b) April - May 2019: Construction Documents
    c) Summer/Fall 2019: Installation (7 raingardens, 2 trench drains (concrete swales), pollinator plantings, educational signage); educational event, open to surrounding community
    d) Spring/Fall 2019: Maintenance Trainings; educational event, open to surrounding community

2) Phase III (2020-2022, funded primarily by Sherman Associates)
    a) 2-4 raingardens/year to capture building downspouts and parking lot runoff

The member City must verify that a public easement (or equivalent) is dedicated and that an Operations and Maintenance Agreement has been executed and recorded prior to release of any funds.

item TAC 02a



Autumn Ridge

8516 63rd Avenue, Brooklyn Park MN 55428

Stormwater Management Plan

GRAPHIC SCALE

Designer: Rich Harrison
Date: November 28, 2017

Metro Blooms

Autumn Ridge Budget: II (2019)				
Item	Construction Cost Estimate	Hennepin County (Approved)	SCWMC Request	Sherman
PHASE II (2019)				
Northeast Entrance (Boone Ave)				
-RG 19-A (1025 sq ft w/concrete swale, curb cut and bunker pretreatment)	$21,000.00			
- RG 19-B (1565 sq ft w/curb cut, turrent pretreatme	$28,500.00			
Southwest Entrance (63rd Ave N)				
- RG 19-C (2275 sq ft w/ curb cut/ turrent pretreatment)	$40,100.00			
- RG 19-D (660 sq sf w/Trench Drain and bunker pretreatment)	$16,110.00			
Erosion Problem Areas (with CCM)				
- RG 19-E (225 sq ft) (N. entrance of Bldg #4)	$2,700.00			
- RG 19-F (440 sq ft) (N. entrance of Bldg #4)	$5,280.00			
- RG 19-G (400 sq ft) (W. of Bldg #4)	$4,800.00			
Sustainable Reforesting				
- Ash Tree Removal (1)	$2,000.00			
- Shade Trees (2)	$2,000.00			
Metro Blooms (outreach, design & construction mgmt)	$25,000.00			
Signage	$2,000.00			
Subtotals	$149,490.00	$60,000.00	$50,000.00	$39,490.00

Technical Memo

WENCK ASSOCIATES

Responsive partner.
Exceptional outcomes.

To: Shingle Creek WMO Commissioners
Shingle Creek/West Mississippi TAC

From: Ed Matthiesen, P.E.
Diane Spector

Date: March 8, 2019

Subject: New Hope Car Wash Cost-Share Program Application

Recommended Commission Action	Review and discussion by the TAC. Commission consideration of TAC recommendation.

The City of New Hope has submitted a Partnership Cost Share application on behalf of LAMA Holdings LLC – Chris Robbins for a capture and reuse project at the Speed Thru Car Wash at 7201 Bass Lake Road, New Hope. The amount requested is $50,000. The proposed project is the installation of five 20,000 gallon storage tanks and a filtration system to capture runoff from the site for reuse as car wash water. The site drains to the Bass Lake Road trunk storm sewer and then to Upper Twin Lake.

Runoff from nearly all impervious surface on site will be collected and routed to the storage tanks (see attachments). The storage tanks will be treated by aerobic bacteria. All petroleum-based products will be consumed, and the only byproducts are CO_2 and water. After bacteria treatment the water will be further purified using a reverse osmosis system before being dispensed in the car wash tunnel.

To determine whether the system truly has the capacity to retain 1.3" of runoff on site to meet Commission water quality requirements, we obtained expected usage volumes from the applicant and analyzed use compared to expected precipitation replenishment.

On average, there is a 0.34 inch rainfall every 72 hours, which would generate an estimated 1,385 gallons of runoff every three days. The car wash uses 8 gallons per vehicle with an estimated 100 vehicles per day, using 2,400 gallons every three days. Therefore, every three days on average the volume in the tanks is drawn down by 1,015 gallons. While that on average uses more water than is added through rainfall, the larger, less frequent storms would make up those deficits and replenish the tanks. With the tanks drawn down to a nominal 5% full, they have the capacity to capture a 3.1" storm. When the tanks are full, the system will be bypassed into the storm sewer system similar to any other practice designed to capture the first 1.3" and overflow the rest. The storage tanks are capable of holding 280 days of average precipitation.

Staff recommends that the TAC and Commission approve the application. The Partnership Cost Share account has the following balance. The Commission has on hand approximately $100,057 (2018 audit hasn't been completed), with another approximately $50,500 levied to be received in 2019.

item TAC 02b

2017 Year End Audited Balance	$99,557
2017 pay 2018 levy (un audited)	$51,035
Autumn Ridge Phase 1	($50,000)
Estimated Unencumbered Balance	$100,057
2018 pay 2019 levy	$50,500

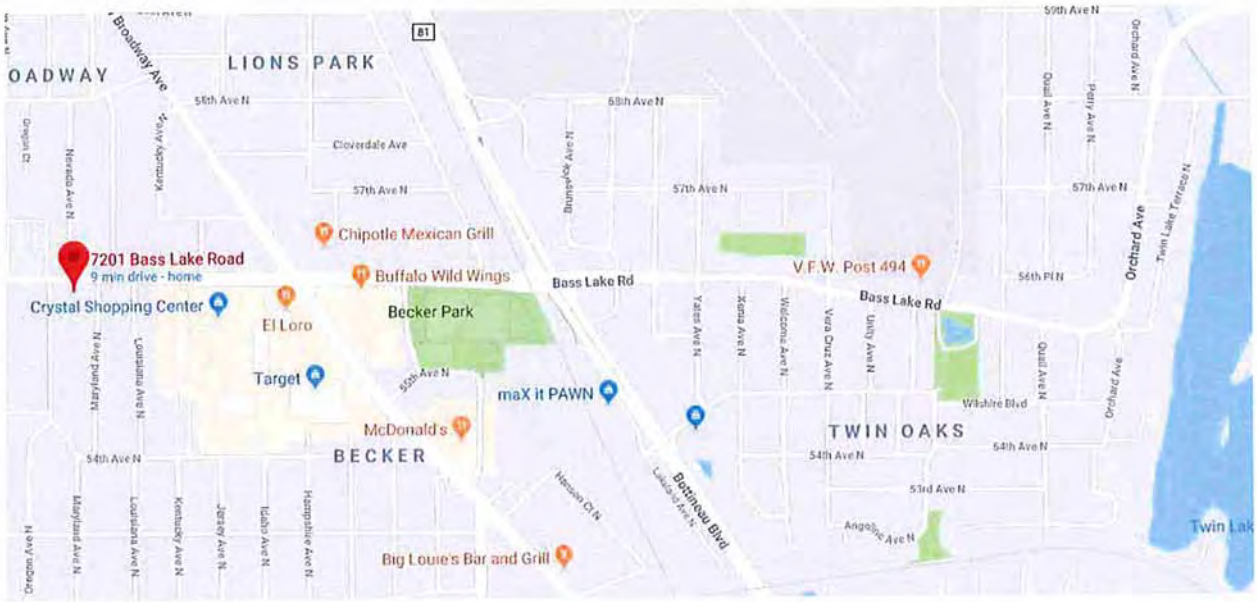


Figure 1. Project location.

item TAC 02b

Shingle Creek Watershed Management Commission

3235 Fernbrook Lane N • Plymouth, MN 55447
Phone (763) 553-1144 • Fax (763) 553-9326

www.shinglecreek.org

Shingle Creek
Watershed Management Commissions
Partnership Cost-Share Program Guidelines

The Shingle Creek Watershed Management Commission will from time to time make funds available to its member cities to help fund the cost of Best Management Practices (BMPs) partnership projects with private landowners. The following are the guidelines for the award of cost-share grants from this program:

1. Projects on private property must be for water quality improvement, and must be for improvement above and beyond what would be required to meet Commission rules. Only the incremental cost of "upsizing" a BMP above and beyond is eligible.
2. Priority is given to projects in a priority area identified in a subwatershed assessment or TMDL.
3. Commission funds may reimburse up to 100% of the cost of the qualifying BMP.
4. The minimum cost-share per project is $10,000 and the maximum is $50,000.
5. Projects must be reviewed by the Technical Advisory Committee (TAC) and recommended to the Commissions for funding.
6. Cost-share is on a reimbursable basis following completion of project.
7. The TAC has discretion on a case-by-case basis to consider and recommend to the Commissions projects that do not meet the letter of these guidelines.
8. Unallocated funds will carry over from year to year and be maintained in a designated fund account. Any balance in said account in excess of $100,000 will be transferred to the City Cost Share Program Account.
9. The property owner must dedicate a public easement or equivalent sufficient to install and maintain the BMP.
10. The Member City must obtain a recordable maintenance agreement from the property owner that specifies maintenance requirements and schedule; authorizes the City to inspect the BMP and order maintenance and improvement; and authorizes the City to undertake ordered maintenance and improvement not completed by the property owner, and assess the cost that work to the property.
11. The standard Commission/Member Cooperative Agreement will executed prior to project construction.

Adopted November 2015
Revised February 2017

item TAC 02b

Shingle Creek Watershed Management Commission

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Phone (763) 553-1144 • Fax (763) 553-9326

www.shinglecreek.org

Shingle Creek Watershed Management Commissions
Partnership Cost-Share Program Application

City:	New Hope
Contact Name:	Chris Long
Contact Phone:	651-604-4808
Contact Email:	Chris.Long@stantec.com
Project Name:	Speed Thru Carwash
Total Project Cost:	$309,971
Amount Requested:	$50,000
Project Location:	7201 Bass Lake Road, New Hope MN 55428
Owner:	LAMA Holdings LLC – Chris Robbins
Address:	7201 Bass lake Road
City, State, Zip:	New Hope MN 55428
Phone:	763-913-5482
Email:	Chris@speedthrucarwash.com

1. Describe the BMP(s) proposed in your project. Describe the current condition and how the BMP(s) will reduce pollutant loading and/or runoff volume. Note the estimated annual load and volume reduction by parameter, if known, and how they were calculated. Attach figures showing project location and BMP details including drainage area to the BMP(s).

This system will use (5) – 20,000 gallon tanks to collect and store storm water from the site. The storage tanks will be treated by aerobic bacteria. All petroleum-based products will be consumed, and the only byproducts are C02 and Water. After bacteria treatment the water will be further purified using a reverse osmosis system before being dispensed in the car wash tunnel.

The current site does not use any onsite retention or purification. All storm water is directed to Shingle Creek. The new system will collect 727,300 gallons annually compared to 0 gallons currently and all petroleum products will be removed from the water.

2. If this request is for cost share in "upsizing" a BMP, explain how the upsize cost and benefit were computed.

The site will consist of 1.33 Acres (57,934 sq. ft.) of impervious surfaces when finished. Minimum requirements are for 75,314 gallons of retention (1.3 x 57,934). The installed system will have 100,000 gallons total capacity. This project is 32.7% larger than required. The total cost is $309,971. A 32.7% cost share would equal $101,360, but the grant is limited to $50,000.

item TAC 02b

Shingle Creek Watershed Management Commission

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3. Show total project cost and the amount of cost share requested.

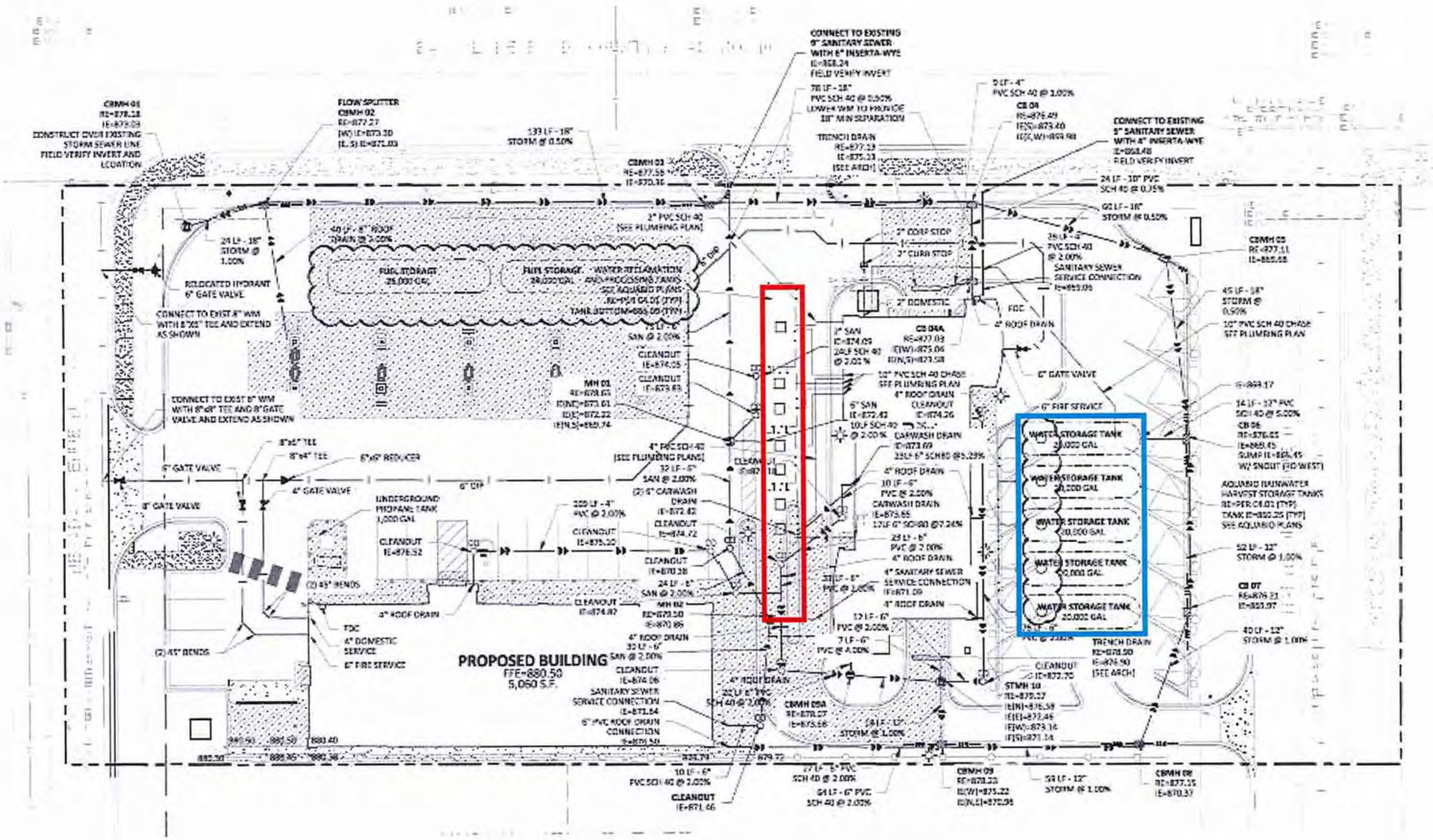
- Storage Tanks (Including Freight) $29,227
- Tank Fabrication $40,850
- Aerobic Bacteria treatment system $32,500
- Tank Installation $179,744
- Reverse Osmosis System $27,650

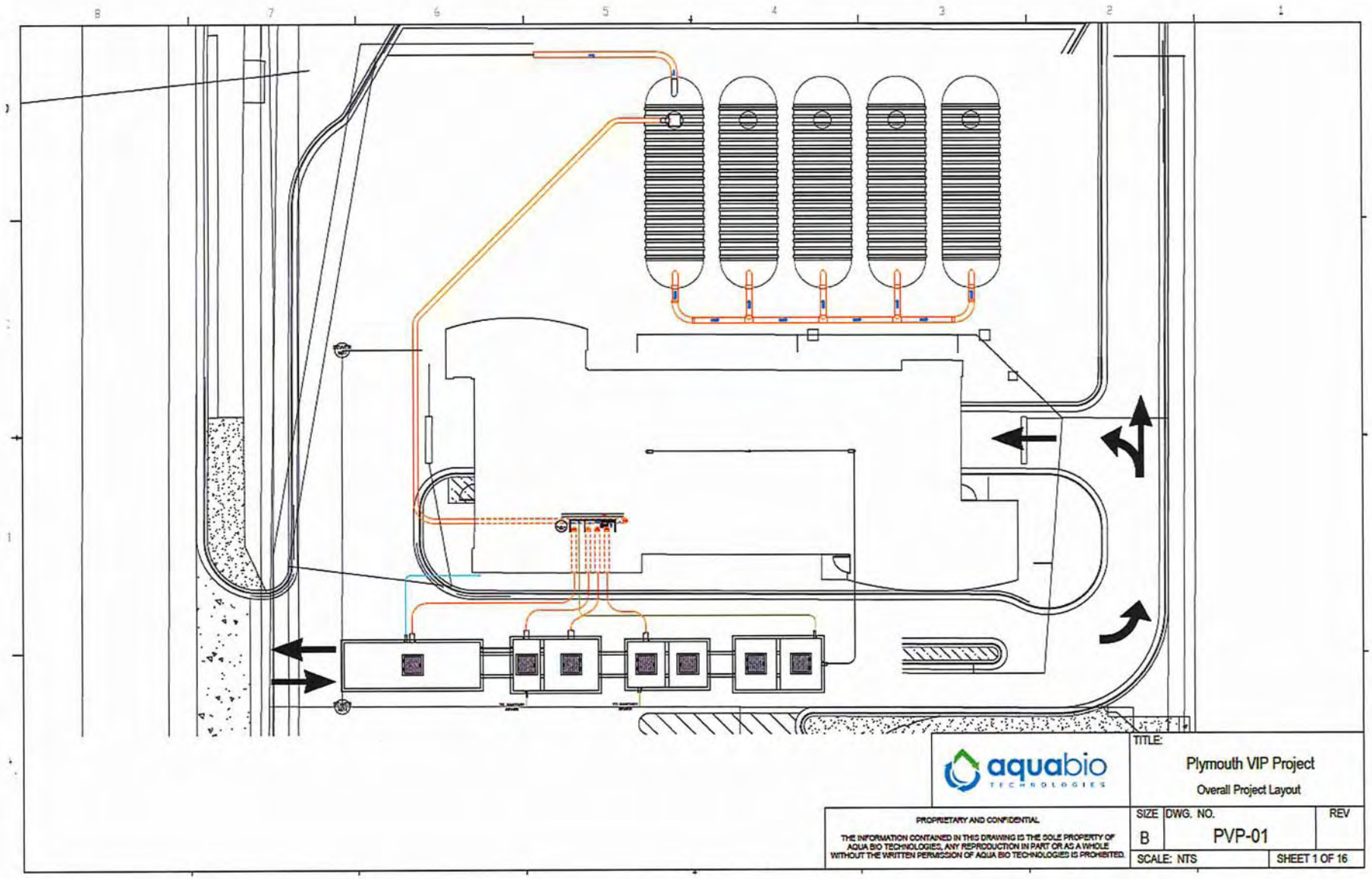
4. What is the project schedule, when will work on the BMP(s) commence and when will work be complete?

Project to start Mid July 2018 – Projected completion expected in April 2019

The member City must verify that a public easement (or equivalent) is dedicated and that an Operations and Maintenance Agreement has been executed and recorded prior to release of any funds.

item TAC 02b

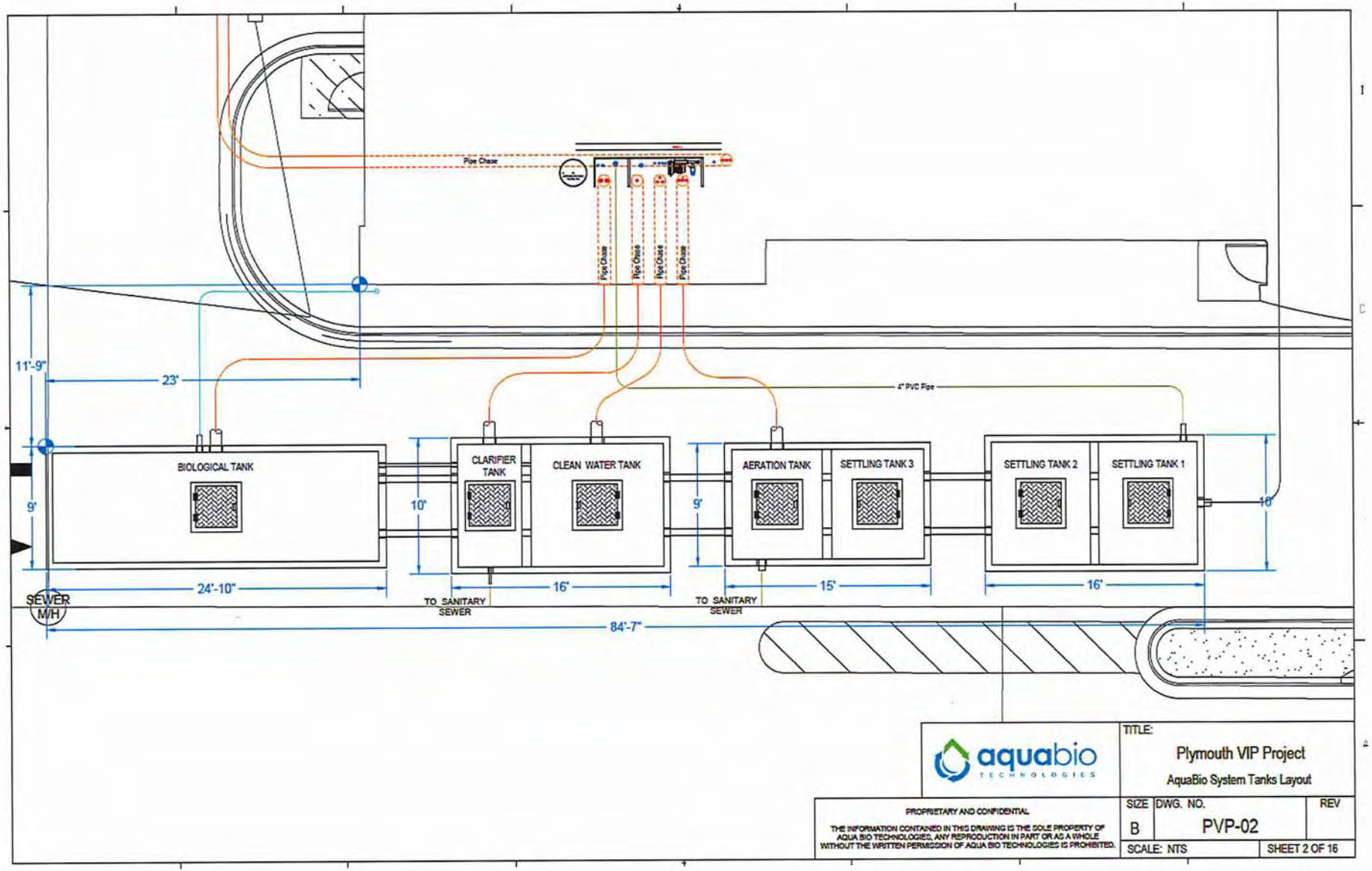

PROPOSED BUILDING
FFE=880.50
5,060 S.F.
WATER STORAGE TANK
20,000 GAL
FUEL STORAGE
25,000 GAL
6" GATE VALVE
8" GATE VALVE
4" GATE VALVE
4" ROOF DRAIN
6" FIRE SERVICE
4" DOMESTIC SERVICE
FDC
CLEANOUT
CARWASH DRAIN
TRENCH DRAIN
UNDERGROUND PROPANE TANK
1,000 GAL
AQUABID RAINWATER HARVEST STORAGE TANKS
RELOCATED HYDRANT
(2) 45° BENDS
6"x6" REDUCER



aquabio TECHNOLOGIES

TITLE:
Plymouth VIP Project
Overall Project Layout

SIZE	DWG. NO.	REV
B	PVP-01	
SCALE: NTS		SHEET 1 OF 16



aquabio TECHNOLOGIES

TITLE:
Plymouth VIP Project
AquaBio System Tanks Layout

SIZE	DWG. NO.	REV
B	PVP-02	
SCALE: NTS		SHEET 2 OF 16

item TAC 02b1)

MONTGOMERY WATSON

By: [illegible] Date: 2-26-19 Client: SCCWRRE Sheet 1 of 3

Chkd. By: Description: New Hope Car Wash Job No.

