

A meeting of the joint Technical Advisory Committee (TAC) of the Shingle Creek and West Mississippi Watershed Management Commissions is scheduled for **1:00 p.m., Monday, March 30, 2020.** This will be a virtual meeting.

To Join Zoom Meeting click: <u>https://zoom.us/j/701097805</u>. Or go to <u>www.zoom.us</u> and click Join A Meeting and use Meeting ID: 701 097 805. If you don't have audio capabilities on your computer you can also join by voice on the numbers below to participate in the meeting.

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# AGENDA

- 1. Call to Order.
  - a. Roll Call.
  - b. Approve Agenda.\*
  - c. Approve Minutes of Last Meeting.\*
- 2. 2020 CIP and Minor Plan Amendment.\*
- 3. Cost Share Program Status update.
  - a. River Park, Brooklyn Park.\*
- 4. Bass Creek Restoration Preliminary Findings presentation.
- 5. Hydrodynamic Separator Effectiveness Comparison.\*
  - a. Maple Grove Response.\*
- 6. Other Business.
- 7. Next TAC meeting is scheduled for \_\_\_\_\_.
- 8. Adjournment.

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## MINUTES

#### February 13, 2020

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 11:11 a.m., Thursday, February 13, 2020, at Edinburgh USA, 8700 Edinbrook Crossing, Brooklyn Park, MN.

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

Not represented: Champlin and Osseo.

Also present: Burt Orred, Jr., Crystal; Harold E. Johnson and James Kelly, Osseo; Andy Polzin, Plymouth; and Laura Scholl and Jennifer Ehlert, Metro Blooms.

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

**II.** Motion by Ray, second by Robinson to **approve the minutes**\*of the January 9, 2020 meeting. *Motion carried unanimously.* 

#### III. Cost Share Application – Brooks Landing.

**A.** The City of Brooklyn Park has submitted a Partnership Cost Share Program application on behalf of Boisclair Corporation and Metro Blooms for improvements at Brooks Landing Senior Apartments. The various site improvements include replacing the parking lot, adding two raingardens to treat runoff from the parking lot and sidewalk, and adding some amenities such as benches and landscaping. The cost share would be applied to the rain garden portion of the project. Similar to the Autumn Ridge project, Metro Blooms will provide outreach and stewardship opportunities for residents of the development.

**B.** At the January 9, 2020 TAC meeting members discussed the cost-effectiveness of the proposal which requested \$50,000 from the program. The estimated load reduction is 1.75 pounds of TP annually, or about \$28,000 per pound of TP removed. The proposed project is in the Directly Connected Impervious Area and is a priority for treatment retrofits. Commission Staff's maximum comfort level is about \$10,000/pound unless there are other significant benefits. Following discussion, the TAC recommended to the Commission that the project be funded at \$20,000. The Shingle Creek Commission approved funding at that amount at their January 9, 2020 meeting.

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**C.** Metro Blooms staff returned to this meeting with a revised proposal.\* After revisiting stormwater modeling and site design they are able to capture 3.9 pounds of TP annually and have requested an additional \$10,000 from the January 9th TAC recommendation, for a total of \$30,000. This site was awarded a Lawns to Legumes demonstration site and funding from that grant will also be applied to the raingarden.

Motion by Ray, second by Robinson to recommend to the Commission approval of an additional \$10,000 of funding for this project. *Motion carried unanimously.* 

#### IV. 2020 CIPs.\*

Staff's February 7, 2020 memo shows the current status of the CIP for each watershed. As in past years, there are some projects on the CIP that are placeholders that need additional detail to implement or are associated with potential development or redevelopment that has not yet occurred. These usually are rescheduled to a future year and no plan amendment is required for that action.

Typically, the TAC hears feasibility studies for proposed projects and makes a recommendation to the Commissions in April of each year as to which projects to consider for that year's CIP and whether any minor plan amendments are necessary. This all goes to the Commissions, which set the maximum levies and forward that information to Hennepin County. The County goes through its public hearing and maximum levy setting process, usually done by the end of June. The process then comes back to the Commissions to hold public hearings on proposed projects and set a final levy.

Table 3 of the memo, which assumes that many of the projects currently shown for 2020 will be rescheduled for later years, estimates a 2020 levy of \$825,000. In 2019 the Commissions amended their Management Plan to raise the annual voluntary maximum levy to \$750,000, with the thinking that that number will climb to \$1 million by 2022. Potentially, the Bass Creek Restoration Project could be considered in 2020, which would add anywhere from \$300,000 - \$400,000 to that levy, raising it well above the voluntary \$750,000 maximum.

Both the Cost-Share program and the Partnership Cost Share program currently have balances of about \$120,000 (plus an additional \$100,000 to be received this year) and \$150,000 (plus \$50,000), respectively. The Commissions could get by without certifying levy for either of these programs in 2020, if need be.

It was suggested that the Commissions maintain secondary CIPs that include projects with no years attached, thus reducing the annual totals on the primary CIP.

Staff emphasized that if cities have projects for the 2020 CIP they need to know about them now.

#### V. Manufactured Treatment Devices (MTDs).\*

There has been ongoing discussion between representatives of various WMOs and cities in the metro area and the MPCA regarding Manufactured Treatment Devices (MTDs). WMOs and cities would like the MPCA to establish design standards and allowable performance efficiencies in the Stormwater Manual similar to other BMPs so there is some uniformity of analysis when doing project and permit reviews.

This small group - led by Bassett, Nine Mile, Shingle, and Riley Purgatory Creeks and Ramsey-Washington - requested that the MPCA "Cooperate with and support the implementation of the Water Environment Federation's (WEF) Stormwater Testing and Evaluation of Products and Practices (STEPP) verification program, currently under development. Staff prefer this option because the STEPP verification program is already well along in its development, it will be a nationwide program, and MPCA SCWM TAC Meeting Minutes February 13, 2020 Page 3



Staff are already engaged in the program. Once implemented, the STEPP verification program would validate MTD performance; it would be up to the state (e.g., the MPCA) to certify the MTDs.

Subsequently Mike Trojan at the MPCA held a wider listening session to hear from more entities about how MTDs are being used and how they are being credited. Included in Staff's February 7, 2020 memo are notes from that meeting. Seth Brown, who is called out in the memo, is the STEPP coordinator at WEF. TAPE, which is also referenced, is the Washington State Technology Assessment Protocol – Ecology program, which maintains a series of guidance documents.

If anyone is interested in being a part of any work group, they should contact Mike Trojan directly, mike.trojan@pca.state.mn.us, or Commission staff and they can forward that information. Otherwise, Staff will keep members apprised of any progress on this topic.

It was a consensus of the members that the Commissions should not fund devices as they are being certified. Certification should be paid for by the manufacturers.

#### VII. Other Business.

**A. Plymouth Street Sweeper.\*** Scharenbroich provided a copy of the quote from Environmental Equipment. It details the cost of the sweeper, which is included on the Commission's CIP and included in the meeting packet for informational purposes.

**B. MS4 comments.** Members discussed various revisions and updates to the proposed MS4 permit.

**C. Cost of Maintenance.** A recurring question is how to fund the cost of maintenance of projects the Commissions undertake. The members will ask the Commissions to direct the TAC to consider this issue.

#### VIII. Next Meeting.

The next Technical Advisory Committee meeting is scheduled for 11:00 a.m. Thursday, March 12, 2020, prior to the Commissions' regular meeting.

The meeting was adjourned at 12:23 p.m.

Respectfully submitted,

hidi Adedustr

Judie A. Anderson Recording Secretary

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То:	Shingle Creek/West Mississippi WMC TAC	
From:	Ed Matthiesen, P.E. Diane Spector	
Date:	March 25, 2020	
Subject:	Initiate 2020 CIP and Minor Plan Amendment (if necessary)	

Typically, the TAC hears feasibility studies for proposed projects and makes a recommendation to the Commissions in April of each year as to which projects to consider for that year's CIP and whether any minor plan amendments are necessary. This all goes to the Commissions which then set the maximum levies and then forwards all that information to Hennepin County. The County then goes through its public hearing and maximum levy setting process that is usually done by the end of June. The process then goes back to the Commissions to hold public hearings on proposed projects and set a final levy.

Attached are the current draft CIPs for each watershed which reflect the Minor Pan Amendments approved in 2019 and rescheduling some projects to future years. Tables 1 and 2 show the potential projects for consideration in 2020 and the associated estimated levies. In 2019 the Commissions amended their Management Plan to raise the annual voluntary maximum levy to \$750,000. Shingle Creek as proposed would exceed that \$750,000 voluntary cap. Both the Cost-Share program and the Partnership Cost Share program have balances, currently about \$120,000 (plus an additional \$100,000 to be received this year) and \$150,000 (plus \$50,000) respectively. The Commission could get by without certifying levy for either of these programs in 2020 if need be. We would also expect to submit grant applications for the Meadow Lake and two stream projects, and there will be another round of Watershed-Based Funding from BWSR that could also provide funding for these projects.

#### Table 1. Shingle Creek 2020 CIP Projects (2021 levy).

Project	Total Estimated	City/ Private	Grant	Commission Share
Cost share (city projects)	\$200,000	\$100,000	0	\$100,000
Connections II Stream Restoration	400,000	0	0	400,000
Plymouth Street Sweeper	350,000	275,000	0	75,000
Meadow Lake Management Plan	300,000	0	0	300,000
Bass Creek Restoration	400,000	0	0	400,000
Partnership cost share (private projects)	100,000	50,000	0	50,000
Subtotal	\$1,750,000	\$425,000	\$0	\$1,325,000
5% additional for legal/admin costs				66,250
Subtotal				1,391,250
TOTAL LEVY (101% for uncollectable)				\$1,405,165

#### Table 1b. Levy by Project

Project	Total Levy
Cost share (city projects)	\$106,050
Connections II Stream Restoration	424,200
Plymouth Street Sweeper	79,540
Meadow Lake Management Plan	318,150
Bass Creek Restoration	424,200
Partnership cost share (private projects)	\$53,025
Total	\$1,405,165