Storm Volume runoff

$51{,}480\ ft^2\ (0.95)(0.34\ in)\left(\frac{ft}{12\ in}\right)$

$= 1466\ ft^3$

$= 10{,}998\ gal$ 7.5 gal/ft3

say 11,000 gal

Annual Volume assume 26" precip/yr

Once full:

Assume 0.34"/third day

8 gal/car (100 car/day) = 800 gal/day

100,000 gal storage ability to use 95% per Chris Robbins ∴ 95,000 gal available or 119 day supply

$0.34\ in\ (95\%)\left(\frac{ft}{12\ in}\right)(51{,}580\ ft^2)\left(\frac{7.5\ gal}{ft^3}\right) = 1385$

Summary: An average 0.34" rain will keep the reservoir supplied for 280 days. If the tanks are drawn down to 5% water remaining they can capture 3.1" storm.

MONTGOMERY WATSON

By EAm Date 2-26-19 Client SLCWMC Sheet 2 of 3

Chkd. By ____ Description ____ Job No. ____

Day	Start GAL	Usage gal	End of Day gal	0.34 in Storm yield gal
1	100,000	800.	99 200	
2		"	98 400	
3		"	97 600	1385
4	98,985	"	98,185	
5		"	97 385	
6		"	96 585	1385
7	97970	"	97970	
8		"	97 170	
9		"	96 370	1385
10	97755	"	97 755	
11		"	96 955	
12		"	96 155	1385
13	97540	"	97 540	
14		"	96 740	
15		"	95 940	1385
16	97325	"		

∴ 2400 gallons every 3 day with 1385 gal replenishment.

≈ 1015 gal deficit every 3 dy

100,000 gal (95%) / 1015 gal deficit every 3 day

≈ could run 280 days

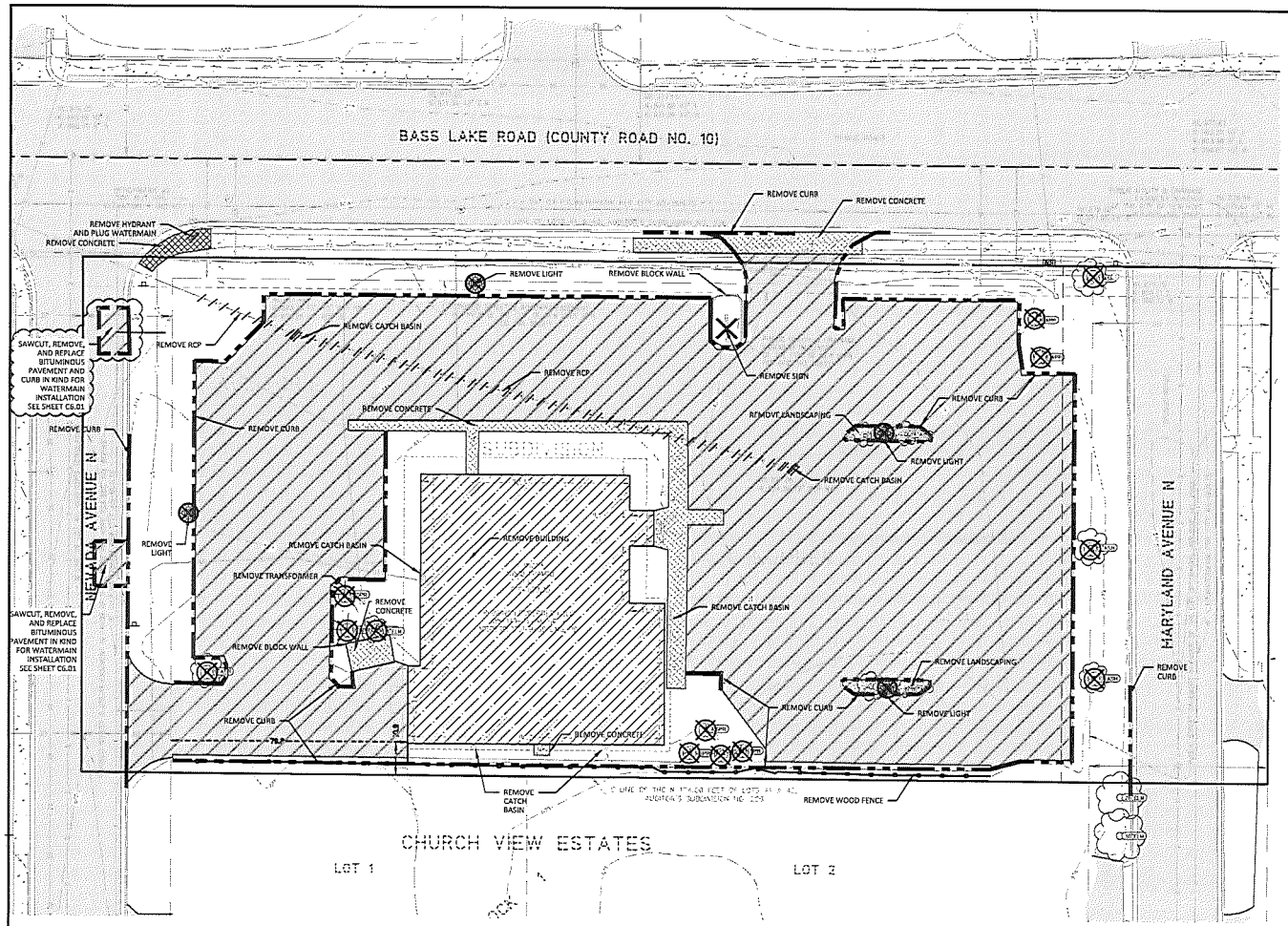
Storm volume to fill:

$\left(\frac{ft^3}{7.5\ gal}\right)$ 100,000 gal (0.95) = 5,980 ft² (0.95) $\frac{X\ in}{12\ in}$ ft

12,667 ft³ = 4075 ft³ (X in)

X = 3.1 in rainfall

3/3



DEMOLITION NOTES

1. DEMOLITION NOTES ARE NOT COMPREHENSIVE. CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION TO OBTAIN A CLEAR UNDERSTANDING OF THE INTENDED SCOPE OF WORK.
2. THE DESIGN SHOWN IS BASED ON ENGINEER'S UNDERSTANDING OF EXISTING CONDITIONS. THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON ALTA AND TOPOGRAPHIC MAPPING PREPARED BY SAMBATEK DATED 04-21-2017. IF CONTRACTOR DOES NOT ACCEPT EXISTING TOPOGRAPHY AS SHOWN ON THE PLANS WITHOUT EXCEPTION, CONTRACTOR SHALL HAVE MADE, AT OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR AND SUBMIT IT TO THE OWNER FOR REVIEW.
3. THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION, REMOVAL, AND DISPOSING IN A LOCATION APPROVED BY ALL GOVERNING AUTHORITIES AND IN ACCORDANCE WITH APPLICABLE CODES, OF ALL STRUCTURES, PADS, WALLS, FLUMES, FOUNDATIONS, PARKING, DRIVES, DRAINAGE STRUCTURES, UTILITIES, ETC., SUCH THAT THE IMPROVEMENTS SHOWN ON THE PLANS CAN BE CONSTRUCTED. ALL FACILITIES TO BE REMOVED SHALL BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER THE GEOTECHNICAL REPORT AND/OR GEOTECHNICAL ENGINEER.
4. CLEARING AND GRUBBING: CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL DEBRIS FROM THE SITE AND DISPOSING THE DEBRIS IN A LAWFUL MANNER. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
6. CONTRACTOR IS RESPONSIBLE FOR THE DISCONNECTION OF UTILITY SERVICES TO EXISTING BUILDINGS PRIOR TO DEMOLITION OF THE BUILDINGS.
7. CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANIES PRIOR TO REMOVAL AND/OR RELOCATION OF UTILITIES. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES CONCERNING PORTIONS OF WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANIES' FORCES AND ANY FEES WHICH ARE TO BE PAID TO UTILITY COMPANIES FOR SERVICES. CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
8. CONTRACTOR IS SPECIFICALLY CAUTIONED THAT LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM INFORMATION AVAILABLE. ENGINEER ASSUMES NO RESPONSIBILITY FOR THE UTILITY MAPPING ACCURACY. PRIOR TO START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES 48 HOURS PRIOR TO ANY EXCAVATION FOR ON-SITE LOCATIONS OF EXISTING UTILITIES. THE LOCATIONS OF UTILITIES SHALL BE OBTAINED BY THE CONTRACTOR BY CALLING MINNESOTA GOPHER STATE ONE CALL AT 800-252-1166 OR 651-454-0002.
9. THE MAPPING LOCATION OF ALL EXISTING SEWERS, PIPING, AND UTILITIES SHOWN ARE NOT TO BE INTERPRETED AS THE EXACT LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES. GIVE NOTICE TO ALL UTILITY COMPANIES REGARDING DISTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL LINES BEFORE PROCEEDING WITH WORK. UTILITIES DETERMINED TO BE ABANDONED SHALL BE REMOVED IF UNDER THE BUILDING INCLUDING 10' BEYOND FOUNDATIONS.
10. ELECTRICAL, TELEPHONE, CABLE, WATER, FIBER OPTIC CABLE AND/OR GAS LINES NEEDING TO BE REMOVED OR RELOCATED SHALL BE COORDINATED WITH THE AFFECTED UTILITY COMPANY. ADEQUATE TIME SHALL BE PROVIDED FOR RELOCATION AND CLOSE COORDINATION WITH THE UTILITY COMPANY IS NECESSARY TO PROVIDE A SMOOTH TRANSITION IN UTILITY SERVICE. CONTRACTOR SHALL PAY CLOSE ATTENTION TO EXISTING UTILITIES WITHIN THE ROAD RIGHT OF WAY DURING CONSTRUCTION.
11. CONTRACTOR MUST PROTECT THE PUBLIC AT ALL TIMES WITH FENCING, BARRICADES, ENCLOSURES, ETC., TO THE BEST PRACTICES.
12. CONTINUOUS ACCESS SHALL BE MAINTAINED FOR THE SURROUNDING PROPERTIES AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.
13. PRIOR TO DEMOLITION OCCURRING, ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED AND APPROVED BY THE LOCAL AUTHORITY.
14. CONTRACTOR SHALL LIMIT SAW-CUT & PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE IT IS REQUIRED AS SHOWN ON THESE CONSTRUCTION PLANS BUT IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ITS REMOVAL AND REPAIR.
15. CONTRACTOR TO PROTECT EXISTING FEATURES WHICH ARE TO REMAIN. DAMAGE TO ANY EXISTING CONDITIONS TO REMAIN WILL BE REPLACED AT CONTRACTOR'S EXPENSE.
16. ABANDON OR REMOVE ALL SANITARY, WATER AND STORM SERVICES PER CITY STANDARDS. COORDINATE ALL WORK WITH CITY. ALL STREET RESTORATION SHALL BE COMPLETED IN COMPLIANCE WITH LOCAL STANDARDS.
17. CONTRACTOR SHALL PREPARE AND SUBMIT TO THE GOVERNING AUTHORITY A TRAFFIC AND/OR PEDESTRIAN TRAFFIC PLAN PER CITY/COUNTY/STATE STANDARDS TO BE APPROVED BY THE LOCAL GOVERNING AUTHORITY.

LEGEND

EXISTING		
GAS METER		BITUMINOUS CURB
HYDRANT		BUILDING
LIGHT		REMOVE EXISTING UTILITY LINE
STORM SEWER		REMOVE EXIST CONCRETE CURB
DRAIN TILE		SAW CUT EXIST BITUMINOUS PAVEMENT
WATERMAIN		REMOVE EXISTING BITUMINOUS PAVEMENT
FORCE MAIN		REMOVE EXISTING CONCRETE PAVEMENT
SANITARY SEWER		REMOVE EXISTING BUILDING
OVERHEAD ELECTRIC		REMOVE EXISTING LANDSCAPING
UNDERGROUND TELEPHONE		REMOVE EXISTING TREE
UNDERGROUND CABLE TV		REMOVE EXISTING
UNDERGROUND ELECTRIC		REMOVE EXISTING UTILITY
UNDERGROUND GAS		REMOVE EXISTING WOOD FENCE
WOOD FENCE		REMOVE EXISTING LIGHT FIXTURE
STONE RETAINING WALL		
EDGE OF TREES		
TREES / SHRUBS		
CONCRETE		
SIGNS		
CONCRETE CURB		

THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL ... THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE MINNESOTA GOPHER STATE ONE FOR MINNESOTA. THE CONTRACTOR AND/OR SUBCONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY THEIR FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD)

IF THE CONTRACTOR ENCOUNTERS ANY DRAIN TILE WITHIN THE SITE, HE OR SHE SHALL NOTIFY THE ENGINEER WITH THE LOCATION, SIZE, INVERT AND IF THE TILE LINE IS ACTIVE. NO DRAIN TILE SHALL BE ABANDONED WITHOUT APPROVAL FROM THE PROJECT ENGINEER.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

5.1"x28" : 19.3 ft²

Area: 19.3 ft² (3600 ft²/144 in²) = 51,480 ft²

0.25" = 40'

1" = 160'

1 in² = 3600 ft²

NORTH
0 20 40
SCALE IN FEET

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone
763.476.6532 facsimile
Engineering | Surveying | Planning | Environmental

Client
LAMA HOLDINGS, LLC

7201 BASS LAKE ROAD
NEW HOPE, MN 55428

Project
NEW HOPE GAS AND CONVENIENCE

Location
NEW HOPE, MN

Certification

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Eric A. Vogel
Registration No. 54914 Date: 9/19/2018

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's Minnetonka, MN office.

Summary

Designed: Drawn: CAV
Approved: EDS Book / Page:
Phase: FINAL Initial Issue:

Revision History

No.	Date	By	Submittal / Revision
	9/19/2018		ISSUED FOR CONSTRUCTION
	9/21/2018		UTILITY PLAN UPDATE
	9/28/2018		UTILITY PLAN UPDATE
	10/15/2018		SITE AND UTILITY UPDATE
	10/22/2018		REVISED FUEL TANKS

Sheet Title
DEMOLITION PLAN

Item TAC(2201)

Sheet No. Revision
C2.01 D

Project No. 2072

Technical Memo

WENCK ASSOCIATES

Responsive partner.
Exceptional outcomes.

To: Shingle Creek/West Mississippi WMC TAC

From: Ed Matthiesen, P.E.
Diane Spector

Date: March 8, 2019

Subject: County Levy Funds for Sweeping Equipment

The TAC had previously debated the use of capital or cost share funds for high performance street sweeping equipment. While the TAC and Commission are favorable of this idea, it is ultimately the decision of Hennepin County as to whether this meets the state statutes regulating their capital bonding.

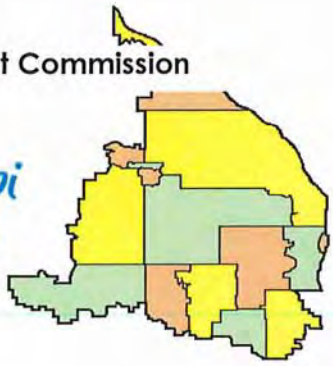
We've been in contact with Karen Galles at Hennepin County Energy and Environment, who is supportive of the idea. She has been discussing this idea with various upper level managers and county attorneys. We have not reached a decision yet, but do hope to have some clarity by the March 14, 2019 meeting.

In the mean time, attached is a submittal from the City of Plymouth to add a regenerative air sweeper to the 2020 CIP.

Wenck Associates, Inc. | 7500 Olson Memorial Highway | Suite 300 | Plymouth, MN 55427
Toll Free 800-472-2232 Main 763-252-6800 Email wenckmp@wenck.com Web wenck.com

item TAC 02c

Shingle Creek Watershed Management Commission
West Mississippi Watershed Management Commission
3235 Fernbrook Lane N • Plymouth, MN 55447
Tel: 763.553.1144 • Fax: 763.553.9326
Email: judie@jass.biz • Website: www.shinglecreek.org



Shingle Creek and West Mississippi Watershed Management Commissions
Request to Add a Project to the Capital Improvement Program

The Shingle Creek and West Mississippi Watershed Management Commissions share the cost of high watershed-priority capital improvements and demonstration projects through the Commissions' Capital Improvements Program (CIP). High-priority watershed capital improvements are those activities that go above and beyond general city management activities to provide a significant improvement to the water resources in the watershed. Thus, a local street flooding issue is not of watershed priority, but a local flooding issue that creates significant erosion and sedimentation impacting a downstream resource may be a watershed priority.

The Commissions' Cost Sharing Policy provides for up to 25 percent of the cost of qualifying projects to be shared by all property in the watershed, with the balance of project cost funded by the local governments participating in or benefiting from the improvement. *The Commissions' maximum share is $250,000.* The Commissions have developed a set of criteria by which proposed projects would be scored, with those projects scoring a minimum number of points on the proposal form screening questions advancing to a prioritization stage by the Technical Advisory Committee (TAC). Prioritization will be based on cost effectiveness, amount of improvement achieved, and regional significance.

Because the Commissions intend to utilize Hennepin County's ad valorem tax levy to finance the watershed share of most of these projects, preference will be given to "bricks and mortar" –type construction projects. However, some management-type projects such as rough fish control may be considered for cost sharing through the Commission budget.

item TAC 02c

Shingle Creek and West Mississippi Watershed Management Commissions
Capital Improvement Program Proposal

Date:	3-8-2019
City:	Plymouth
Contact Name:	Ben Scharenbroich
Telephone:	763-509-5527
Email:	bscharenbroich@plymouthmn.gov
Project Name:	Enhanced Street Sweeper
Proposed CIP Year:	2020
Total Estimated Project Cost:	$350,000
Total Estimated Commission Share: (Maximum smaller of 25% or $250,000)	$75,000

In no more than two pages, please address the following questions:

1. Please describe:
   a. The proposed project and its estimated cost for construction, engineering, easement or land acquisition, and any other costs;
      a. **The City is looking to purchase a high-efficiency street sweeper to improve street sweeping efficiency and reduce pollutant loading to Elm Creek.**
   b. Its purpose;
      a. **Street sweeping is one of the most cost effective best management practices for improving water quality and reducing pollutant loading to impaired waters. Plymouth is bringing our street sweeping program in-house in 2019 and is committed to expanding our street sweeping program to address water quality concerns going forward.**
   c. The water resource(s) that would be affected by the project;
      a. **All water resources that are within and downstream of the City of Plymouth could be affected by the enhanced street sweeping effort.**
   d. The anticipated improvement that would result from the proposed project, for example, estimated pounds of phosphorus removed annually; linear feet of streambank stabilized with native vegetation; square feet of vegetated buffer added; and
      a. **There are 71 centerline (142 curb miles) in the City of Plymouth within the Shingle Creek Watershed. As such, the following are the estimated pollutant removals from this practice based on the Minnesota Stormwater Manual.**

         Pollutant Reduction Estimates for 4 full city sweeps per year:
         Phosphorus = 105 pounds per sweep or 420 pounds per year
         Nitrogen = 705 pounds per sweep or 2,820 pounds per year
         Chloride = 40 pounds per year or 160 pounds per year.

   e. The nature of the improvement.
      a. **Equipment purchase to further enhance street sweeping effectiveness.**

Attach a conceptual or preliminary site plan, and if available a drainage plan, and estimated benefiting area.

item TAC 02c

All streets that are maintained by the City of Plymouth will be swept as recommend by the Minnesota Stormwater Manual (https://stormwater.pca.state.mn.us/index.php?title=Street_sweeping_for_trees)

2. Please describe how the proposed project addresses as many of the following as apply:
   a. Improved water quality.
      a. **Street sweeping is one of the most cost effective best management practices for improving water quality and reducing pollutant loading to impaired waters. Plymouth is bringing our street sweeping program in-house in 2019 and is committed to expanding our street sweeping program to address water quality concerns going forward.**
   b.
   c. Prevention of flooding.
      a. **N/A**
   d. Prevention or correction of erosion.
      a. **N/A**
   e. Groundwater recharge.
      a. **N/A**
   f. Protection and/or enhancement of fish and wildlife habitat.
      a. **Will reduce nutrient and chloride loading to lakes and streams**
   g. Improvement or creation of water recreation facilities.
      a. **N/A**

3. Does the project address one or more TMDL requirements, and if so, which and by how much?
   a. **Yes, enhanced street sweeping is one of the most cost effective best management practices to help work towards meeting TMDL goals.**

   There are 71 centerline (142 curb miles) in the City of Plymouth within the Shingle Creek Watershed. As such, the following are the estimated pollutant removals from this practice based on the Minnesota Stormwater Manual.

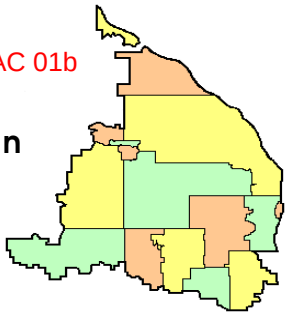
   <u>Pollutant Reduction Estimates for 4 full city sweeps per year:</u>
   Phosphorus = 105 pounds per sweep or 420 pounds per year
   Nitrogen = 705 pounds per sweep or 2,820 pounds per year
   Chloride = 40 pounds per year or 160 pounds per year.

4. How does the proposed project implement a strategy identified in one or more TMDL Implementation Plans, Subwatershed Assessments, other special or feasibility study?
   a. **Enhanced street sweeping was been identified in the Bass, Schmidt & Pomerleau TMDL, The Cedar Island, Pike and Eagle Lake TMDL and the Pike Lake Subwatershed Assessment (Wenck 2017) as a cost effective BMP for nutrient reductions.**
5. Do all the cities responsible for sharing the 75 percent balance of the cost of the project agree to go forward with the project? (It is not necessary to have a final agreement on the precise cost sharing yet.)
   a. **N/A**
6. Is the project in your CIP and the CIP of other cost-sharing cities?
   a. **Yes**

item 01b and TAC 01b

Shingle Creek Watershed Management Commission

West Mississippi Watershed Management Commission



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A combined regular meeting of the Shingle Creek and West Mississippi Watershed Management Commissions will be convened on Thursday, March 14, 2019, at 12:45 p.m. at Edinburgh USA, 8700 Edinbrook Crossing, Brooklyn Park, MN. **The Technical Advisory Committee (TAC) will meet at 11:30 a.m., prior to the regular meeting. The agenda for both meetings follows.** Agenda items are available at **http://www.shinglecreek.org/minutes--meeting-packets.html.**

TECHNICAL ADVISORY COMMITTEE MEETING

1. Call to Order.
   a. Roll Call.
   b. Approve Agenda.*
   c. Approve Minutes of Last Meeting.*
2. Cost Share Applications.
   a. Autumn Ridge Phase II.*
   b. Speed thru Car Wash.*
      1) Engineering Calcs.*
   c. Enhanced Street Sweeper.*
3. Other Business.
   a. Upcoming – Maple Grove wetlands district revisions.
4. Next TAC meeting is scheduled for _____.
5. Adjournment.

REGULAR MEETING

		1.	Call to Order.
	SCWM	a.	Roll Call.
√	SCWM	b.	Approve Agenda.*
√	SCWM	c.	Approve Minutes of Last Meeting.*
		2.	Reports.
√	SC	a.	Treasurer's Report.*
√	SC	b.	Approve Claims* - voice vote.
√	WM	c.	Treasurer's Report.*
√	WM	d.	Approve Claims* - voice vote.
	SCWM	3.	Open forum.
		4.	Project Reviews.
√	SC	a.	SC2019-003 Windsor Ridge, New Hope.*
√	SC	b.	SC2019-004 CSAH 81, Brooklyn Park/Crystal.*
		5.	Watershed Management Plan.
		a.	Cost Share Applications. *(Refer to documents on TAC agenda.)*
√	SC	1)	Autumn Ridge Phase II.*
√	SC	2)	Speed thru Car Wash.*
√	SCWM	3)	Enhanced Street Sweeper.*
√	SCWM	b.	Initiate Minor Plan Amendment to Revise CIP Policies

	SCWM	6.	Water Quality.
√	SC	a.	Next TAC meeting – tentatively 8:30 a.m., Thursday, March 28, 2019, Crystal City Hall.
	SCWM	7.	Education and Public Outreach.
√	SCWM	a.	2018 NPDES Report.*
	SCWM	b.	Education and Outreach – update.**
	SC	c.	Environmental Initiative Nomination.*
		d.	Next WMWA meeting – 8:30 a.m., Tuesday, April 9, 2019, Plymouth City Hall.
		8.	Grant Opportunities and Updates.
	SC	a.	Section 319 Crystal Lake Management Plan - Grant Application.*
	SC	b.	Bass and Pomerleau Lakes Alum Application – verbal update.
	SC	c.	Twin Lake Carp Removal – verbal update.
	SC	d.	SRP Reduction Project – verbal update.
	SCWM	9.	Communications.
	SCWM	a.	Communications Log.*
	SCWM	10.	Other Business.
	SCWM	11.	Adjournment.

* In meeting packet or emailed ** Available at meeting ***Previously transmitted **** Available on website √ Item requires action

Shingle Creek Watershed Management Commission
West Mississippi Watershed Management Commission

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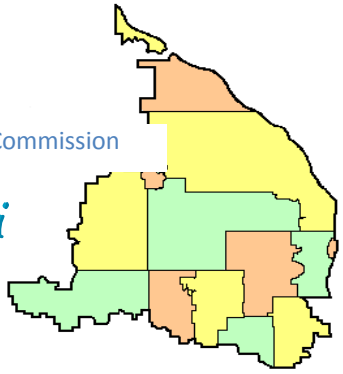


MINUTES
Regular Meeting
February 14, 2019

(Action by the SCWMC appears in blue, by the WMWMC in green and shared information in black.
*indicates items included in the meeting packet.)

I. A joint meeting of the Shingle Creek Watershed Management Commission and the West Mississippi Watershed Management Commission was called to order by Shingle Creek Chairman Andy Polzin at 12:46 p.m. on Thursday, February 14, 2019, at the Clubhouse at Edinburgh, USA, 8700 Edinbrook Crossing, Brooklyn Park, MN.

Present for Shingle Creek: David Mulla, Brooklyn Center; John Roach, Brooklyn Park; Burton Orred, Jr., Crystal; Karen Jaeger, Maple Grove; Gary Anderson, Minneapolis; Bill Wills, New Hope; Harold E. Johnson, Osseo; Andy Polzin, Plymouth; Wayne Sicora, Robbinsdale; Diane Spector, Wenck Associates, Inc.; Troy Gilchrist, Kennedy & Graven; and Judie Anderson, JASS.

Present for West Mississippi: David Mulla, Brooklyn Center; Steve Chesney, Brooklyn Park; Gerry Butcher, Champlin; Karen Jaeger, Maple Grove; Harold E. Johnson, Osseo; Diane Spector, Wenck Associates, Inc.; Troy Gilchrist, Kennedy & Graven; and Judie Anderson, JASS.

Also present: Andrew Hogg, Brooklyn Center; Alex Prasch and Mitchell Robinson, Brooklyn Park; Derek Asche, Maple Grove; Liz Stout, Minneapolis; Bob Grant and Megan Hedstrom, New Hope; Vanessa Strong, and Ben Scharenbroich, Plymouth; and Richard McCoy and Marta Roser, Robbinsdale.

II. Agendas and Minutes.

Motion by G. Anderson, second by Wills to approve the **Shingle Creek revised agenda.*** *Motion carried unanimously.*

Motion by Chesney, second by Johnson to approve the **West Mississippi agenda.*** *Motion carried unanimously.*

Motion by Johnson, second by G. Anderson to approve the **minutes of the January regular meeting.*** *Motion carried unanimously.*

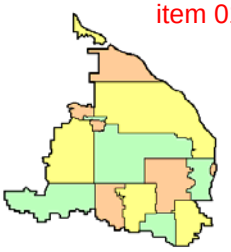
Motion by Butcher, second by Jaeger to approve the **minutes of the January regular meeting. *** *Motion carried unanimously.*

III. Finances and Reports.

A. Motion by Orred, second by Wills to approve the **Shingle Creek February Treasurer's Report.*** *Motion carried unanimously*.

Motion by Orred, second by Wills to approve the **Shingle Creek February claims.*** Claims totaling $100,126.62 were *approved by roll call vote:* ayes – Mulla, Roach, Orred, G. Anderson, Jaeger, Wills, Johnson, Polzin, and Sicora; nays – none.

B. Motion by Butcher, second by Chesney to approve the **West Mississippi February Treasurer's Report.*** *Motion carried unanimously*.



Motion by Chesney, second by Butcher to approve the **West Mississippi February claims.*** Claims totaling $16,619.84 were *approved by roll call vote:* ayes – Mulla, Chesney, Butcher, Jaeger, and Johnson; nays – none.

IV. Open Forum.

V. Project Reviews.

A. SC2019-001 New Hope City Hall North Drainage Area, New Hope.* Demolition and construction of New Hope's City Hall, Police Station, City Pool, and associated parking lot, as well as the reconfiguration of the park amenities in the project area. The total project area is approximately 19.8 acres. Following development, the site will be 40.4 percent impervious, with 8.0 acres of impervious surface, an increase of 1.4 acres. The project site is located at 4401 Xylon Avenue North. A complete project review application was received January 30, 2019.

To comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 80-85% TSS removal and 50-60% TP removal. Infiltrating 1.3-inches of runoff, for example, is considered sufficient to provide a similar level of treatment. If a sump is used the MnDOT Road Sand particle size distribution is acceptable for 80% capture.

Runoff from the site is proposed to be routed to an underground rock filtration system that includes a two ft. layer of medium-sized angular rock and a centralized tree trench. Runoff will percolate a minimum of 65 linear feet through the rock before exiting on the other side. Pretreatment will be provided by a sump (4 ft. depth, 6 ft. diameter) with SAFL Baffle prior to entering the underground system, which SHSAM predicts will remove greater than 80% of sediment from stormwater. The applicant meets Commission water quality treatment requirements.

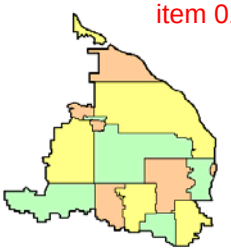
Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year storm events. Runoff from 4.8 acres of impervious surface (including impervious surface associated with the new city hall and police station buildings, the new pool parking lot, and portions of the pool deck) will be routed to an underground rock filtration system, which is intended to reduce runoff rates. The proposed underground system will consist of two feet of medium-sized angular rock and will lie beneath the entirety of the new pool parking lot. Subcatchments that are not routed to the underground system have disconnected impervious surface that makes up 25% of the subcatchment on average. The applicant meets Commission rate control requirements.

Commission rules require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. The new impervious area on this site is 8.0 acres, requiring infiltration of 0.927 acre-feet within 48 hours. However, soils on site are not conducive to infiltration, so *filtration* of 0.927 acre-feet is instead required. The applicant proposes to route runoff to an underground rock filtration system that has the capacity to filtrate the required volume within 48 hours. The applicant meets Commission volume control requirements.

The National Wetlands Inventory identifies one 0.34-acre probable wetland in the northern portion of the site. The City of New Hope is the LGU for WCA administration for this project and New Hope Public Works Director Bernie Weber is the LGU contact. Sarah Nalven, Wenck Associates, had a conversation with Mr. Weber on February 5, 2019 in which he stated that this probable wetland is actually just a low-lying wet spot in a field of turf-grass and that the project is in line with all WCA requirements. The applicant meets Commission wetland requirements.

There are no Public Waters on this site. The applicant meets Commission Public Waters requirements. There is no FEMA-regulated floodplain on this site. The low floor elevations of the buildings are at least two feet higher than the high-water elevation of the underground storage system according to Atlas 14 precipitation. The applicant meets Commission floodplain requirements.

An erosion control plan was submitted with the project review, and includes inlet protection, silt fence, and a rock construction entrance. The erosion control plan meets Commission requirements.



A project update was presented to City Council on January 14, 2019, and several other public events have been conducted around the project. The project meets Commission public notice requirements.

An Operations & Maintenance (O&M) plan was provided.

Motion by G, Anderson, second by Jaeger to advise the City of New Hope that approval of project SC2019-001 is granted with no conditions. *Motion carried unanimously.*

B. SC2019-002 CSAH-9 (Rockford Road) and I-494 Interchange, Plymouth.* Reconstruction of the Rockford Road Bridge over Interstate 494 and associated improvements. The proposed project includes reconstruction of the approaching roadway segments and ramps, replacement of traffic signals at nearby intersections, construction of ADA-compliant pedestrian ramps, reconstruction of an existing multi-use trail at the south side of the bridge, and construction of a new multi-use trail along the northern side of the new bridge. The project area is located within the Bassett Creek WMC's legal boundary, but approximately 34 acres of the project's drainage area will drain north to the Shingle Creek watershed. This area is located in the northwest quadrant of the interchange and is being referred to as *the Shingle Creek portion.* Within this Shingle Creek portion, impervious surface will increase by 0.06 acres (2,725 ft^2) or 1.8%. A complete project review application was received January 11, 2019.

To comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 85% TSS removal and 60% TP removal. The applicant proposes to raise the outlet elevation of the existing wetland that drains the project area (called Pond 18-EX P or Wetland 7), increasing dead storage and thereby providing sufficient water quality treatment. The applicant meets Commission water quality treatment requirements.

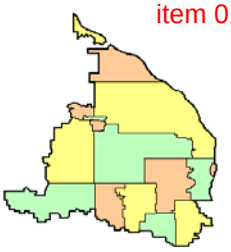
Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year storm events. Runoff from the portion of the project draining to the Shingle Creek watershed is routed north out of existing Pond 18-EX P and into a large wetland complex within Nature Canyon Park (which lies within Shingle Creek WMC's legal boundary). Runoff rate from Pond 18-EX P will be reduced because the applicant proposes to raise the outlet from 968 to 970 feet. The applicant meets Commission rate control requirements.

Commission rules require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. The new impervious area on this site is 0.06 acres, requiring infiltration of 0.005 acre-feet (218 CF) within 48 hours. The applicant proposes to route runoff to two existing wetlands within the project area and then to a large wetland complex in Nature Canyon Park that together have the capacity to infiltrate the required volume within 48 hours.

Volume was also examined because water that was previously routed south to the Bassett Creek watershed is proposed to be routed north to the Shingle Creek watershed. However, the large wetland complex in Nature Canyon Park, located just downstream/north of the project area, can handle the additional volume proposed to be routed there. Even if the Nature Canyon Park wetland's outlet was blocked, its 23-acre area would only see about 1-foot of bounce during a 100-year storm and no structures would be affected. The applicant meets Commission volume control requirements.

There are two wetlands in the Shingle Creek portion of the project, both just west of I-494 (a wetland delineation was approved by the City of Plymouth December 10, 2018). The Minnesota Department of Transportation (MnDOT) is LGU for WCA administration for this project. Sarah Nalven, Wenck Associates, spoke with Beth Brown, Environmental Program Specialist at MnDOT, on January 25, 2019. Ms. Brown stated that a notice of application has been issued for the proposed project, which includes temporary impacts, permanent impacts and utility exemptions. Ms. Brown stated that a decision on the proposed project will be made following the review of the application and completion of the comment period on February 13, 2019. The applicant meets Commission wetland requirements.

There are no Public Waters on this site. The applicant meets Commission Public Waters requirements.



There is no regulatory floodplain on this site. The applicant meets Commission floodplain requirements.

An erosion control plan was submitted with the project review, and includes silt fence, bio roll, rock construction entrances/exits, inlet protection, and rip rap at outlets. The erosion control plan meets Commission requirements.

An open house for the project was conducted on January 16, 2019, meeting Commission public notice requirements.

Motion by Jaeger, second by G. Anderson to advise the City of Plymouth that approval of project SC2019-002 is granted with no conditions. *Motion carried unanimously.*

C. WM2019-001 Oak Village, Brooklyn Park.* Construction of 56 townhomes on 5.36 acres of previously undeveloped land located in the southwest quadrant of Oak Grove Parkway and Regent Avenue, approximately 9712 Regent Avenue. Following development, the site will be 53 percent impervious with 2.85 acres of impervious surface, an increase of 2.85 acres. A complete project review application was received on January 2, 2019.

To comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 80-85% TSS removal and 50-60% TP removal. Infiltrating 1.3-inches of runoff, for example, is considered sufficient to provide a similar level of treatment. If a sump is used the MnDOT Road Sand particle size distribution is acceptable for 80% capture.

Runoff from the site is proposed to be routed to a regional pond northwest of the site, just north of Oak Grove Parkway. This pond was designed as a part of the Oxbow Commons master plan to provide the required water quality treatment. In addition, the applicant has designed two filtration basins that provide water quality treatment to about one-third of the site. According to P8, these filtration basins remove about 97% TSS and 63% TP from water routed to them, and overall, 32% TSS and 20% TP is removed. Sumps (4 ft. deep, 4 ft. diameter) provide adequate pretreatment to water before it enters the filtration basins. The applicant meets Commission water quality treatment requirements.

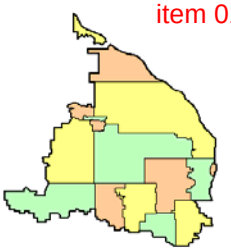
Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year storm events. Runoff from the site drains to a regional pond northwest of the site, just north of Oak Grove Parkway. Although runoff leaving the site is not limited to predevelopment rates, this regional pond was designed as a part of the Oxbow Commons master plan to limit rates from the site. The applicant meets Commission rate control requirements.

Commission rules require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. The new impervious area on this site is 2.85 acres, requiring infiltration of 10,340 CF within 48 hours. However, existing fill on the site makes infiltration unrealistic, so the applicant proposes to filtrate the required volume. The filtration basins have the capacity to filtrate the required volume within 48 hours. The applicant meets Commission volume control requirements.

The National Wetlands Inventory does not identify any wetlands on site. The applicant meets Commission wetland requirements. There are no Public Waters on this site. The applicant meets Commission Public Waters requirements.

There is no floodplain on this site. The low floor elevations of the buildings are at least two feet higher than the high-water elevation of the filtration basins according to Atlas 14 precipitation. The applicant meets Commission floodplain requirements.

An erosion control plan was submitted with the project review. It includes a rock construction entrance, inlet protection, silt fence around the site perimeter, silt fence and erosion control blanket around filtration basins, rip rap at filtration basin inlets, and native seed specified on the pond slopes. The erosion control plan meets Commission requirements.



A public hearing on the project was conducted on January 9, 2019 as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements.

A draft Operations & Maintenance (O&M) agreement between the applicant and the City of Brooklyn Park was provided.

Motion by Chesney, second by Butcher to advise the City of Brooklyn Park that approval of project WM2019-001 is granted with no conditions. *Motion carried unanimously.*

VI. Watershed Management Plan.

A. CIP and Annual Levy Limits.* In May 2007 the Commissions adopted a Major Plan Amendment to the Second Generation Watershed Management Plan. That amendment established the Cost Share Policy for Commission participation in capital improvement projects up to a maximum of 25% of the actual project cost up to $250,000. The policy also voluntarily limited the maximum annual levy request to $500,000 for each Commission. In 2011, as the Commissions were developing the Third Generation Plan, the policy was reviewed by City Managers, who recommended no changes.

B. At the January meeting the Commissioners requested that the Technical Advisory Committee (TAC) discuss reconsidering the self-imposed limits on Commission cost share in CIP projects, and in the maximum amount of the annual levy and make recommendations for any changes to those policies. The TAC discussed these issues at its January 24, 2019 meeting and makes the following recommendations.

1. Eliminate the $250,000 maximum contribution on individual CIPs.

2. Keep the 25% maximum contribution limit for CIP projects, but with the $250,000 maximum cap lifted, it would be effectively capped at the available levy.

3. Allow projects costing more than $100,000 to be eligible for the City Cost Share program, but keep the $50,000 maximum Commission contribution.

4. Continue Commission 100% funding of lake and stream internal load projects.

5. Raise the annual levy request from $500,000 to $750,000 and increase that amount to $1,000,000 by the time of the Fourth Generation Plan in 2022.

These revisions can be "rolled into" the annual Minor Plan Amendment making changes to the Capital Improvement Program (CIP) that takes place in the spring. The process includes notification to the cities and review agencies, discussion at a public meeting, and review and approval by the County Board.

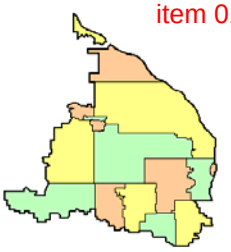
Motion by Orred, second by G. Anderson directing Staff to draft revised language for presentation at the March meeting. *Motion carried unanimously.*

Motion by Butcher, second by Jaeger directing Staff to draft revised language for presentation at the March meeting. *Motion carried unanimously.*

The members also requested Staff to include in their presentation the impact of the increases on the average property owner.

VII. Water Quality.

A. Shingle Creek 2019 Water Quality Monitoring Program. The Commission each year budgets and undertakes monitoring activities, including routine stream and lake monitoring and volunteer lake, stream, and wetland monitoring. Water quality and quantity monitoring on Shingle Creek and select lakes is performed by Wenck staff and the USGS and macroinvertebrate monitoring in Shingle Creek is performed by volunteers through the Hennepin County Environment and Energy Services' (HCEES) RiverWatch program. Additional lake monitoring is performed by volunteers



through the Metropolitan Council's Citizen Assisted Lake Monitoring Program (CAMP). Wetland monitoring is conducted through HCEES's Wetland Health Program (WHEP).

Staff's February 8, 2019 memo* details the proposed 2019 monitoring program. This proposal is consistent with the program set forth in the Third Generation Watershed Management Plan, which includes routine monitoring tasks, specific monitoring efforts to support Commission-administered grants, and monitoring to evaluate progress toward the TMDLs every five years. In 2019 the Commission will complete the 5-year TMDL review report for Meadow and Magda Lakes, completing the first cycle of lake reviews.

1. The Commission has **routinely monitored stream flow and water quality** in Shingle Creek since 1996. Two locations, one downstream of Humboldt Avenue in Minneapolis and one upstream of Zane Avenue in Brooklyn Park have been monitored for water quantity and various water quality chemical parameters. In 2007, the latter location was moved upstream to just downstream of Brooklyn Boulevard in order to obtain a better stage-discharge relationship. In 2015 Bass Creek was added as a third site to be routinely monitored for water quality and conductivity, providing better information about water quality in Bass Creek, which is impaired for chloride and biota. A fourth site at Queen Avenue in Minneapolis is monitored for flow by the US Geological Survey (USGS) as a part of its ongoing National Assessment of Water Quality (NAWQA). Continuous conductivity and temperature are measured at the USGS site. That data are available on-line real-time at waterdata.usgs.gov/mn/nwis/uv?05288705. The Commission also partners financially with the USGS in the operation of the Queen Avenue monitoring station.

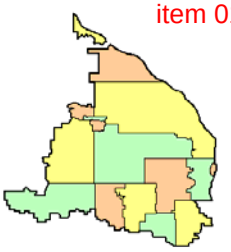
With upcoming DO biotic impairment updating, Staff are proposing to conduct two dissolved oxygen longitudinal surveys across Bass and Shingle Creeks at designated road crossings. Surveys will target a single high flow and a single low flow period in which recordings will occur before 9:00am and after 4:00pm on the same day. A more detailed discussion and breakdown of the routine stream flow and water quality monitoring activities and costs is included in Staff's memo. ($32,285)

2. In 2018 a new pressure transducer was purchased to replace a dated sensor with a bad battery. All the major **monitoring equipment** owned by the Commission is in working order. With the possibility that additional sensors will go out this year, additional budget was added for these smaller miscellaneous equipment needs. This year's budget includes funds to purchase new deep cycle batteries to replace aging batteries previously purchased by the Commission. The marine-cycle batteries are used to power the monitoring equipment (transducers and pumps) at the routine stream monitoring stations. ($3,000)

3. There is currently about $715 difference between this year's estimated monitoring program cost and the 2019 budget. Staff recommend that the Commission hold this in reserve for any monitoring needs that may come up this season. One possible use of these funds would be to request and process high school student volunteer stream macroinvertebrate monitoring raw data from the Hennepin County's RiverWatch program at various locations on Shingle Creek. The site at the Connections project location has been monitored by students from Park Center High School for over 20 years. It would be of value to assess this data to see if there have been changes in the macroinvertebrate community over the past 20 years. This data would also assist with the DO/biotic TMDL review in 2019-2020.

4. To track the effectiveness of BMP implementation in improving lake water quality, the Commission periodically performs **intensive lake monitoring** to supplement the volunteer surface monitoring. Because the Commission's goals include achieving delisting of lakes that meet their TMDLs and water quality goals, the Third Generation monitoring plan includes more rigorous lake monitoring sufficient to demonstrate to the MPCA and EPA that conditions have improved. The February 8 memo includes the lake monitoring schedule from the Third Generation Plan, updated to reflect the actual monitoring completed.

For 2019, Schmidt Lake will be monitored twice monthly. The water quality data collected for Schmidt will include surface water samples, water column temperature/DO profiles and surface water samples. Note that 2017 marked the point where we completed a full round of sampling for all lakes and the Commission is now on to round two of Intensive Lake monitoring to support the 5-Year TMDL Reviews. ($7,334)



A component of the intensive monitoring is to obtain or update surveys of lake aquatic vegetation. Aquatic vegetation plays an important role in water quality and biotic integrity, and the vegetation community can change as water quality changes. For 2019 Staff propose that surveys for Schmidt Lake be updated in tandem with the intensive monitoring. ($5,878)

5. DNR records show the most recent fish surveys for Schmidt Lake were conducted in 1990. In 2018 Wenck contacted the local DNR fisheries office to inquire about their next planned fish surveys within the Shingle Creek watershed and Schmidt Lake was not on the list for DNR sampling. DNR staff indicated that they plan to perform fish surveys on Crystal Lake in 2019 or 2020. Based on this information, and since fish communities play a key role in lake water quality and promoting a healthy and balanced ecosystem, Staff recommend that the Commission perform fish surveys on Schmidt Lake in 2019 as part of the intensive monitoring schedule. ($3,670)

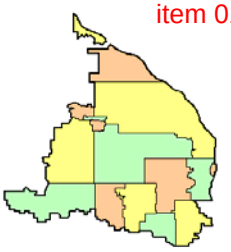
6. The **Twin Lake Carp Management 319 grant project** is set to end in 2019. This project includes active management of submersed aquatic vegetation (SAV) within the lakes for the first three years post initial internal management activity. The first carp removal occurred in the winter of 2018 and, therefore, SAV management began in the spring of 2018 to treat curlyleaf pondweed (CLP). As part of the management, the Commission is required by the MnDNR to conduct annual aquatic invasive species (AIS) delineation of CLP for treatment purposes and conduct annual water quality sampling. Water quality sampling requirements are not specified and do not need to follow the intensive monitoring schedule, however, with the level of current management occurring, Staff recommend conducting monthly water quality sampling, as budget allows, similar to intensive lake monitoring. A more comprehensive data collection effort will produce valuable data to track rapid changes in water quality due to fisheries management. ($6,325)

To track the effectiveness of the Twin Lake Carp project and to fulfill SAV treatment requirements, intensive lake water quality monitoring will be conducted on Upper, Middle, and Lower Twin Lakes in 2019. All three basins of Twin Lake will be monitored once a month (May – Oct, as budget allows). The water quality data collected for each basin will include surface water samples for various parameters, water column temperature and DO profiles, and deep-water phosphorus samples (Middle Twin only). This activity was not included in the original monitoring budget and the estimated cost exceeds the 2019 budget. Staff will be as efficient as possible in all the lake monitoring to try to get the recommended work done within the budget, but may not be able to collect all the data outlined; for example, they may have to forego October sampling. There is also a small amount of grant funding left ($590) that can also help fund this work. ($2,280)

As part of the Twin Lake Carp project, CLP delineations will be conducted on Upper Twin Lake in 2019. The delineation will be conducted in April/May and be presented to the DNR for permit approval for herbicide treatment and the contracted herbicide applicator to know the designated treatment area. A year-end report is also required to be submitted to the MnDNR for permit renewal purposes in 2020. Approximately $750 has been carried over from the Twin Lake Carp project budget to assist funding this activity.

7. The following monitoring tasks are built into ongoing grant projects. While not funded from the Commission's general fund budget, they are presented here for completeness. Routine water quality monitoring will be conducted on Bass and Pomerleau Lakes as part of monitoring the response to the **Bass and Pomerleau Lake Alum Treatment Project.** The Commission last performed fisheries and vegetation surveys on Bass Lake in 2017 and 2018, respectively, therefore, these types of assessments are not recommended for 2019 as biotic community responses may take a few years to achieve new stable community conditions.

8. **Volunteer Lake Monitoring.** The Shingle Creek Commission has participated in the Metropolitan Council's Citizen Assisted Lake Monitoring Program (CAMP) since 1993. This program trains volunteers to take surface water samples and make water quality observations from late spring to early fall, using standardized reporting techniques and forms. The CAMP program has been the Commission's primary means of obtaining ongoing lake water quality data. This program is also an NPDES Education and Outreach BMP. CAMP was initiated by the Met Council to supplement the water quality monitoring performed by Met Council staff and to increase our knowledge of



water quality of area lakes. Volunteers in the program monitor the lakes every other week from mid-April to mid-October. They measure surface water temperature and Secchi depth, and collect surface water samples that are analyzed by the Met Council for total phosphorous, total Kjeldahl nitrogen, and chlorophyll-a. The volunteers also judge the appearance of the lake, its odor, and its suitability for recreation. The Met Council charges $760 per lake to cover the cost of supplies for volunteers, analysis of samples, and the Regional Reports. The Commission owns seven equipment kits purchased in past years and will not have to purchase any more kits unless key equipment needs to be replaced.

Lakes are monitored on a rotating schedule. The larger lakes are monitored every other year while the smaller lakes are monitored every three years. It is assumed that when a lake undergoes the intensive sampling program, no CAMP monitoring will be performed that year. Lakes scheduled for 2019 volunteer lake monitoring are Cedar island, Meadow, and Success. ($3,800)

9. Volunteer Stream Monitoring. In previous years high school student volunteers conduct macroinvertebrate monitoring through Hennepin County Environment and Energy Services' RiverWatch Program at two locations on Shingle Creek. The Commission contracts with Hennepin County for this service at a cost of $1,000 per site. Hennepin County maintains an interactive online map showing locations throughout the county and stream grades going back to 1996: hennepin.us/riverwatch. ($2,000)

10. Volunteer Wetland Monitoring. In 2007 the Commission began participating in Hennepin County Environment and Energy Services' Wetland Health Evaluation Program (WHEP), a volunteer monitoring program. Through this program, adult volunteers monitor vegetative diversity and macroinvertebrate communities. In 2018, there were no wetlands monitored in Shingle Creek. Hennepin County has an interactive online map showing WHEP locations throughout the County: hennepin.us/your-government/get-involved/wetland-health-evaluation-program. The 2019 budget includes $2,000 to monitor two wetlands. Staff recommend that they work with the cities to identify sites for 2019

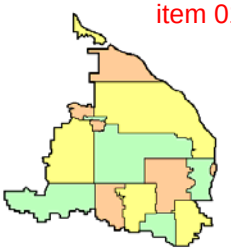
Motion by G. Anderson, second by Jaeger to approve the proposed 2019 Shingle Creek monitoring program. *Motion carried unanimously.*

B. For many years the Commission did not routinely monitor water quality in the few streams that are present in the watershed. The Commission undertook stream and outfall monitoring in 1990-1992 and found that the water quality of runoff from the watershed was generally within ecoregion norms. Since much of the watershed was poised to develop under Commission rules regulating the quality and rate of runoff, the Commission elected to discontinue further monitoring. In 2010 and 2011 the Commission authorized a repeat of the 1990-1992 monitoring, to determine current conditions and evaluate whether the development rules were protective of downstream water quality.

Staff's February 7, 2019 memo* details the proposed 2019 monitoring program. The Third Generation Plan and subsequent budgets incorporated ongoing, routine monitoring for West Mississippi that includes monitoring flow and water quality at two sites per year on a rotating basis. In 2018 the Commission monitored the Environmental Preserve and Oxbow Creek outlets. Results of 2018 monitoring will be presented in the Annual Water Quality Report in April 2019.

1. Routine Monitoring. The 65th Avenue outfall and the Mattson Brook outlet will be monitored in 2019 for flow and water quality using automatic samplers. Continuous flow will be monitored using pressure transducers, and water quality will be analyzed through field parameter measurements, periodic grab samples and storm composite sampling using ISCO automated samplers purchased by the Commission in 2010. The 2019 budget for this activity is $17,000.

2. Volunteer Stream Monitoring. In previous years high school student volunteers conduct macroinvertebrate monitoring through Hennepin County Environmental Services' RiverWatch Program at one location in West Mississippi – Mattson Brook. The Commission contracts with Hennepin County for this service at a cost of $1,000 per site. In the past few years Hennepin County has been finding it difficult to recruit a high school to monitor



this site. Staff recommends that this budget ($1,000) be held in reserve in the event a team is found for 2019. Staff will consult with the County to see if the Commission should drop this site in future budgets.

3. Volunteer Wetland Monitoring. In 2007 the Commission began participating in Hennepin County Environment and Energy Services' Wetland Health Evaluation Program (WHEP), a volunteer monitoring program. Through this program, adult volunteers monitor vegetative diversity and macroinvertebrate communities. In 2018, the wetlands monitored were in the environmental Preserve in Brooklyn Park and near the intersection of 101st and Regent Avenues in Brooklyn Park. The 2019 budget includes $2,000 to monitor two wetlands. Staff recommend that they work with the cities to identify sites for 2019.

Motion by Jaeger, second by Butcher to approve the proposed 2019 West Mississippi monitoring program. *Motion carried unanimously.*

C. Technical Advisory Committee (TAC).

1. January 24, 2019 TAC minutes* are included in the meeting packet.

2. The next TAC meeting is scheduled for 8:30 a.m., Thursday, February 28, 2019, Crystal City Hall.

VIII. Education and Public Outreach - West Metro Water Alliance (WMWA).

A. Watershed PREP and Education and Outreach Events. The February 12, 2019 WMWA meeting was cancelled due to weather. Educators are currently scheduling spring classroom visits and are also available to table at city and school events. Contact Amy Juntunen at amy@jass.biz to schedule these events. In 2019 the educators will also be putting together some potential presentations for lake associations.

B. *Ten Things You Can Do Brochure.* The brochure is in final edits and the group is working with Hennepin County to update the design and layout. It is expected the County will print the brochure at no cost to the watershed organizations.

C. Website/Social Media. The website Google Analytics for January 2019 along with the Facebook insights for the last 28 days for both the Shingle Creek Commission and WMWA are included in Staff's February 13, 2019 memo.*

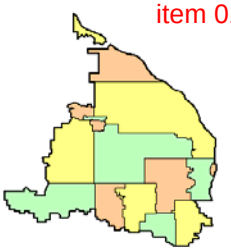
D. Professional Services Contract.* At the January 8, 2019 meeting, WMWA agreed to again hire Dawn Pape to prepare 1-2 Facebook and Twitter postings per week for 2019 about water quality, AIS, salt use, natural resources issues, and the Pledge to Plant campaign. The contract,* included in the meeting packet, also provides for one boosted post per month. Pape has been managing social media for the Bassett Creek Commission and has found that boosting one or two posts per month dramatically increases reach and engagement. The contract was drafted by the Commission's attorney between Lawn Chair Gardener, Pape's company, and the Shingle Creek Commission acting as fiscal agent for WMWA. Motion by Orred, second by G. Anderson to enter into this contract. *Motion carried unanimously.*

E. The **2018 NPDES Report** will be available in the March meeting packet.

F. The **next WMWA meeting** is scheduled for 8:30 a.m., Tuesday, March 12, 2019, at Plymouth City Hall.

IX. Grant Opportunities and Updates.

Crystal Lake Management Plan Section 319 Grant Application.* Included in the meeting packet is draft of a Section 319 grant to complete the Crystal Lake Management Plan proposed last fall. This project would include an alum treatment for Crystal Lake, carp harvesting and aquatic vegetation management. While Staff is still crunching numbers, they estimate the total cost would be about $300,000, with $180,000 coming from the grant and $120,000 from the Commission. As part of this year's Minor Plan Amendment the CIP would be amended to specify that the generic 2020 lake internal load project would be the Crystal Lake Management Plan. Motion by Roach, second by Jaeger to submit this application and to include the final application in the March meeting packet. *Motion carried unanimously.*



X. Communications.

A. January Communications Log.* No items required action.

B. 2019 Environmental Initiative Awards Project Nominations* Staff is recommending that the Commission make application in the category, Environmental Innovation, that recognizes "a partnership working on the next environmental breakthrough. "…winners of this future-facing award will be recognized for their creativity in solving an environmental challenge and the potential of their project or plan to ensure a prosperous economy, an equitable society and a healthy environment long into the future." The Commission's application would be for the Biochar- and Iron-Enhanced Sand Filter project. Motion by Mulla, second by Orred to submit a nomination for the Commission and the Biochar project, and requesting Staff to craft a story to which the Commissioners can make revisions and enhancements prior to submittal. *Motion carried unanimously.*

XI. Other Business.

A. The biennial **Solicitation of Interest Proposals*** was published in the January 14, 2019 edition of the *State Register.* Two (two) firms responded to the solicitation for technical consultant; two (two) for wetland consultant; and one each for legal and administrative consultants. J. Anderson emailed the responses to the Commissioners for their review.

After discussion, motion by Sicora, second by Jaeger to retain the current consultants for 2019-2020. *Motion carried unanimously.*

Motion by Chesney, second by Butcher to retain the current consultants for 2019-2020. *Motion carried unanimously.*

The firms selected are Wenck Associates, Inc., technical and wetland consultants; Kennedy & Graven, Chartered, legal consultants; and Judie Anderson's Secretarial Service, Inc., administrative consultants.

B. Election of 2019 officers. The following individuals advised Staff that they are willing to serve as officers in 2019: Butcher, Jaeger, Johnson, Polzin, Sicora and Vlasin.

Hearing no further nominations, motion by G. Anderson, second by Roach to elect Polzin as Chair, Sicora as Vice Chair, Jaeger as Secretary, and Johnson as Treasurer for the coming year. *Motion carried unanimously.*

Hearing no further nominations, motion by Chesney, second by Butcher to elect Butcher as Chair, Vlasin as Vice Chair, and Jaeger as Secretary/Treasurer for the coming year. *Motion carried unanimously.*

C. The terms of representatives from Champlin, Maple Grove, Minneapolis, and New Hope expired January 31, 2019.

XII. Adjournment. There being no further business before the Commissions, the meetings were adjourned at 2:19 p.m.

Respectfully submitted,

Judie A. Anderson
Recording Secretary
JAA:tim

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March 8, 2019

SHINGLE CREEK WATERSHED MANAGEMENT COMMISSION

PROJECT REVIEW SC2019-003: Windsor Ridge

Owner: Mike Kevitt
SVK Development, LLC
3335 Pennsylvania Avenue N
Crystal, MN 55427

Engineer: Todd McLouth, PE
Company: Loucks
Address: 7200 Hemlock Lane #300
Maple Grove, MN 55369

Phone: 763-496-6742
Fax: 763-424-5822
Email: tmclouth@loucksinc.com

Purpose: Construction of 32 single-family residential homes on 8.7 acres.

Location: 51st Avenue & Pennsylvania Avenue North, New Hope, MN (Figure 1).

Exhibits:

1. Project review application dated 2/14/19 and project review fee of $2,200, dated 2/4/19, received 2/14/19.
2. Site plan, preliminary plat, grading, utility, erosion control, and landscaping plans dated 2/8/19, received 2/14/19.
3. Hydrologic calculations by Loucks, dated 2/6/19, received 2/14/19.

Findings:

1. The proposed project is the construction of 32 single-family residential homes on 8.7 acres. Following development, the site will be 36.6 percent impervious with 3.2 acres of impervious surface, an increase of 3.2 acres.
2. The complete project application was received on 2/14/19. To comply with the 60-day review requirement, the Commission must approve or deny this project no later than the 4/11/19 meeting. Sixty calendar-days expires on 4/15/19.
2. To comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 85% TSS removal and 60% TP removal. Infiltrating 1.3-inches of runoff, for example, is considered sufficient to provide a similar level of treatment. If a sump is used the MnDOT Road Sand particle size distribution is acceptable for 80% capture.

   Runoff from the majority of the site (drainage area 1P, 7.1 acres) is proposed to be routed to a NURP pond connected to an infiltration basin (P1 and P1i, respectively; Figure 2). According to the MIDS calculator, this treatment pond removes 91% TSS and 87% TP. Stormwater entering this pond is pretreated with a 6 ft. diameter/6 ft. depth sump, which removes 85% TSS according to SHSAM. The applicant meets Commission water quality treatment requirements.

3. Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year storm events. Runoff from the majority of the site (drainage area 1P, 7.1 acres) is proposed to be routed to a NURP pond connected to an infiltration basin (P1 and P1i, respectively). The applicant meets Commission rate control requirements (Table 1).

Table 1. Runoff from site (cfs).

Drainage Area	2-year event		10-year event		100-year event	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Entire site	1.2	0.3	6.0	4.7	21.6	15.9

4. Commission rules require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. The new impervious area on this site is 3.2 acres, requiring infiltration of 11,580 cubic feet within 48 hours. Runoff from the majority of the site (drainage area 1P, 7.1 acres) will be routed to a NURP pond connected to an infiltration basin (P1 and P1i, respectively; Figure 2). In addition, a small portion of the site (drainage area 2P, 1.05 acres) will be routed to a second infiltration basin (P2; Figure 2). Together these infiltration basins have the capacity to infiltrate the required volume within 48 hours. In fact, soils have measured infiltration rates of 31 inches per hour, which is higher than 8.3 inches per hour, the highest infiltration rate the Minnesota Stormwater Manual allows (for water quality purposes). The applicant proposes to amend in-place sandy soils with 1 ft. of topsoil to slow infiltration rates to 8.3 inches per hour. The applicant will test infiltration post-construction to confirm desired infiltration rates. The applicant meets Commission volume control requirements.

5. The National Wetlands Inventory does not identify any wetlands on site. The applicant meets Commission wetland requirements.

6. There are no Public Waters on this site. The applicant meets Commission Public Waters requirements.

7. There is no FEMA-regulated floodplain on this site. The lowest opening elevations of all but two houses are at least two feet higher than the high water elevation of the ponds according to Atlas 14 precipitation. Lots 1 and 2 in Block 2 have lowest opening elevations of 906 ft., and the high water level of Pond 2 is 904.98 ft. The applicant does not meet Commission floodplain requirements.

8. An erosion control plan was submitted with the project review, and includes rock construction entrances, perimeter silt fence, silt fence surrounding basins, inlet protection, rip rap at inlets, and native seed specified on the pond slopes. The erosion control plan meets Commission requirements.

9. A public hearing on the project was conducted on 3/5/19 as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements.

SC2019-003: Windsor Ridge

10. The City plans to own Outlot A and maintain the pond within Outlot A (P1 and P1i). Therefore, an O&M agreement is not necessary.

11. A Project Review Fee of $2,200 has been received.

Recommendation: Recommend approval subject to the following conditions:

1. Demonstrate by double ring infiltrometer or witness test that the site meets the design infiltration rate of 8.3 inches/hour.

2. Provide evidence that work within the railroad right of way is allowed.

3. By 3/13/19, submit revised plans in which the lowest opening elevations of Lots 1 and 2 in Block 2 have been raised so that there is a minimum of 2 ft. of freeboard between these elevations and Pond 2's high water level.

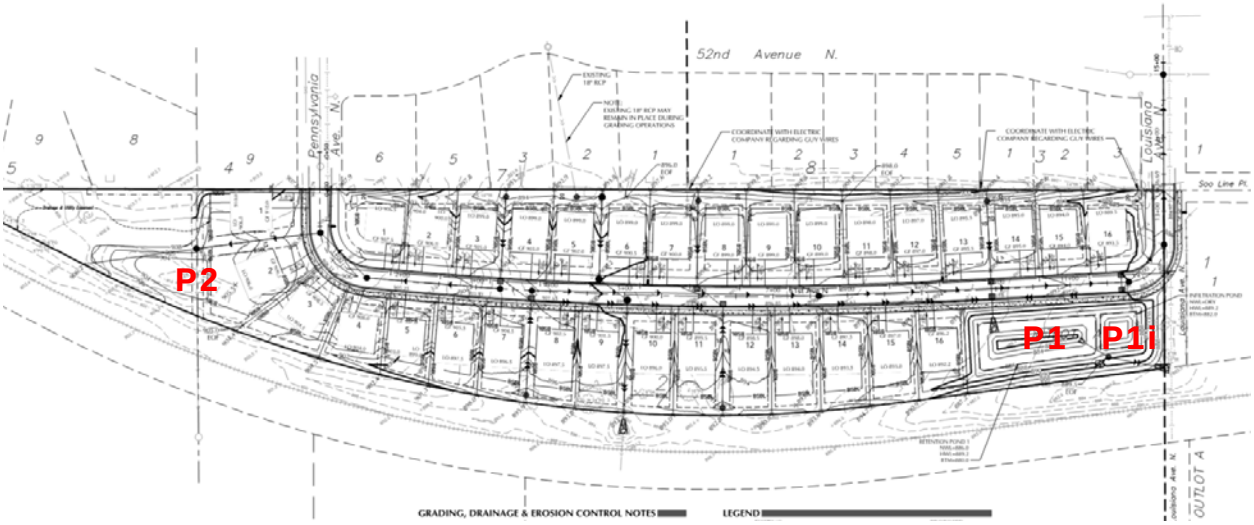
Wenck Associates, Inc.
Engineers for the Commission

Ed Matthiesen, P.E. Date

SC2019-003: Windsor Ridge

Figure 1. Site location.

Figure 2. Site grading plan.



SHINGLE CREEK WATERSHED MANAGEMENT COMMISSION

PROJECT REVIEW SC2019-004: CSAH-81 (Bottineau Boulevard)

Owner: Hennepin County Public Works
1600 Prairie Drive
Medina, MN 55340

Engineer: Kelly Agosto, P.E.
Company: Hennepin County
Address: 1600 Prairie Drive
Medina, MN 55340
Phone: (612) 596-0365
Fax:
Email: Kelly.agosto@hennepin.us

Purpose: Reconstruction and expansion of CSAH 81 (Bottineau Boulevard) on 50 acres (1.6 miles) to provide a consistent six-lane roadway, stormwater structures, and a multi-use trail that is part of the future Crystal Lake Regional Trail.

Location: 200 feet north of CSAH 8 (West Broadway Ave) to 200 feet south of 83rd Avenue (Figure 1).

Exhibits:

1. Project review application and project review fee of $1,100, dated February 27, 2019, received March 7, 2019.

2. Site plan, preliminary plat, grading, utility, erosion control, and landscaping plans dated February 7, 2019, received February 18, 2019.

3. Hydrologic calculations by Hennepin County, dated and received on February 18, 2019.

Findings:

1. The proposed project is the 1.6-mile reconstruction of CSAH-81 (approximately a 50-acre construction footprint) from CSAH-8 in Crystal to 83rd Avenue in Brooklyn Park. The site is 50.2 acres. Following development, the site will be 65 percent impervious with 32.7 acres of impervious surface, an increase of 5.7 acres.

2. The complete project application was received on February 18, 2019. To comply with the 60-day review requirement, the Commission must approve or deny this project no later than the April 11, 2019 meeting. Sixty calendar-days expires on April 19, 2019.

3. To comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 85% TSS removal and 60% TP removal. Infiltrating 1.3-inches of runoff, for example, is considered sufficient to provide a similar level of treatment. If a sump is used the MnDOT Road Sand particle size distribution is acceptable for 80% capture.

   Runoff from the site is proposed to ultimately be routed offsite at seven different discharge points. Table 1 below summarizes how much impervious surface from each drainage area is routed to various water quality devices. The proposed drainage map is shown on Figure 2. All inlets to filtration basins will receive pretreatment via a 4-foot-deep sump structure in the manhole/catch basin immediately upstream. The

applicant submitted SHASAM model results demonstrating that the water quality requirements will be met by the SAFL baffle/Preserver structures. The applicant meets Commission water quality requirements.

Table 1. Water quality routing

Drainage Area	Impervious acres routed to filtration basin (s)	Impervious acres routed to baffle device	Impervious acres routed to existing MnDOT ponds
Area 1	1.4	1.7	-
Area 2	3.6	16.5	-
Area 3	-	6	-
Area 4	0.4	2.3	-
Area 5	0.3	6.2	-
Area 6	-	6.9	-
Area 7	-	-	10.3

4. Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year storm events. Runoff from the site ultimately flows into Shingle Creek. Runoff leaves the site via various adjacent ditches. Overall, the project results in a decreased discharge rate offsite. However, due to limited right-of-way space, rate control is not met at every individual discharge location (Table 2). For the drainage areas that did not meet rate control, slight increases in overall discharge volume are anticipated. Table 3 shows the volume increases.

   Rena Weis from Wenck called Brooklyn Park City Engineer Jesse Struve on March 6, 2019. Mr. Struve did not see an issue with the slight increase in rate and volume within the right-of-way during the 100-year event from Drainage Area 6 since the water will flow south along Highway 81 to Shingle Creek.

   The applicant meets Commission rate control requirements.

Table 2. Runoff from site (cfs).

Drainage Area	2-year event		10-year event		100-year event	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Area 1	8.68	5.71	20.33	12.22	50.01	30.91
Area 2	62.55	54.61	114.97	91.51	233.93	174.22
Area 3*	17.1	15.1	28.2	28.2	45.3	38.6
Area 4	5.67	6.72	11.57	12.25	25.68	26.64
Area 5	18.87	21.69	36.66	37.38	78.16	72.53
Area 6	20.97	24.62	37.87	42.31	75.92	80.97
Area 7	3.11	3.23	4.98	5.07	10.96	10.72
Total	136.95	131.65	254.58	228.9	519.69	434.51
Reduction		-5.3		-25.68		-85.45

* Modeled with XP-SWMM

Table 3. Runoff volumes (ac-ft)

Drainage Area	2-year event		10-year event		100-year event	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Area 1	0.505	0.533	1.123	1.198	2.757	2.901
Area 2	3.432	3.947	6.368	6.963	13.328	13.991
Area 3*	-	-	-	-	-	-
Area 4	0.315	0.421	0.635	0.778	1.432	1.622
Area 5	1.039	1.279	2.016	2.303	4.394	4.725
Area 6	1.151	1.325	2.105	2.324	4.348	4.618
Area 7	3.743	3.928	7.912	8.175	16.292	16.497

* Modeled with XP-SWMM

5. Commission rules require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. The project site is located within a Drinking Water Supply Management Area and therefore proposes filtration instead of infiltration. The new impervious area is 5.7 acres, requiring filtration of 0.48 acre-feet (20,691 cubic feet) within 48 hours. The applicant proposes to construct five filtration basins that have the capacity to filtrate the required volume within 48 hours. The applicant meets Commission volume control requirements.

6. A wetland assessment was completed in February 2018 by Hennepin County, which identified ten wetlands within the project boundary. The Shingle Creek WMC is LGU for WCA administration in Brooklyn Park. The applicant proposes to encroach on 0.4 acres of wetland and provide compensation through wetland bank credits. The applicant meets Commission wetland requirements (contingent on wetland credits being purchased).

7. Shingle Creek is a DNR Public Water that crosses CSAH-81. It is impaired for aquatic life and aquatic recreation due to chloride, dissolved oxygen, and E. coli concentrations and poor aquatic macroinvertebrate bioassessment scores. The proposed project is anticipated to improve the water quality of Shingle Creek by bringing the site up to current standards and installing Best Management Practices where they didn't previously exist. The applicant meets Commission Public Waters requirements.

8. There is FEMA 100-year floodplain where CSAH-81 crosses Shingle Creek. There are no proposed buildings as part of this project. This project proposes to replace the Shingle Creek culvert underneath CSAH-81, which involves 81 ft of transverse encroachment of the floodplain. Approximately 5.8 cubic yards of fill will be placed within the floodplain. The project proposes the creation of approximately 10.2 cubic yards of compensatory storage, which will be in the CSAH-81 project area and hydraulically connected to the Shingle Creek floodplain, resulting in a net increase of approximately 4.4 cubic yards of storage. The applicant meets Commission floodplain requirements.

9. The project proposes replacement of the Shingle Creek culvert underneath CSAH-81. The new culvert will have the same cross section as the existing culvert. The new culvert will be 5 feet longer than the

existing culvert. HEC-RAS modeling was submitted to show that the water surface elevation will not be changed.

10. An erosion control plan was submitted with the project review, and includes erosion control blanket, perimeter silt fence/biolog, biologs surrounding detention ponds/infiltration basins, inlet protection, rip rap at inlets, and native seed specified on the filtration basin slopes. The erosion control plan meets Commission requirements.

11. Hennepin County mailed out letters to residents and business owners along the project corridor to update them on the reconstruction timeline and stages in January 2019. The City of Brooklyn Park held an Open House for this phase of the CSAH-81 redevelopment on Tuesday, October 3, 2017. These activities meet the Commission public notice requirements.

12. Operations & Maintenance (O&M) for this site is covered under Hennepin County's MS4 permit.

13. A Project Review Fee of $1,100 has been received.

Recommendation: Recommend approval subject to the following condition(s):

1. Purchase of wetland bank credits
2. Revision of plans to show all erosion and sediment control practices that were indicated on hand annotated plan submittal

Wenck Associates, Inc.
Engineers for the Commission

_____ _____

Ed Matthiesen, P.E. Date

SC2019-004: CSAH-81

Figure 1. Site location.

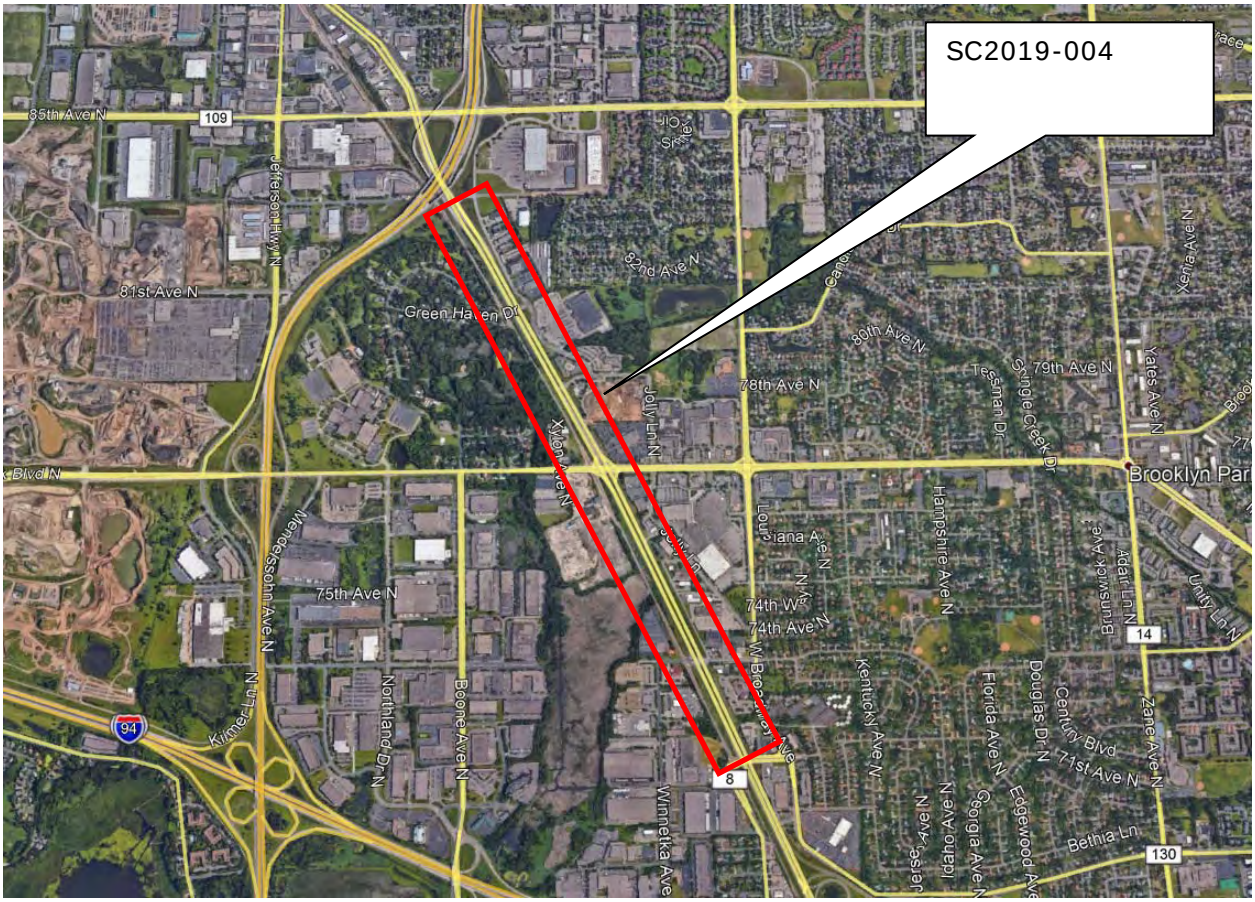
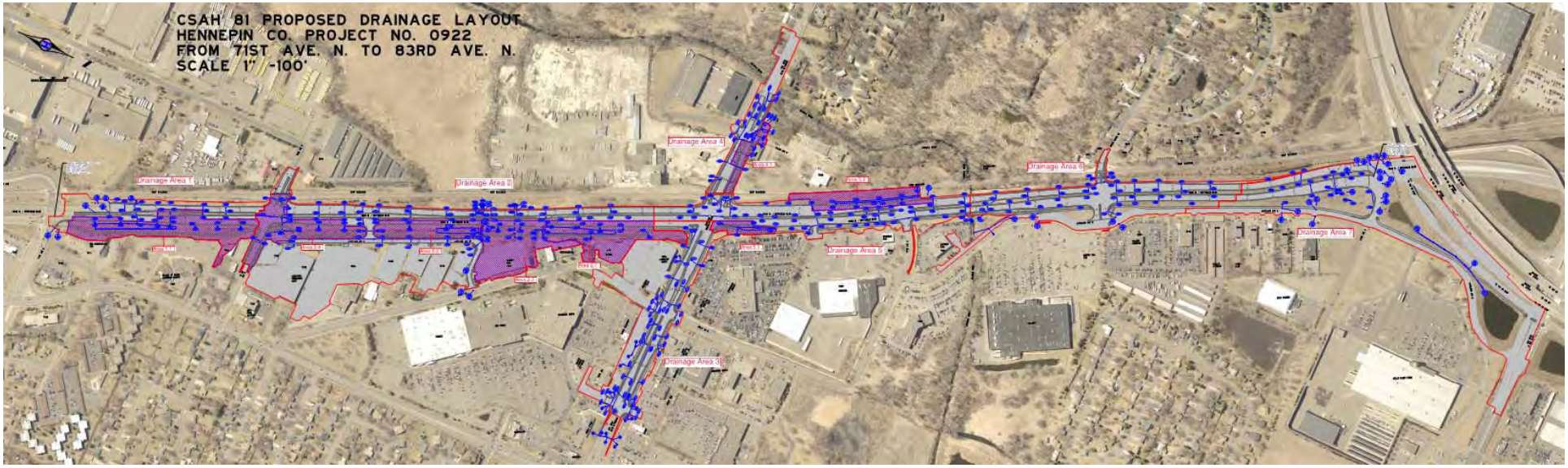


Figure 2. Proposed Drainage.



Technical Memo

WENCK ASSOCIATES

Responsive partner.
Exceptional outcomes.

To: Shingle Creek/West Mississippi WMO Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: March 8, 2019

Subject: Initiate Minor Plan Amendment

Recommended Commission Action	Staff recommends that each Commission authorize proceeding with the attached minor plan amendment and set the date for the public meeting as May 9, 2019 regular meeting.

The Commissions had previously discussed revising some of the provisions of the CIP program, namely increasing the voluntary $500,000 annual levy limit and lifting the $250,000 per project maximum. On February 21, 2019 BWSR Board Conservationist concurred this could be completed by Minor Plan Amendment. Since this is an issue that cities may wish to take some time to discuss, we recommend that the Commissions provide 60 days for local review rather than the standard 30 days.

CIP revisions may also be completed by Minor Plan Amendment. At this time the only CIP action proposed by a member city that would require a Minor Plan Amendment (MPA) is rescheduling the generic "Lake Internal Load" project in 2020 to 2019, revising its cost to $370,500, and specifying that the project is the Crystal Lake Management Project. The Commission applied for a Section 319 grant for that project. The $370,500 shown in the CIP is the full cost of the project; should the Commission be awarded a grant, the actual amount levied would be less than that.

If the Commissions choose to go forward with the Minor Plan Amendment, we recommend setting May 9, 2019 as the public meeting at which it would be discussed. At that May 9 meeting, the Commissions would discuss any other 2019 CIP projects proposed and establish a maximum levy for 2019. The current CIPs are attached for reference. The Minor Plan amendment and maximum levy would then be forwarded to Hennepin County for consideration by the Hennepin County Board.

Attached is the proposed Notice of Minor Plan Amendment. Because you have a joint Plan both Commissions must authorize proceeding with the Minor Plan Amendment. The Commissions must send a copy of the proposed minor plan amendment to the member cities, Hennepin County, the Met Council, and the state review agencies for review and comment, and must hold a public meeting (not a hearing) to explain the amendment. This meeting must be public noticed twice, at least seven and 14 days prior to the meeting

Staff recommends you proceed with the Minor Plan Amendment process to revise the Third Generation Management Plan and CIP as set forth on the attached Notice of Minor Plan Amendment, and set the date of the required public meeting as May 9, 2019, at your regular meeting.

Notice of Minor Plan Amendment
Shingle Creek and West Mississippi Watershed Management Commissions

The Shingle Creek and West Mississippi Watershed Management Commissions propose to amend their joint *Third Generation Watershed Management Plan* to adopt a revision to the Plan and to the Capital Improvement Program (CIP). This revision revises capital project cost share policies and adds one project and specifies the location of one project on the Shingle Creek CIP.

The proposed minor plan revision is shown as additions (underlined) or deletions (~~strike outs~~).

Section 4.3.7 of the Shingle Creek WMC Third Generation Plan is hereby revised as follows:

Option 1 - Cost Share Policy. For capital projects that have been identified in a Commission-adopted or approved TMDL or management plan or as approved by the Commissions for cost participation. Projects constructed to meet Commission development or redevelopment requirements are not eligible for cost participation.

1. The Commission's share will be 25 percent of the final cost of the project, with a minimum share of $25,000 ~~and a maximum share of $250,000~~.
2. The Commission's share will be funded through the ad valorem tax method – spread across all taxpayers within the watershed.
3. If the 25 percent share of an individual project's final project cost is less than the amount certified for that project, the balance of the levy will be deposited into a segregated Closed Project Account. The Commissions will administer that account according to a Closed Account Policy.
4. Each Commission will use a maximum annual levy of ~~$500,000~~ $750,000 as a working guideline.

Table 4.5. Shingle Creek WMC Third Generation Plan Implementation Plan is hereby revised as follows:

Action	2018	2019	2020	2021	2022
Lake Internal Load Improvement Project			~~200,000~~		200,000
-Commission Contribution			~~200,000~~		200,000
-Local Contribution			~~0~~		0
Crystal Lake Management Plan		370,500			
-Commission Contribution		370,500			
-Local Contribution		0			

Appendix F, CIP Descriptions is hereby revised as follows:

Lake Internal Load Improvement Projects

The 13 lake TMDLs now in implementation in the Shingle Creek watershed recommend internal load improvements for several of the lakes. These projects could include rough fish removal and installation of fish barriers, chemical treatment such as alum, drawdowns, whole-lake aquatic vegetation treatment, etc. Typically implementation emphasizes reducing the load from external sources before completing internal load reductions. Some lakes not shown here may require internal load reductions if external load reduction is insufficient to meet state water quality goals. Potential lakes to be improved include the following (not in priority order):

1. Twin Lake. (Crystal, Brooklyn Center, Robbinsdale). 2015 Project: Rough fish tracking and removal, fish barriers, and aeration system; Future Project: aquatic vegetation treatment.
2. Pomerleau (Plymouth). 2018 Project: Chemical treatment.
3. Cedar Island (Maple Grove). Rough fish removal, fish barriers, drawdown.
4. Eagle Lake (Maple Grove.) Aquatic vegetation treatment.
5. Bass Lake (Plymouth). 2018 Project: Chemical treatment, aquatic vegetation management
6. Crystal Lake. 2019 Project: Chemical treatment, rough fish management, aquatic vegetation management.

Table 1. Current Shingle Creek WMC CIP with proposed Minor Plan Amendment.

CAPITAL IMPROVEMENT PROGRAM	2018	2019	2020	2021	2022
Cost Share Program	200,000	200,000	200,000	200,000	200,000
Commission Contribution	100,000	100,000	100,000	100,000	100,000
Local Contribution	100,000	100,000	100,000	100,000	100,000
Partnership Cost-Share BMP Projects	100,000	100,000	100,000	100,000	100,000
Commission Contribution	50,000	50,000	50,000	50,000	50,000
Local Contribution	50,000	50,000	50,000	50,000	50,000
Lake Internal Load Improvement Project			~~200,000~~		200,000
Commission Contribution			~~200,000~~		200,000
Local Contribution			~~0~~		0
Bass and Pomerleau Lakes Alum Treatment	390,000				
-Commission Contribution	390,000				
-Local Contribution	0				
SRP Reduction Project	124,680				
-Commission Contribution	124,680				
-Local Contribution	0				
Crystal Becker Park Infiltration Project	2,500,000				
Commission Contribution	250,000				
Local Contribution	2,250,000				
Crystal Lake Management Plan		370,500			
Commission Contribution		370,500			
Local Contribution		0			
Shingle Creek or Bass Creek Restoration Project		500,000			
Commission Contribution		125,000			
Local Contribution		375,000			
Maple Grove Pond P57		648,000			
Commission Contribution		162,000			
Local Contribution		486,000			
Maple Grove Pond P33		574,000			
Commission Contribution		143,500			
Local Contribution		430,500			
Shingle Creek Brookdale Park Habitat Project			150,000		
Commission Contribution			37,500		
Local Contribution			112,500		
Minneapolis Webber Park Stream Restoration			500,000		
Commission Contribution			125,000		
Local Contribution			375,000		
Mpls Flood Area 5 Water Quality Projects			6,000,000		
Commission Contribution			250,000		
Local Contribution			5,750,000		
Maple Grove Pond P55			855,000		
Commission Contribution			213,800		
Local Contribution			641,200		
Shingle Cr Restoration, Regent to Brooklyn			400,000		

CAPITAL IMPROVEMENT PROGRAM	2018	2019	2020	2021	2022
Blvd					
Commission Contribution			100,000		
Local Contribution			300,000		
Plymouth Palmer Creek Estates Bass Creek Restoration				450,000	
Commission Contribution				112,500	
Local Contribution				337,500	
TOTAL PROJECT COST	**3,314,680**	**2,392,500**	**8,205,000**	**750,000**	**500,000**
TOTAL COMMISSION SHARE	**914,680**	**951,000**	**876,300**	**262,500**	**350,000**
Grant/Previous Levy	462,170	216,000*			
Net New Levy	452,510	735,000			
TOTAL CITY SHARE	**2,400,000**	**1,441,500**	**7,328,700**	**487,500**	**150,000**

*Applied for

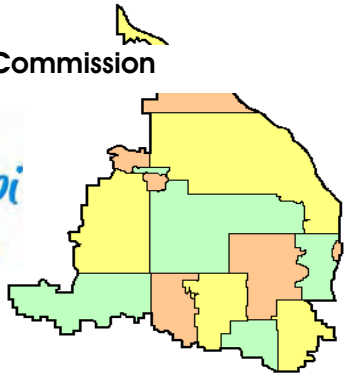
Table 2. Current West Mississippi WMC CIP.

CAPITAL IMPROVEMENT PROGRAM	2018	2019	2020	2021	2022
Cost Share Program	100,000	100,000	100,000	100,000	100,000
Commission Contribution	50,000	50,000	50,000	50,000	50,000
Local Contribution	50,000	50,000	50,000	50,000	50,000
Mississippi Crossings Phase B Infiltration Vault		200,000			
Commission Contribution		50,000			
Local Contribution		150,000			
Champlin Woods Trail Rain Gardens		180,000			
Commission Contribution		45,000			
Local Contribution		135,000			
Wetland Restoration Project			250,000		
Commission Contribution			62,500		
Local Contribution			187,500		
TOTAL PROJECT COST	**100,000**	**480,000**	**350,000**	**100,000**	**100,000**
TOTAL COMMISSION SHARE	**50,000**	**145,000**	**112,500**	**50,000**	**50,000**
TOTAL CITY SHARE	**50,000**	**335,000**	**237,500**	**50,000**	**50,000**

Shingle Creek Watershed Management Commission

West Mississippi Watershed Management Commission

3235 Fernbrook Lane N • Plymouth, MN 55447
Tel: 763.553.1144 • Fax: 763.553.9326
Email: judie@jass.biz • Website: www.shinglecreek.org



DRAFT National Pollutant Discharge Elimination System (NPDES) Phase II DRAFT
Education and Public Outreach Program
2018 Annual Report

The Shingle Creek and West Mississippi Watershed Management Commissions conducted education and public outreach activities in 2018 in fulfillment of their Third Generation Watershed Management Plan Watershed Education and Public Outreach Program goals.

EDUCATION AND PUBLIC OUTREACH PROGRAM GOALS

1. All members of the community become knowledgeable about the water resources in the watersheds and take positive action to protect and improve them.
2. All members of the community have a general understanding of watersheds and water resources and the organizations that manage them.
3. All members of the community have a general understanding of the Impaired Waters in the watersheds and take positive actions to implement TMDL requirements.

The Commissions identified the following general education and outreach strategies in the Third Generation Watershed Management Plan. More detailed educational goals by stakeholder groups may be found in Appendix E of that Plan.

- Maintain an active Education and Outreach Committee with representatives from all member cities to advise the Commissions and to assist in program development and implementation
- Participate in the West Metro Water Alliance (WMWA) to promote interagency cooperation and collaboration, pool resources to undertake activities in a cost-effective manner, and promote consistency of messages
- Use the Commissions', member cities', and educational partners' websites and newsletters, and local newspapers and cable TV to share useful information to stakeholders on ways to improve water quality
- Prominently display the Commissions' logos on information and outreach items, project and interpretive signs, and other locations to increase visibility
- Provide opportunities for the public to learn about and participate in water quality activities
- Provide cost-share funding to assist in the installation of small BMPs and demonstration projects
- Educate elected and appointed officials and other decision makers
- Enhance education opportunities for youth
- Each year review and modify or develop and prioritize education and outreach activities and strategies for the coming two years

Program: Watershed PREP (Protection, Restoration, Education, and Prevention)

Audience: Fourth grade students, educators, and families; the general public

Program Goals:

a. Engage elementary students in hands-on learning about the water cycle and how the built environment influences stormwater runoff and downstream water quality.
b. Provide general watershed and water quality education to citizens, lake associations, other civic organizations, youth groups, etc.

Educational Goals:

a. Have a general understanding of watersheds, water resources and the organizations that manage them.
b. Understand the connection between actions and water quality and water quantity.

Specific Activities to Reach Goals:

Watershed PREP is a program of the West Metro Water Alliance (WMWA), a consortium of four WMOs including the Shingle Creek and West Mississippi WMOs, and stands for Protection, Restoration, Education, and Prevention. 2018 was the fifth year of the program. Two persons with science education backgrounds serve as contract educators to be shared between the member WMOs. The focus of the program is two-fold - to present water resource-based classes to fourth grade students and to provide education and outreach to citizens, lake associations, civic organizations, youth groups, etc.

Fourth Grade Program. Three individual classes meeting State of Minnesota education standards have been developed. **Lesson 1*, What is a Watershed and Why do we care?,*** provides an overview of the watershed concept and is specific to each school's watershed. It describes threats to the watershed. **Lesson 2, *The Incredible Journey,*** describes the movement and status of water as it travels through the water cycle. **Lesson 3,** *Stormwater Walk,* investigates movement of surface water on school grounds. The ultimate goal is to make this program available to all fourth graders in the four WMWA watersheds (Shingle Creek, West Mississippi, Bassett Creek, and Elm Creek), and to other schools as contracted. The program is offered to public, private, parochial, and charter schools.

Table 1. Watershed PREP Program participation growth.

Year	# Classrooms	# Students	# and Type of Schools
Lesson 1			
2013	63	1,679	13 in six districts; one charter school; one parochial school
2014	116	3,469	30 in seven districts; one magnet school; one parochial school
2015	122	3,183	36 in nine districts; two charter schools; five parochial schools
2016	107	2,850	29 in seven districts, one charter school, 5 parochial schools
2017	121*	3,249	12 in seven districts, one charter school, one parochial school
2018	143	3,593	32 in seven districts, one charter school, 2 parochial schools
Lesson 2			
2013	14	390	Three in three districts; one charter school; one parochial school
2014	22	645	Five in three districts
2015	27	859	Six in five districts
2016	20	524	Five in three districts, one parochial school
2017	38	1,072	Seven in three districts, one parochial school
2018	69	1,755	16 in five districts, one parochial school

Table 2. 2018 schools and students participating in Lesson 1: What is a Watershed?

Date	School	School District	City	Watershed	Classes	Students
1/9	Hassan	Elk River	Rogers	Elm	6	143
2/9	Lakeview Elementary	Robbinsdale	Robbinsdale	Shingle	3	67
2/12	Noble Academy	Charter	Brooklyn Park	W. Miss	3	75
2/13	Meadow Lake Elementary	Robbinsdale	New Hope	Shingle	4	92
2/22	FAIR School	Robbinsdale	Crystal	Shingle	3	66
3/7	Rush Creek	Osseo	Maple Grove	Elm	6	161
3/12	Plymouth Creek	Wayzata	Plymouth	Bassett	5	126
3/14	Greenwood Elementary	Wayzata	Plymouth	Bassett	5	124
3/21	Neill Elementary	Robbinsdale	Crystal	Bassett	3	74
3/26	Kimberly Lane	Wayzata	Plymouth	Bassett	4	107
4/4-5	Woodland Elementary	Osseo	Brooklyn Park	W. Miss	4	118
4/9	Birchview	Wayzata	Plymouth	Bassett	3	68
4/10	Sunset Hill	Wayzata	Plymouth	Bassett	4	110
4/10	Good Shepherd	Parochial	St. Louis Park	Bassett	2	42
4/12	Meadow Ridge Elementary	Wayzata	Plymouth	Elm	5	142
3/27	Gleason Lake	Wayzata	Plymouth	Minnehaha	5	91
4/19	Mary Queen of Peace	Parochial	Rogers	Elm	1	11
5/7	Oakwood	Wayzata	Plymouth	Minnehaha	3	78
5/8	Zachary Lane Elementary	Robbinsdale	Plymouth	Bassett	4	88
5/14	Dayton Elementary	Anoka-Hennepin	Dayton	Elm	3	89
6/4&5	Meadowbrook Elementary	Hopkins	Golden Valley	Bassett	4	120
9/11	Noble Elementary	Robbinsdale	Golden Valley	Bassett	3	62
9/24	Weaver Lake	Osseo	Maple Grove	Elm	4	117
10/1	School of Eng and Arts (SEA)	Robbinsdale	Golden Valley	Bassett	3	82
10/5	Palmer Lake	Osseo	Brooklyn Park	Shingle	3	82
10/10	Monroe Elementary	Anoka-Hennepin	Brooklyn Park	W. Miss	2	58
10/16	Birchview	Wayzata	Plymouth	Bassett	3	74
10/16	Oxbow Creek Elementary	Anoka-Hennepin	Champlin	W. Miss	7	189
10/23	Rice Lake Elementary	Osseo	Maple Grove	Elm	4	93
10/29-30	Basswood Elementary	Osseo	Maple Grove	Elm	6	183
11/8	FAIR School	Robbinsdale	Crystal	Shingle	2	44
11/12	Good Shepherd	Parochial	St. Louis Park	Bassett	2	50
11/14	Rogers Elementary School	Elk River	Rogers	Elm	4	93
11/20	Dayton Elementary	Anoka-Hennepin	Dayton	Elm Creek	3	75
11/26-30	Meadowbrook	Hopkins	Golden Valley	Bassett	5	121
12/13&14	Earle Brown	Brooklyn Center	Brooklyn Center	W. Miss	8	168
12/19&20	Robbinsdale Spanish Immersion	Robbinsdale	Robbinsdale	Bassett	4	110
**New Schools this year.				**Total:**	**143**	**3593**

Table 3. 2018 schools and students participating in Lesson 2: The Incredible Journey

	Date	School	School District		Watershed	Classes	Students
1	1/8	Hassan	Elk River	Rogers	Elm	6	
2	2/8	Lakeview Elementary	Robbinsdale	Robbinsdale	Shingle	3	
3	2/21	FAIR School	Robbinsdale	Crystal	Shingle	3	
4	2/28	Rush Creek	Osseo	Maple Grove	Elm	6	
5	3/19	Neill Elementary	Robbinsdale	Crystal	Bassett	3	
6	4/19	Mary Queen of Peace	Parochial	Rogers	Elm	1	
7	5/1	Forest Elementary	Robbinsdale	Crystal	Shingle	4	
8	5/30&31	Meadowbrook Elementary	Hopkins	Golden Valley	Bassett	4	
9	9/10	Noble Elementary	Robbinsdale	Golden Valley	Bassett	3	
	10/5	Palmer Lake	Osseo	Brooklyn Park	Shingle	3	
	10/9-10	Oxbow Creek Elementary	Anoka-Hennepin	Champlin	W. Miss	7	193
	10/12	Monroe Elementary	Anoka-Hennepin	Brooklyn Park	W. Miss	2	58
	10/22	Rice Lake Elementary	Osseo	Maple Grove	Elm	4	94
	10/25-26	Basswood Elementary	Osseo	Maple Grove	Elm	6	178
	11/2	Rogers Elementary	Elk River	Rogers	Elm	4	92
	11/7	FAIR School	Robbinsdale	Crystal	Shingle	2	44
	11/16	Dayton Elementary	Anoka-Hennepin	Dayton	Elm Creek	3	76
10	11/26-27	Meadowbrook Elementary	Hopkins	Golden Valley	Bassett	5	119
					Total	**69**	**1755**

Community Education and Outreach. The PREP educators provided outreach at four community and school events. Because of the nature of these events, it is difficult to keep a tally of the number of contacts made and citizens engaged. Events are detailed in Table 4.

Table 4. 2018 Watershed PREP community education and outreach participation

Date	Event	Location		Watershed	# of Attendees	
2/1	Sonnesyn Science Night	New Hope		Bassett	20 parents	30 kids
7/9	Gleason Lake-Stormwater walk	Plymouth	Lesson 3	Bassett	1 Class	17 kids
8/2	Plymouth Kids Fest	Plymouth		Bassett	3000 attendees	
11/8	Weaver Lake STEM Night	Maple Grove		Elm Creek	100 parents/kids	

Evaluation:
The educators evaluate the success of the Fourth Grade Program by surveying students and teachers about the quality of the program, the learning that was observed, and the performance of the educators. Much of the feedback occurs during and right after the presentations in spontaneous comments.

Program: Distribute Educational Materials

Audience: Multiple

Program Goals:

a. Inform various stakeholders about the watershed organizations and their programs.
b. Provide useful information to a variety of stakeholders on priority topics.
c. Engage stakeholders and encourage positive, water-friendly behaviors.

Educational Goals:

a. Property owners maintain properties and best management practices (BMPs) to protect water resources.
b. Property owners adopt practices that protect water resources.
c. Stakeholders support and engage in protection and restoration efforts.

Specific Activities to Reach Goals:

Maintain Your Property the Watershed Friendly Way

This handbook is targeted to small businesses, multi-family housing properties, and common ownership communities such as homeowners' associations. It contains tips for specifying and hiring turf and snow maintenance contractors, and includes checklists for BMP inspections. Electronic copies have been provided to Shingle Creek and West Mississippi cities for their use and to be displayed on their websites. The handbook also appears on the WMWA website. Print copies are available for distribution.

Press Releases and Newspaper Articles

The Commission received news media coverage of some of its projects in 2018.

On January 10, 2018 Minnesota Public Radio featured Shingle Creek in one of its series of reports about road salt's effect on the environment.
https://www.mprnews.org/story/2018/01/10/water-road-salt-shingle-creek-chloride-impairment

In January 2018, the Commission undertook a carp harvest on Middle Twin Lake as part of the Twin Lake Carp Management project. CCX Media, which is Northwest Community Television broadcast to nine suburbs, covered the harvest on its January 18 newscast:
https://ccxmedia.org/news/water-quality-project-targets-carp-on-middle-twin-lake/

On June 22, 2018, KARE 11, The Twin Cities' NBC affiliate, covered the Biochar- and Iron-Enhanced Sand Filter Project. The story was broadcast live from Webber Park Falls in Minneapolis.
https://www.kare11.com/article/news/bio-box-installed-along-shingle-creek/89-566680532

The Biochar project was also featured in Stormwater magazine, a national trade journal targeted to engineering and public works professionals.
https://foresternetwork.com/stormwater-magazine/sw-water/sw-stormwater/innovative-filter-design-application-targeting-e-coli-and-phosphorus-removal/

The Center for Watershed Protection, a national nonprofit dedicated to research and education on watersheds, featured on its website two July 2018 presentations about phosphorus release from stormwater ponds. One of those presentations was made by Joe Bischoff of the Commissions' technical consultant Wenck. Joe used the Shingle Creek watershed to illustrate that we have been able to manage particulate phosphorus, but dissolved phosphorus concentrations in the creek are increasing, likely from sediment release in stormwater ponds.
https://www.cwp.org/phosphorus-release-stormwater-ponds/

Web Site

The Commissions maintained a joint web site, shinglecreek.org, which includes information about the watersheds, the Commissions, and the water resources in the watersheds. In 2015 the website was refreshed and significantly updated In 2018 the site received over 8,830 pageviews.

Social Media. The Commission established a Facebook page in 2016. During 2018 there were 125 "likes" and 6281 "reaches." A reach is logged when a timeline post is seen by a viewer. Viewers were "engaged" 730 times. An engagement is a click to open a post, view a photo or video, make a comment, or click on a reaction emoji. Commission posts were "liked" 137 times, "shared" 31 times, and received 21 comments.

Evaluation:
Evaluation measures are as noted above: number of brochures and handbooks distributed; number of website hits; social media engagement. The new website uses Google Analytics to better track page views and unique visitors. The 2018 website activity is shown on the last page of this report.

Program: Public Outreach

Audience: Residents, youth

Program Goals:
a. Provide opportunities for people of all ages to participate in hands-on activities to protect and improve waters.
b. Provide opportunities for people to learn about ways they can protect and improve waters.

Educational Goals:
a. Maintain their properties and best management practices (BMPs) to protect water resources.
b. Adopt practices that protect water resources.
c. Support and engage in protection and restoration efforts.
d. Participate in volunteer activities.

Specific Activities to Reach Goals:

Pledge to Plant Campaign. At WMWA's request, Metro Blooms/Blue Thumb submitted a proposal for a project that would encourage residents to replace impervious surface and turf grass with native plantings

to benefit clean water by reducing stormwater runoff. The project includes the additional benefit of creating habitat for pollinators. An agreement between Metro Blooms and the Shingle Creek Commission, as fiscal agent, to move the project forward was approved.

Phase one of the project began with creation of a name, tag line and logo. The project was promoted in the Blue Thumb space at the State Fair where the public voted to name the campaign, *Pledge to Plant for Clean Water and Pollinators.*

Phase two included a roll out of the Pledge campaign on the Metro Blooms and WMWA websites where citizens can enter the square footage of their new plantings, creation of a Pledge to Plant banner for events, and a social media campaign that began in May 2016. The Campaign was promoted at the State Fair and other area events.

As of December 31, 2018, over 630 people had submitted the Pledge online covering over 417 acres, though several submissions did not specify area to be planted, so it may be more. The total includes a handful of larger prairie restoration projects but the median pledge covers 250 square feet. Most of the Pledges come from the metro area, but Pledges have been received from 20 other states: Arkansas,

Alabama, California, Georgia, Illinois, Indiana, Iowa, Kansas, Michigan, Missouri, Montana, New Jersey, New York, North Dakota, Ohio, Oklahoma, Tennessee, Virginia, Wisconsin, and Wyoming.

The Pledge to Plant campaign was also promoted during the Watershed PREP classes and at events Educators attended in 2018. Pledge campaign materials will be included in the 2019 Metro Bloom workshop handouts.

Rain Garden Workshops

The Commissions partnered with WMWA to sponsor four Rain Garden workshops through Metro Blooms in 2018. Metro Blooms is a non-profit organization whose mission is to promote and celebrate gardening, to beautify our communities and help heal and protect our environment. Metro Blooms offered two workshops in 2018 - Resilient Yard workshops and Turf Alternative workshops. The workshops provided an overview of Minnesota's changing weather patterns and ways to mitigate the impact in your own yard. The presenters offered recommendations for individual properties and options for establishing mowable, native alternatives to "grass" turf, raingarden basics, and other resilient yard practices. Attendees also received one-on-one design assistance from landscape professionals and Master Gardeners. The locations and number of participants are shown in Table 5.

Table 5. 2018 Rain garden workshop locations and participation.

Location	Date	# Participants
City of Brooklyn Center	May 15	19
Champlin – Champlin City Hall	April 4	19
Crystal partnering w/Golden Valley, New Hope, Robbinsdale–Crystal Community Center	May 10	32
Plymouth – St Barnabas Church	April 17	50

Shingle Creek Cleanup

The 17th Annual Great Shingle Creek Cleanup was held the week of April 22-28, 2018. Each city sponsored its own cleanup, which could be a special event or simply a request that the existing Adopt-a-Park volunteers schedule their spring cleanup during that week.

Volunteer Monitoring

The Commissions provide opportunities for high school students and adults to gain hands-on experience monitoring lakes, streams, and wetlands.

Lakes. Volunteer lake monitoring is performed through the Met Council's Citizen Assisted Lake Monitoring Program (CAMP). The Met Council provides the monitoring equipment and the laboratory work and data analysis while the Shingle Creek Commission staff recruit and train volunteers to perform sampling, collect the volunteers' water quality samples, and get them to the Met Council. No lakes were monitored by volunteers in 2018.

Streams. Routine stream macroinvertebrate monitoring in both watersheds is conducted by volunteers through Hennepin County's River Watch program. This program was initiated in 1995 to provide hands-on environmental education for high school and college students, promote river stewardship, and obtain water quality information on the streams in Hennepin County. Hennepin County coordinates student and adult volunteers who use the River Watch protocols to collect physical, chemical, and biological data to help determine the health of streams in the watershed. Two sites on Shingle Creek were monitored in 2018 – the long-term (23 years) site next to Park Center High School in Brooklyn Park,

monitored by students from Park Center High School; and a site at Webber Park Falls in Minneapolis, monitored by students from Avail Academy (formerly Calvin Christian School) in Fridley.

Wetlands. Two sites in the Shingle Creek watershed and two sites in the West Mississippi watershed were monitored through the Hennepin County Environmental Services' Wetland Health Evaluation Program (WHEP). The WHEP program uses trained adult volunteers to monitor and assess wetland plant and animal communities in order to score monitored wetlands on an Index of Biological Integrity for macroinvertebrates and vegetation. In 2018 no sites were monitored in Shingle Creek. The sites in West Mississippi were the Environmental Preserve wetlands and Oxbow Ponds north of Oxbow Lake, both in Brooklyn Park.

Evaluation:
Evaluation of these programs is based on participation.

Program: Collaborative Efforts

Audience: Multiple

Program Goals:

a. Promote interagency cooperation and collaboration, pool resources to undertake activities in a cost-effective manner, and promote consistency of messages.
b. Share information and ideas with other partners.

Educational Goals:

a. All people have a general understanding of watersheds, water resources and the organizations that manage them.
b. All people understand the connection between actions and water quality and water quantity.

Specific Activities to Reach Goals:

<u>WMWA</u>
The Commissions partner with the Bassett Creek WMO and the Elm Creek WMO and other interested parties as the West Metro Water Alliance (WMWA). Other participating parties have included the Freshwater Society, Hennepin County Environment and Energy, and Three Rivers Park District. The Mississippi WMO also participates but is not a formal member. Each member watershed organization contributes funds to WMWA, which sponsors programs such as Watershed PREP, the eNewsletter *Water Links*, standardized brochures and booklets, and the Planting for Clean Water Program. WMWA publishes an annual report on its activities.

<u>Other Partnerships</u>
The Commissions are also members of:

- WaterShed Partners, a coalition of agencies, educational institutions, WMOs, Watershed Districts, and Soil and Water Conservation Districts that coordinate water resources education and public outreach planning in the Metro area;
- BlueThumb, a consortium of agencies and vendors partnering to increase outreach and awareness; and

- NEMO (Nonpoint Education for Municipal Officials), a program that provides educational and skill-building programming to elected and appointed officials and community leaders to increase their knowledge of the connection of land use and management decisions to water quality and natural resources.

Evaluation:
No specific evaluation of this programing has been completed.

Program: Continuing Education

Audience: Commissioners, Technical Advisory Committee (TAC)

Program Goals:

a. Effectively and efficiently manage the water resources in the watershed.
b. Increase awareness and knowledge of broader water resources issues and trends.

Educational Goals:

a. Commissioners and TAC understand watershed management, water quality and quantity conditions and issues in the watershed, regulatory requirements and the current standards and practices.
b. Commissioners and TAC aware of broader water management issues and trends in Minnesota and elsewhere.

Specific Activities to Reach Goals:

Staff Presentations

- 2017 Annual Water Quality Monitoring report findings.
- Biochar- and Iron-Enhanced Sand Filter Project update.
- Twin Lake Carp Management Project update
- Metro Watershed-Based Funding Pilot
- 2018 Lake and Stream Monitoring update
- FEMA Flood Modeling update
- Minneapolis Subwatershed Assessment update

Guest Speakers

Representatives from Metro Blooms presented a proposed 5-year stormwater retrofit project for the Autumn Ridge Apartments in Brooklyn Park. The residents were seeking a Shingle Creek Partnership Cost Share Grant to help fund the project. Representatives from the Autumn Ridge Apartments returned later in the year to present the progress achieved in Phase I of the project.

Drs. Beth Fisher and Josh Feinberg from the U of M spoke about their specialized monitoring of water quality and effectiveness of the biochar filter media.

Eric Roerish from SRF Consulting Group and Jim Toulouse and Juan Rangel from the Metropolitan Council presented an overview of the Metro Blue Line Extension Project.

Dr. John Gulliver, University of Minnesota Professor of Civil, Environmental and Geo-Engineering, presented *Retention Ponds can be a Source of Phosphorus*.

Joe Bischoff, Aquatic Ecologist, Wenck Associates, presented, “Why is Phosphorus in the Watershed So Stubbornly Persistent?,” an overview of the watershed phosphorus cycle, sources and management.

Other

- The Commission made contributions to funding the annual Road Salt Symposium, the MOOS Lecture Series, and the State of Water Conference sponsored by the Freshwater Society.

Evaluation:

No specific evaluation of this programming has been completed

SCWM

Jan 1, 2018 - Dec 31, 2018

All Users
100.00% Sessions

Users

2,484
% of Total: **100.00% (2,484)**

Pageviews

8,830
% of Total: **96.29% (9,170)**

Pageviews by Landing Page

Landing Page	Pageviews
/	5,923
/minutes--meeting-packets.html	431
/twin-lake-carp-management.html	386
/maps.html	223
/staff.html	193
/biochar-filters.html	186
/rules-and-standards.html	162
/meetings.html	150
/tmdls.html	112
/standard-details.html	110

Pageviews and Unique Pageviews by Page

Page	Pageviews	Unique Pageviews
/	2,788	2,271
/minutes--meeting-packets.html	863	713
/rules-and-standards.html	614	558
/maps.html	363	322
/staff.html	334	296
/twin-lake-carp-management.html	293	233
/biochar-filters.html	212	188
/contact-us.html	206	181
/tmdls.html	194	144
/management-plan.html	189	157

Technical Memo

WENCK ASSOCIATES

Responsive partner.
Exceptional outcomes.

To: Shingle Creek/West Mississippi WMC Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: March 8, 2019

Subject: Environmental Initiative Nomination

As directed at the February meeting, we prepared a nomination to the Environmental Initiative Awards for the Shingle Creek Biochar- and Iron-Enhanced Sand Filters Project. Several Commissioners were able to review and provide helpful feedback prior to its submittal. The final version is attached. The nominations were submitted electronically, so the text was cut from this document and pasted into the submittal form on line.

Environmental Initiative (environmental-initiative.org/) is a nonprofit organization that works with business, nonprofit and government leaders to develop collaborative solutions to Minnesota's environmental problems. The organization:

- Plans and hosts events for environmental leaders from businesses, nonprofits and government agencies to share information, network and learn from one another.
- Facilitates conversations addressing environmental, economic and public health issues between diverse stakeholders.
- Takes action and implements on the ground projects to improve our air, land and water for all Minnesotans.

From their website: "In early 1992, leaders from seemingly adversarial interests came together around this vision of partnership. A group of leading Minnesota businesses, environmental advocacy nonprofits and state agencies was convened to discuss a collaborative model for problem solving. The organization grew out of these early conversations, and was founded under the name Minnesota Environmental Initiative (MEI). Now called Environmental Initiative, we carry forward the tradition of building partnerships to develop collaborative solutions to Minnesota's environmental problems. Outcomes of Environmental Initiative's work range from thousands of diesel engines retrofitted with pollution-reducing equipment through Project Green Fleet to the Clean Water Legacy Act that aims to clean up state's lakes, rivers and streams."

Z:\Shingle Creek\Communications\2019\M-convey environmental initiative.docx

2019 Environmental Initiative Awards Project Nominations
Shingle Creek Biochar-and Iron-Enhanced Sand Filters
Due Feb 22, 2019

Project Summary
Must be between 1 and 550 words.

Summer is short but sweet in Minnesota. We savor opportunities to swim at the neighborhood lake or wade in a nearby stream. But too often we find beaches closed or No Wading signs posted because the water is contaminated with E. coli bacteria. E. coli and other pathogens found in human and animal waste can cause illness and disease in both humans and animals. In urban areas, bacteria sources are widespread and diffuse: waste from pets, song birds, wild life, waterfowl. When it rains, stormwater washes bacteria into storm sewers and then into our lakes and streams. There are limited ways to protect our waters from this contamination. Until now.

Over the last three years the Shingle Creek Watershed Management Commission has undertaken a first in the nation, groundbreaking research study to field test a new twist on an old technology. Like many urban streams, Shingle Creek in Hennepin County has high concentrations of E. coli, and is designated as an Impaired Water. Required to reduce those concentrations, stormwater managers at the Commission were not sure how to accomplish this. They came across little-known academic research in California suggesting that using biochar - a special type of charcoal - to filter stormwater in a lab setting greatly reduces bacteria concentration, like passing tap water though an activated carbon filter. However, biochar filters had never been tested in the real world. If it is as effective in the field as in the lab, it would be a valuable new way to protect and clean our lakes and streams.

The Commission's past experience and a reputation for undertaking innovative research studies allowed it to secure a $200,000 grant from the federal Environmental Protection Agency/Minnesota Pollution Control Agency to complete a Biochar- and Iron-Enhanced Sand Filters Project. This project tested sand filters enhanced with biochar and iron filings in three different ways. The Commission modified three existing stormwater detention ponds to treat water collected in the pond; added filters to storm sewer catch basins to reduce bacteria in runoff from streets and sidewalks; and withdrew streamflow directly from Shingle Creek, directing it though a filter, and returning it back to the Creek.

Do the filters work? Yes! Two years of monitoring show the filters removed 70 to 90 percent of bacteria from stormwater, even when bacteria concentrations were extremely high. The filters require no energy inputs, are low maintenance, and are composed of a simple, natural product. When iron filings are added to the sand and biochar medium, they become even more effective, and reduce phosphorus, which is another pollutant in stormwater.

This is an exciting finding with great potential. For example, biochar-enhanced sand filters would be ideal to treat runoff from dog parks, areas where geese congregate, and storm sewers

that discharge near beaches. Biochar- and Iron-Enhanced Sand Filters are an important new method to help everyone benefit from clean, safe lakes and streams. As news of the project has spread, the Commission has fielded inquiries from Arizona, California, Florida, and Hawaii about how it could be adapted for their communities. This project is ongoing, and will be wrapping up at the end of 2019.

Project Goals
Please describe the goals for this project and how they are important to solving environmental problems. Must be between 1 and 275 words.

The goals of the project are to reduce beach and stream closures, protect public health, and keep our lakes and streams clean so we can safely swim, wade, kayak, fish, and otherwise have fun in them. To do this, the project explored a basic research question: Are biochar and iron-enhanced sand filters cost-effective bacteria and phosphorus reduction treatment technologies for stormwater runoff in urban watersheds? Options to reduce bacteria in urban storm water are limited and the results variable. Developed areas have limited space to add treatment technologies such as new detention ponds or biofiltration basins. Demonstrating that biochar- and iron-enhanced sand filters can be added to existing stormwater infrastructure adds a powerful new tool to the urban stormwater toolbox.

Project Partners
Please list up to 10 key project partners and associated point people involved with this project, including yourself, if applicable.

Shingle Creek Watershed Management Commission: lead partner
City of Crystal: host partner
City of Champlin: host partner
City of Minneapolis: host partner
City of Robbinsdale: host partner
Minneapolis Park and Recreation Board: host partner
Drs. John Gulliver and Andy Erickson, University of Minnesota Saint Anthony Falls Lab: research partners
Drs. Joshua Feinberg and Beth Fisher, University of Minnesota: research partners
Dr. Sanjay Mohanty, Stanford University and UCLA: research partner
Minnesota Pollution Control Agency: funding partner

Project Partnership
Please describe how project partners worked together to build collaborate across difference on this project.
Must be between 1 and 275 words.

The Shingle Creek Watershed Management Commission is a joint powers organization of nine cities in Hennepin County. The Commission sets goals, policies, and actions for the protection and improvement of the lakes, streams, and wetlands in the 44 square mile watershed. The

Commission stays current with both academic and applied research, explores potential new practices, and maintains a network of peers to share information and learn about advancements in stormwater management. A few years ago researchers from the University of Minnesota met researchers from Stanford University who shared data about their lab biochar studies. The U of M researchers knew that Shingle Creek was interested in the topic and introductions were made. The academic researchers brought to the project a theoretical understanding as well as lab results that helped inform how the filters should be designed for field testing. Midway through the project, another U of M team joined the project to do some additional specialty monitoring that will help advance the scientific understanding of why the biochar and iron sand filters work. The city partners brought their ponds and catch basins and a practical perspective to the project, with a desire that the filters be low-maintenance and low-cost.

Project Impacts
Please describe the environmental impacts associated with the project.
Must be between 1 and 275 words.

E. coli and other bacteria in stormwater are a public health and safety concern. Many of these organisms do not themselves cause illness, but their occurrence can indicate the presence of other pathogens carried by human and animal waste that may cause illness and disease. When it rains, pet and animal waste on the ground or rooftops is carried away by stormwater runoff into storm sewers that discharge into nearby lakes or streams or stormwater ponds. Stormwater practices such as detention ponds and rain gardens are of limited effectiveness at removing bacteria. Other forms of treatment such as application of UV-light or chlorination are costly and impractical given the ubiquity of the problem.

Biochar is produced by applying high heat to organic material such as wood in a low-oxygen atmosphere. Its most common use is as an agricultural soil amendment. The highly irregular surfaces of the biochar particles attract and retain bacteria. The Biochar- and Iron-Enhanced Sand Filter project demonstrates that biochar- and iron-enhanced sand filters are very effective, removing 70 to 90 percent of bacteria in real-world stormwater. They are also inexpensive, passive, and use a product that is usually created from waste wood. They can be added to existing stormwater infrastructure such as stormwater ponds and catch basins. They are ideally suited to treating a pollutant that is diffuse and all around us.

Groundbreaking
Please describe how this project was unique and innovative.
Must be between 1 and 275 words.

The project was groundbreaking in that using biochar in iron-enhanced sand filters to remove bacteria from stormwater has never before been tested in real world stormwater management. There is some academic research exploring various applications of biochar in lab or limited,

tightly-controlled small field studies, but nothing similar to or at the scale of the Shingle Creek study. The project truly brings together academics and practitioners to fast-track development of a new stormwater management technique, demonstrating its effectiveness but also advancing the science. The Commission was careful to ensure that both city engineering and maintenance staff and academic researchers were full partners in the project. The project was also innovative in that it looked at different components of a typical urban drainage system: storm sewer catch basins, detention ponds, and an urban stream to explore how these filters might most effectively be applied within that system.

Considering Equity
Please describe how the project considered social equity, such as eliminating of barriers to full participation of historically under-represented and marginalized communities, in the project's development and execution.
Must be between 1 and 275 words.

Exposure to bacterial pathogens is a public health and safety issue that affects all communities. Reducing bacterial pathogens in public waters allows those resources to be enjoyed safely by all. To the extent that impaired urban waters disproportionately affect older cities with higher concentrations of immigrants and people of color, such as the Shingle Creek Watershed in North Minneapolis and several northwestern suburbs, the benefits will improve social equity by enabling all people to swim, wade and fish in their nearby public waters.

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Federal Clean Water Act Section 319

Proposal project workplan

Doc Type: Proposal

Project title: Crystal Lake Management Plan

1. Project summary:

Organization: Shingle Creek Watershed Management Commission
Contractor contact name: Judie Anderson
Title: Administrator
Address: 3235 Fernbrook Lane
Plymouth, MN 55447
Phone: 753-553-1144
Fax: 763-553-9326
Email: judie@jass.biz

Proposed Subcontractor(s)/Partner(s):

Organization: Wenck
Project manager: Ed Matthiesen
Address: 7500 Olson Memorial Highway Suite 300
Golden Valley, MN 55427
Phone: 763-252-6851
Fax: 952-831-1268
Email: ematthiesen@wenck.com

Proposed Subcontractor(s)/Partner(s):

Organization: UW-Stout
Project manager: Bill James
Address: 123 E Jarvis Hall Science Wing
Menominee, WI 54751
Phone: 715-232-2638
Fax:
Email: jamesw@uwstout.edu

Project information

Latitude/Longitude: 45.026758, -93.327305
County: Hennepin
Total project cost: $370,506 total grant funds: $216,066 total match funds: $154,440
***Full time equivalents:**

Project location:

a) Basin (check all that apply):

☐ Lake Superior ☐ Lower Mississippi/Cedar ☒ Upper Mississippi ☐ Minnesota ☐ Rainy
☐ Red River ☐ Des Moines ☐ Missouri ☐ St. Croix

b) Watershed name: Mississippi River – Twin Cities Watershed HUC8: 07010206

c) Waterbody names and Assessment Unit Identification numbers (AUIDs) Crystal Lake (27-0034-00)

d)	**Listed 303(d) impairment including parameters, e.g., phosphorus, total suspended solids, etc., other documented water quality problem, or other (explain):**	Nutrients
e)	**Reports addressing water bodies of concern (must have an EPA-approved TMDL by February 26, 2018):**	https://www.pca.state.mn.us/water/tmdl/crystal-lake-excess-nutrients-tmdl-project
f)	**Is there an EPA-approved Nine Element Plan approved for this watershed? (30 points)**	No

Organization type:
- ☐ Local/Regional government (county, SWCD, WD, etc.)
- ☐ State government
- ☒ Joint powers organization of local government

Interested in this proposal being scored for 0% Interest Clean Water Partnership Loan funds (no obligation)?

☐ **Yes** ☒ **No**

2. Statement of problems, opportunities, and existing conditions

Project background (15 points)

Crystal Lake is a 126-acre nutrient-impaired lake located in the city of Robbinsdale. It is popular among anglers, and there are several city parks abutting the lake as well as a regional bike trail. There is a public boat landing on the south end and a fishing pier on the north end. Summer ten-year average TP concentration is 63 ug/L compared to the deep lake standard of 40 ug/L. The excessive concentration of phosphorous causes nuisance algae blooms and has inhibited the growth of aquatic plants, limiting fish habitat and the aesthetic appeal of the lake. The carp in the lake mobilize phosphorus-containing sediment on the bottom as they feed, impacting water clarity and causing further phosphorus release. This is becoming an even greater issue as carp increase in density in the lake. Reduction in the in-lake phosphorus concentration and the carp population is needed to promote a healthy ecosystem and bring a greater recreational appeal to the lake.

The Crystal Lake Nutrient TMDL was approved in 2008, and the cities of Robbinsdale and Minneapolis and Hennepin County have been actively implementing BMPs in the lakeshed. The TMDL requires a 90% decrease in TP from internal sources (255 pounds) and a 59% decrease from watershed sources (256 pounds). In 2016 the Shingle Creek Watershed Management Commission completed a TMDL Progress Review. It estimated that the cities and county had achieved about 73 pounds of the required annual 256 pound TP wasteload reduction. The city of Crystal also installed and continues to run a hypolimnetic withdrawal flocculation treatment facility in Lakeview Terrace Park, which has averaged the removal of 147 pounds per year over the three years it's been in service. However, when the hypolimnetic water withdrawn for treatment becomes anoxic, the system produces a foul smell, which is not acceptable to the park users or the adjacent residential neighborhood. When there are odor issues, the system is switched over to epilimnetic withdrawal, which is less efficient at controlling phosphorus from sediment release.

In addition to nutrient issues, a recent carp assessment estimated the current mean biomass of carp in Crystal Lake as about 126 kg/ha. Research suggests that high densities of common carp can reduce submersed aquatic vegetation coverage, lower water fowl populations, and increase turbidity. These impacts begin to occur when the carp population exceeds a 100 kg/ha critical density threshold (Bajer et al. 2009). Crystal Lake does not currently sustain a robust aquatic vegetation community, likely limited by the presence of carp and excess turbidity. Curly-leaf pondweed is known to be present in the system, although currently at low densities.

Project impact (25 points)

The purpose of this project is to improve the water quality and ecological integrity of Crystal Lake to restore beneficial uses and progress the lake toward achieving the state water quality standard for TP. As the largest lake in the city of Robbinsdale and with significant adjacent park acreage and a public access, it is a popular destination for water recreation and fishing. The proposed project takes a whole-lake management approach, significantly reducing internal phosphorus release from sediments, reducing the carp population to a more manageable carrying capacity, and as water clarity improves, encouraging the restoration of a healthy native plant community and addressing the potential increase in invasive aquatic plant populations.

The Crystal Lake Management Plan includes three components. The first is a lake alum treatment to seal the sediments and reduce the need and frequency of withdrawing from the hypolimnion. The second is carp harvesting to reduce the population to a level well below the impairment threshold. The third step, after alum treatment and carp removal, is the restoration of a healthy native aquatic vegetation community by treating invasive plants as water quality improves and take any necessary management steps to keep the lake healthy and native .

Upon application, alum forms a flocculant that binds with phosphorus to form an aluminum phosphate compound that can no longer be used as food by algae. As the flocculant slowly settles, some phosphorus is removed from the water column, along with other suspended particles. On the bottom of the lake, the flocculant forms a layer that acts as a phosphorus barrier. To maximize the effectiveness of the alum treatment, it would be performed in two doses. Initial sediment cores would be used to compute the effective dose, and water column DO measurements would be used to identify the anoxic zone and the limits of alum treatment. One-half the recommended dose would be applied the first year, and additional sediment cores taken and evaluated. Based on the initial results, dosing for the second treatment may be adjusted. Following the second treatment, a final set of sediment cores would be used to confirm the effectiveness of the treatment at reducing the sediment release rate. Alum treatments dosed correctly can achieve a 90-95% reduction in sediment release. The goal of the Crystal Lake alum treatment is a 90% reduction, or 255 pounds per year, which is the TMDL internal load reduction requirement. This improvement would allow the flocculation system to focus on reducing phosphorus in the epilimnion, which would help treat the watershed load and extend the life of the alum treatment.

An initial carp assessment has already been completed in September 2018. The assessment concluded that the carp biomass was just above the critical impairment threshold, but more importantly that the carp were relatively small in size. This suggests that carp issues in the lake are likely to worsen as they grow and reproduce. Prior to the alum treatment, the carp population assessment would be repeated and RTF tags placed in a sample of the fish for radio tracking to determine their overwintering locations. Based on an initial carp assessment, approximately 3,500-4,000 kg of carp will need to be removed from the lake to reduce the population density below the 100 kg/ha density threshold. The Commission will work with the commercial fisherman assigned to this area to harvest carp and other undesirable rough fish. Fewer carp stirring up the bottom sediments should also result in less sediment and pollutants being contributed from the bottom of the lake, improving clarity.

Finally, the previously completed aquatic vegetation surveys demonstrate an extreme lack of submersed aquatic vegetation, with few native pondweed species common in healthy shallow and deep lakes throughout Minnesota. As water clarity improves post alum treatment and carp removal, a positive vegetative response would be anticipated. Exactly what that would look like is unknown at this time. A desirable outcome would be one in which a diverse community of native vegetation becomes established, out-competing aquatic invasive species (AIS) but remaining below nuisance levels. However, because AIS have been observed in the lake during plant surveys and anecdotal evidence suggests these species used to be at nuisance levels along the northwest shore, the possibility exists that AIS may try to reestablish, requiring active management. The Commission will monitor submersed aquatic vegetation for invasive aquatic plants and manage those by using spot treatments. This does not directly abate pollution, but the effective removal of invasive species does promote growth of a healthy natural ecosystem.

Organization (10 points)

The Commission has no staff but contracts with consulting engineering, legal and adminstrative services firms to conduct its business. Contract staff from Wenck Associates who would participate in this project include: Ed Matthiesen, PE, MCE, watershed engineer with over 30 years of experience in water resources and environmental engineering (project manager); Joe Bischoff, MS, limnologist and aquatic ecologist with 20 years experience (sediment chemistry, alum dosing); Jeff Strom, MS, water resources scientist with eight years' experience (performance monitoring); Tom Langer, fish biologist with 6 years' experience (fish and aquatic vegetation surveys, carp tracking and removal) and Chad Anderson, MS, water resources scientist with 14 years' experience (grant coordination, public outreach). This team is currently working on similar projects in the Shingle Creek watershed on Twin Lakes in Crystal/Brooklyn Center/Robbinsdale and Bass and Pomerleau Lakes in Plymouth. Other partners in this project will be the City of Robbinsdale and the DNR.

Landowner readiness/willingness (15 points)

The City of Robbinsdale is supportive of this project, and the Commission has a history of working with the DNR on similar types of holistic lake management programs, for example the current Twin Lake Carp Management Project, a portion of which is located in Robbinsdale.

3. Goals, objectives, tasks, and subtasks (5 points)

Goal: The purpose of this project is to improve the water quality of Crystal Lake through the reduction of phosphorus levels, removal of carp and possible treatment for aquatic invasive species. Following completion Crystal Lake will have a healthy ecosystem of native fish and plants and cleaner, clearer waters. Removal / reduction of each of the three target elements: phosphorus, carp and invasive aquatic plants will improve water quality. Improved water clarity will promote plant growth and habitat for native fish. Fewer carp will allow for more space and resources for native fish and reduce phosphorus release and turbidity from stirred-up sediments. Removing invasive plant species will allow for native plant species to inhabit the lake. Together these efforts will restore Crystal Lake to a natural, native, self-supporting ecosystem.

Objective 1: Reduce Phosphorus Levels in Crystal Lake

Task 1: Dosing and Effectiveness Monitoring. Initial sediment cores will be taken from the lake in approximately February 2020 and evaluated for redox-P by Professor Bill James at the Center for Limnological Research and Rehabilitation at UW-Stout. The results will allow the calculation of a maximum initial dosage for alum. Dissolved

oxygen profiles previously taken on Crystal Lake will be used to establish the treatment area. Additional cores and DO profiles will be taken following the initial alum dose and results used to make any necessary adjustments to application rates and areas. A final set of cores taken following the second application will be evaluated to verify that the desired reductions have been achieved.

Responsible Party: Shingle Creek Commission, Wenck, Bill James (UW-Stout)

Task 2: Alum Application. The first dose of aluminum sulfate treatment would be applied in Spring 2021. The second dose would likely be applied in Spring 2022. The City of Robbinsdale will act as contracting agent for this publicly bid project.

Responsible Party: City of Robbinsdale, Commission's Engineer (Wenck)

Task 3: Water Quality Monitoring. The Commission's engineer will perform followup water quality monitoring in 2021 and 2022 to document changes in water quality and clarity. The lake will be monitored for surface and bottom TP, SRP, chl-a, and Secchi depth and DO and temperature profiles, bimonthly from late May to late September. This data will be compared to historical monitoring data to help evaluate project effectiveness. Prior to undertaking monitoring the Commission will work with the MPCA to prepare a QAPP establishing monitoring procedures. A Crystal Lake monitoring station is already established in EQuIS, and collected data will continue to be uploaded as required.

Responsible Party: Shingle Creek Commission, Commission's Engineer (Wenck)

Objective 1 Timeline: February 2020 to September 2022

Objective 1 Cost: $161,984 grant, $100,200 cash match, $262,184 total

Objective 1 Deliverables: Technical memo setting forth dosing calculations and documenting treatment applied; monitoring data.

Objective 2: Carp Removal

Task 1: Carp Population Assessment and Tracking. The previously-conducted carp assessment will be updated by the Commission's engineer using electrofishing techniques. During this assessment 10-15 carp will be tagged with radio transmitter markers. The tagged carp will periodically be tracked using portable trackers to identify overwintering locations. Following removals, a followup carp assessment will be completed to verify that the density goal has been achieved. This task includes coordination and permitting with the DNR.

Responsible Party: City of Robbinsdale, Commission's Engineer (Wenck)

Task 2: Commercial Fish Removal. The Commission will contract with the commercial fishermen assigned to this area to remove and sell or dispose of carp. The primary carp removal effort will be in late winter 2021, just prior to the first alum dose. Additional removals may occur in later, smaller efforts depending on the results of the followup population assessment.

Responsible Party: City of Robbinsdale, Commission's Engineer (Wenck), commercial fishermen (TBD)

Objective 2 Timeline: June 2020 to September 2022

Objective 2 Cost: $24,214 grant, $28,000 cash match, $52,214 total

Objective 2 Deliverables: Technical memo reporting the results of the before and after population assessment, and records of biomass removed form the lake.

Objective 3: Invasive Species Management

Task 1: Field Surveys and Permit Application: The Commission's engineer will perform submersed aquatic vegetation (SAV) surveys in May and September 2020, 2021, and 2022. If invasive species management is required, the engineer will obtain necessary permits from and prepare required reports to the DNR.

Responsible Party: City of Robbinsdale, Commission's Engineer (Wenck)

Task 2: Herbicide Spot Treatments: Spot treatments for invasive plan species will conducted as necessary in 2020, 2021, and 2022.

Responsible Party: City of Robbinsdale, Commission's Engineer (Wenck)

Objective 3 Timeline: January 2020 to September 2022.

Objective 3 Cost: $19,740 grant, $26,240 cash match, $45,980 total

Objective 3 Deliverables: Plant surveys, treatment records

Objective 4: Administration/Semiannual and Final Reports.

Task A: Administration/Semiannual and Final Reports.

Semiannual reports will be completed and submitted to MPCA by February 1st and August 1st each year during the Grant term. A final report will be submitted to MPCA within 30 days from the end of the Grant. Best Management Practices will be reported each year they are implemented by February 1st to the Statewide eLINK data system. Invoices will be submitted to MPCA at least quarterly. Methods and findings will be compiled into a final technical report that will be submitted as part of the Final Report for this grant.

Responsible Party: Commission's Engineer (Wenck)

Objective 4 Timeline: February 2020 to September 2022
Objective 4 Cost: $10,128 grant, $0 cash match, $10,128 total
Objective 4 Deliverables: Semi-annual and final reports, invoices

4. Measurable outcomes (15 points)

a) List the specific measurable outcomes on the targeted waterbody(s) this project would achieve and project deliverables for the approved TMDL. Examples include number and brief description of BMPs to be completed, estimated pollution reductions, cost per pound of pollution reduction. Use requested grant funds for this calculation, not total project costs. Ranges of reduction and cost are acceptable. Note: these approved models may be helpful to estimate load reductions, STEP-L, BWSR eLINK.

Please fill out table for **each water body** (the table can be cut and pasted for multiple water bodies):

Lake ID or stream AUID	Crystal Lake					
Phosphorus	Alum treatment	lbs/yr	255	$/lb	$975	100%
Sediment		tons/yr		$/ton		%
Nitrogen		lbs/yr		$/lb		%
Other (list): Carp	Carp removal	kg	4000	$/kg	$13.05	N/A%
				$/		%

b) Explain the impact this project would have on the reduction goals for the watershed (e.g., the 300 lb/yr phosphorous reduction is 25% of the needed 1,200 lb/yr reduction of phosphorus in watershed A):

The 255 pound annual TP load reduction is 100% of the 255 pound annual internal load reduction required by the Crystal Lake Nutrient TMDL. There is no specific TMDL reduction goal for rough fish management, although it is a recommended action in the Implementation Plan.

c) Describe how an evaluation of the project will be done, including how success will be defined and measured. For example, a description of effectiveness monitoring could be included:

The effectiveness of these measures is assessed through analysis of post-application sediment cores, water quality testing, and surveys. Phosphorus is monitored through water quality data and can also be tracked through analysis of core samples. The change in fish populations is tracked and monitored through surveys before and after commercial removal. Similarly, aquatic plants are surveyed before and after spot treatment to track the progress in eliminating the invasive species. Specifically, the Commission will take pre-application, mid-application, and post-application lake sediment cores and have them analyzed for redox-P release to verify that the target release rate has been achieved. In addition, lake surface and bottom water quality will be monitored bimonthly for two years to assess progress in improving nutrient concentrations, reducing algal growth an measured by chlorophyll-a, and improving water clarity as measured by Secchi depth..

6. Proposed project budget (see attached spreadsheet)

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Budget

Crystal Lake Management Plan
Shingle Creek Watershed Management Commission

Itemized project budget and expenditures

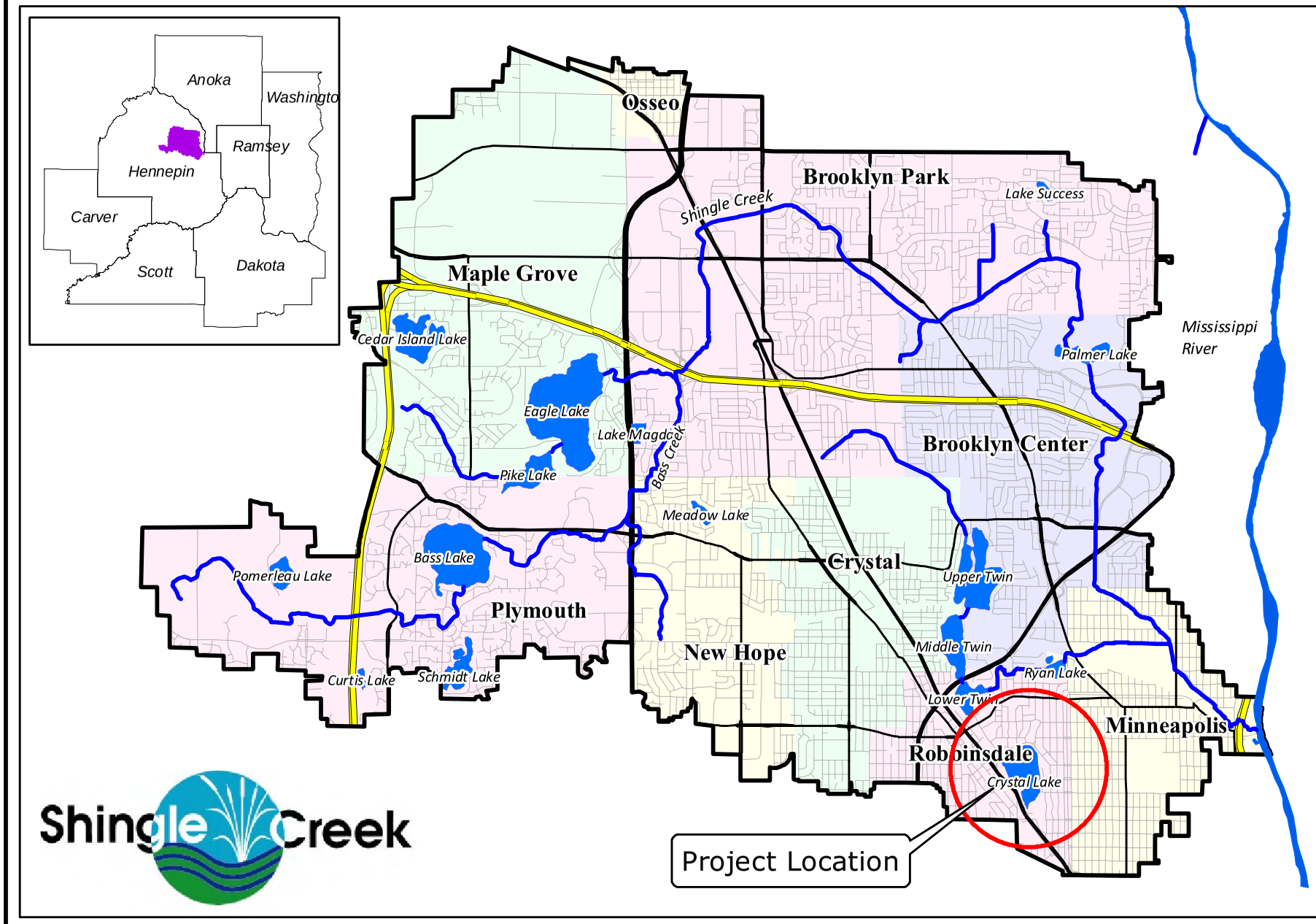
Objective	Cost category	Unit cost	Rate	Quantity	Grant	In kind match	Cash match	Total match	Budget total
Objective 1: Reduce Phosphorus Levels in Crystal Lake									
Task 1: Dosing and effectivness monitoring	Wenck Scientist 3-A	Hour	168.00	16.00	$ 2,688.00			$ -	$ 2,688.00
	Wenck Scientist 2-A	Hour	130.00	48.00	$ 6,240.00			$ -	$ 6,240.00
	Wenck Scientist 4-A	Hour	198.00	12.00	$ 2,376.00			$ -	$ 2,376.00
	Wenck Scientist 1-B	Hour	108.00	24.00	$ 2,592.00			$ -	$ 2,592.00
	Sediment core analysis UW-Stout	Each	7200.00	3.00	$ 21,600.00			$ -	$ 21,600.00
	Mileage	Commissioner's Plan	1.00	350.00	$ 350.00			$ -	$ 350.00
Task 2: Alum application	Wenck Engineer 4-A	Hour	198.00	16.00	$ 3,168.00			$ -	$ 3,168.00
	Wenck Scientist 4-A	Hour	198.00	16.00	$ 3,168.00			$ -	$ 3,168.00
	Wenck Scientist 1-B	Hour	108.00	60.00	$ 6,480.00			$ -	$ 6,480.00
	Contract TBD	LS	200000.00	1.00	$ 100,000.00		$ 100,000.00	$ 100,000.00	$ 200,000.00
		Commissioner's Plan	1.00	100.00	$ 100.00			$ -	$ 100.00
Task C: Water quality monitoring	Wenck Scientist 2-A	Hour	130.00	12.00	$ 1,560.00			$ -	$ 1,560.00
	Wenck Scientist 1-B	Hour	108.00	84.00	$ 9,072.00			$ -	$ 9,072.00
	Lab analysis-TP	Each	11.00	40.00	$ 440.00			$ -	$ 440.00
	Lab analysis-SRP	Each	9.00	40.00	$ 360.00			$ -	$ 360.00
	Lab analysis-TSS	Each	9.00	20.00	$ 180.00			$ -	$ 180.00
	Lab analysis-Chl-a	Each	18.00	20.00	$ 360.00			$ -	$ 360.00
	Boat rental	Each	50.00	20.00	$ 1,000.00			$ -	$ 1,000.00
	Supplies	Each	200.00	1.00	$ -		$ 200.00	$ 200.00	$ 200.00
	Mileage	Commissioner's Plan	1.00	250.00	$ 250.00			$ -	$ 250.00
Objective 1 - Total					**$ 161,984.00**	**$ -**	**$ 100,200.00**	**$ 100,200.00**	**$ 262,184.00**
Objective 2: Carp Removal									
Task A: Carp population assessment and tracking	Wenck Scientist 2-A	Hour	130.00	12.00	$ 1,560.00			$ -	$ 1,560.00
	Wenck Scientist 1-B	Hour	108.00	84.00	$ 9,072.00			$ -	$ 9,072.00
	Electrofishing boat rental	Each	1000.00	2.00	$ 2,000.00			$ -	$ 2,000.00
	Boat rental	Each	100.00	8.00	$ 800.00			$ -	$ 800.00
	Radio tags and supplies	LS	8000.00	1.00	$ -		$ 8,000.00	$ 8,000.00	$ 8,000.00
	Mileage	Commissioner's Plan	1.00	150.00	$ 150.00			$ -	$ 150.00
Task 2: Commercial carp removal	Wenck Scientist 2-A	Hour	130.00	12.00	$ 1,560.00			$ -	$ 1,560.00
	Wenck Scientist 1-B	Hour	108.00	84.00	$ 9,072.00			$ -	$ 9,072.00
	Contract TBD	LS	20000.00	1.00	$ -		$ 20,000.00	$ 20,000.00	$ 20,000.00

item 08a

Itemized project budget and expenditures

Objective	Cost category	Unit cost	Rate	Quantity	Grant	In kind match	Cash match	Total match	Budget total
Objective 2 - Total					**$ 24,214.00**	**$ -**	**$ 28,000.00**	**$ 28,000.00**	**$ 52,214.00**
Objective 3: Invasive Species Management									
Task A: Field surveys and permit application	Wenck Scientist 2-A	Hour	130.00	80.00	$ 10,400.00			$ -	$ 10,400.00
	Wenck Scientist 1-B	Hour	108.00	80.00	$ 8,640.00			$ -	$ 8,640.00
	Boat rental	Each	100.00	6.00	$ 600.00			$ -	$ 600.00
	Mileage	Commissioner's Plan	100.00	1.00	$ 100.00			$ -	$ 100.00
Task B: Herbicide spot treatments	Contract-TBD	LS	20000.00	1.00	$ -		$ 20,000.00	$ 20,000.00	$ 20,000.00
	Wenck Scientist 2-A	Hour	130.00	48.00	$ -		$ 6,240.00	$ 6,240.00	$ 6,240.00
Objective 3 - Total					**$ 19,740.00**	**$ -**	**$ 26,240.00**	**$ 26,240.00**	**$ 45,980.00**
Objective 4: Administration/Semi-Annual/Final Reports									
Task A: Administration/Semi-Annual/Final Reports	Wenck Scientist 3-A	Hour	168.00	16.00	$ 2,688.00			$ -	$ 2,688.00
	Wenck Scientist 2-A	Hour	130.00	24.00	$ 3,120.00			$ -	$ 3,120.00
	Wenck Scientist 1-B	Hour	108.00	40.00	$ 4,320.00			$ -	$ 4,320.00
Objective 4 - Total					**$ 10,128.00**	**$ -**	**$ -**	**$ -**	**$ 10,128.00**
	TOTAL				**$ 216,066.00**	**$ -**	**$ 154,440.00**	**$ 154,440.00**	**$ 370,506.00**

item 08a



SHINGLE CREEK WMC	WENCK ASSOCIATES Responsive partner. Exceptional outcomes.	FEB 2019
Crystal Lake Management Plan Project Location		Figure 1

item 08a

SHINGLE CREEK WMC	WENCK ASSOCIATES Responsive partner. Exceptional outcomes.	FEB 2019
Crystal Lake Management Plan		Figure 2

item 09a

SHINGLE CREEK / WEST MISSISSIPPI WATERSHED MANAGEMENT COMMISSION
MONTHLY COMMUNICATION LOG
February 2019

Date	From	To	SC	WM	Description
2-4-19	Eric Roush @ SRF	Ed Matthiesen.		X	Design meeting for TH169 interchange in Brooklyn Park
2-5-19	Drew McGovern @ Hennepin County Highway	Ed M.	X		Highway 81 project review
2-5-19	Nate @ Larson Engineering	Ed M.	X		Park Center High School parking lot improvements
2-5-19	Tyler Johnson, Stantec	Sarah Nalven	X		Correspondence re necessary revisions for SC 2019-001 (New Hope City Hall)
2-6-19	Darrin George @ Brooklyn Park	Ed M. and Meaghan Watson		X	Resident questions about vegetation management in a wetland
2-8-19	Trevor Gruy @ Loucks	Ed M.	X		Project review question regarding a deck in Maple Grove
2-8-19	Mary Karius, HCEE	Diane Spector	x		Copies of RiverWatch historical raw invert data for sites on Shingle Creek
2-8-19	Rich Harrison, Metro Blooms	SC WMC	X		Submittal of Phase 2 of Autumn Ridge site improvements to the Partnership Cost Share program
2-11-19	Katie Farber, Fortin Consulting	Diane S	X		More RiverWatch data
2-11-19	Deb Davis, Meadow Lake Assn	JASS, Diane S	X		Request for a speaker for the association's annual meeting on April 27 to provide an update on the Meadow Lake TMDL
2-11-19	Eric Alms, MPCA	Jeff Strom	X	X	Follow up handouts from Mississippi River - Twin Cities (West) Cycle II Kickoff Meeting
2-12-19	Tom Rehwaldt @ Ryan Companies	Ed M.	X		Upsher Smith expansion in Plymouth
2-12-19	Chris Long Stantec (for New Hope)	SC WMC	X		Copy of WCA Notice of Decision for wetlands within Civic Center Park
2-12-19	Jason Staebell, Hennepin County	SC WMC	X		Email asking to schedule a pre-permit meeting regarding the upcoming Webber 44 road project
2-13-19	Tom Dillon	Ed M.	X		Proposed project in Robbinsdale on Twin Lake
2-13-19	Josh Phillips @ Barr Engineering	Ed M.	X		SC20019-02 Hwy 494 and Rockford Rd coordination
2-15-19	Derek Asche, Maple Grove	SCWM WMC	X	X	Request review of proposed revisions to wetland ordinance
2-19-19	Diane S	Karen Galles, HCEE	X	X	Request for guidance as to the use of county levy dollars for sweepers
2-19-19	Diane S	Steve Christopher, BWSR	X	X	Request for concurrence that the proposed revisions to the CIP policy raising the voluntary levy limit to $750,000 and lifting the $250,000 maximum can proceed as a Minor Plan Amendment. On 2-21-19 Steve responded with concurrence and approval to proceed.
2-20-19	Mahmood Nachabe @ University of South Florida	Ed M., Diane S.	X	X	Biochar research
2-20-19	Tiffany Schaufler @ Minnehaha Creek WD	Ed M.	X	X	High ground water levels

WENCK ASSOCIATES
Responsive partner. Exceptional outcomes.

SHINGLE CREEK / WEST MISSISSIPPI WATERSHED MANAGEMENT COMMISSION
MONTHLY COMMUNICATION LOG
February 2019

Date	From	To	SC	WM	Description
2-20-19	Mandy Backstrom @ Anderson-Johnson Engineers	Ed M.		X	Project review requirements for Brooklyn Park City Hall
2-20-19	Jim Herbert @ Barr Engineering	Ed M.	X		Project review coordination on SC2019-002 Rockford Rd and Hwy 494 interchange
2-20-19	Malia Jones, Robbinsdale resident	SC WMC	X		Contact from Website contact form. "I am also a high school biology teacher in Richfield and a student in the Advanced Inquiry Program at Miami University-Ohio working on my Master's degree in biology. The focus of my program is conservation and environmental stewardship, and my Master Plan is to develop awareness in my community about the risks of littering in waterways and to inspire others to take action in conserving local lakes. I have found your studies and reports invaluable in my research. Last fall I collected and analyzed litter from the shores of Crystal Lake surrounding the fishing dock and along Lakeview Terrace Park and the boat launch. I was able to analyze the amount and types of litter that is being disposed of by community members. I am looking for a venue to be able to share these results with Robbinsdale residents. I would also like to organize a one-day community cleanup on the shores of Crystal Lake this spring ideally surrounding Earth day 2019. Community members would participate in collecting anthropogenic litter along the shoreline and I would teach them how to categorize it into similar categories that follow the Alliance for the Great Lakes Adopt-a-Beach NGO program. I would like the community to be involved in this project beyond just the cleanup day. I am not sure how this would work yet but I would like to give them the opportunity to be a part of the data analysis portion of the project as well as informed on the results of the cleanup. I am hoping that this further involvement would motivate community members to be better stewards of the lake." Marta Roser from Robbinsdale followed up with her and is developing a partnership.
2-21-19	Jeff Wrede @ Momentum Design Group	Ed M.	X		Proposed redevelopment on Lake Road adjacent to Lower Twin Lake in Robbinsdale
2-21-19	Sue Nissan, SOS	SCWM WMC	X	X	Notice that the salt limited liability legislation will be reintroduced this session
2-22-19	SC WMC	Environmental Initiative	X		Submittal of the Biochar project to the Environmental Initiative awards
2-22-19	SWIFT	SC WMC	X		Notice that the SRP Reduction Project contract is ready to be executed
2-26-19	SC WMC	MPCA	X		Submit Section 319 grant application for the Crystal Lake Management Plan
2-27-19	Steve Mastey @ Landscape Architecture, Inc.	Ed M.	X		Twin Lakes North Apartments parking lot in Cyrstal