#### Table 1c. Levy Excluding Cost Share Projects

Project		Total Levy
Connections II Stream Restoration		\$424,200
Plymouth Street Sweeper		79,540
Meadow Lake Management Plan		318,150
Bass Creek Restoration		424,200
	Total	\$1,246,090

#### Table 2. West Mississippi 2019 CIP Projects (2020 levy).

Project	Total Estimated	City/ Private	Grant	Commission Share
Cost share (city projects)	\$100,000	\$50,000	0	\$50,000
River Park Stormwater Improvements	485,000	363,750		121,250
Subtotal	\$585,000	\$413,750	\$ O	\$171,250
5% additional for legal/admin costs				8,560
Subtotal				179,810
TOTAL LEVY (101% for uncollectable)				\$181,610

#### Table 2b. Levy by Project

Project	Total	
		Estimated
Cost share (city projects)		\$53,025
River Park Stormwater Improvements		128,585
	Total	\$181,610

#### **TAC Action**

Discuss and make a recommendation to the Commissions regarding proceeding with the CIP as shown in the scenarios above. The next step would be to proceed to Feasibility Studies, although the TAC has previously received studies for the Connections II and Meadow Lake projects. The Bass Creek project is currently in conceptual design. We are still checking to see if a Minor Plan Amendment is necessary for the Bass Creek project. If it is, then recommend to the Commission that it initiate a Minor Plan Amendment.

Table 3	. Proposed	2020 Shingle	Creek CIP.
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CAPITAL IMPROVEMENT PROGRAM	2020	2021	2022
Cost Share Program	200,000	200,000	200,000
Commission Contribution	100,000	100,000	100,000
Local Contribution	100,000	100,000	100,000
Partnership Cost-Share BMP Projects	100,000	100,000	100,000
Commission Contribution	50,000	50,000	50,000
Local Contribution	50,000	50,000	50,000
Meadow Lake Management Plan	300,000		
Commission Contribution	300,000		
Local Contribution	0		
Shingle Creek Restoration, Regent to Brooklyn Blvd	400,000		
Commission Contribution	400,000		
Local Contribution	0		
Plymouth Enhanced Street Sweeper	350,000		
Commission Contribution	75,000		
Local Contribution	275,000		
Shingle or Bass Creek Restoration Project	400,000		500,000
Commission Contribution	400,000		500,000
Local Contribution	0		0
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 Enhancement		150,000	
Commission Contribution		150,000	
Local Contribution		0	
Minneapolis Webber Park Stream Restoration		500,000	
Commission Contribution		500,000	
Local Contribution		0	
Minneapolis 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	
Palmer Creek Estates Bass Creek Restoration		450,000	
Commission Contribution		112,500	
Local Contribution		337,500	
Lake Internal Load Project			300,000
Commission Contribution			300,000
Local Contribution			0
TOTAL PROJECT COST	\$1,750,000	\$9,477,000	\$1,100,000
TOTAL COMMISSION SHARE	1,325,000	1,681,800	950,000
TOTAL CITY SHARE	425,000	7,795,200	150,000

#### Table 4. Proposed 2020 West Mississippi CIP.

CAPITAL IMPROVEMENT PROGRAM	2020	2021	2022
Cost Share Program	\$100,000	\$100,000	\$100,000
Commission Contribution	50,000	50,000	50,000
Local Contribution	50,000	50,000	50,000
River Park Stormwater Improvements	485,000		
Commission Contribution	121,250		
Local Contribution	363,750		
Miss 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	\$1,215,000	\$100,000	\$100,000
TOTAL COMMISSION SHARE	328,750	50,000	50,000
TOTAL CITY SHARE	886,250	50,000	50,000



Shingle Creek and West Mississippi Watershed Management Commissions Cost-Share Program Guidelines

The Shingle Creek and West Mississippi Watershed Management Commissions will from time to time make funds available to its member cities to help fund the cost of Best Management Practices (BMPs) projects that cost less than \$100,000. The following are the guidelines for the award of cost-share grants from this program:

- 1. Projects must be for water quality improvement and must be for improvement above and beyond what would be required to meet Commission rules. Only the cost of "upsizing" a BMP above and beyond is eligible.
- 2. Priority is given to projects identified in a subwatershed assessment or TMDL.
- 3. Projects should cost less than \$100,000; 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.
- 4. Commission will share in funding projects on a 1:1 basis.
- 5. The cost of land acquisition may be included as City match.
- 6. The minimum cost-share per project is \$10,000 and the maximum is \$50,000.
- 7. Projects must be reviewed by the Technical Advisory Committee (TAC) and recommended to the Commissions for funding.
- 8. The Commissions will call for projects in December of each year, with potential projects reviewed by the TAC at its end of January meeting.
- 9. Cost-share is on a reimbursable basis following completion of project.
- 10. 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, including projects submitted mid-year.
- 11. Unallocated funds will carry over from year to year and be maintained in a designated fund account.
- 12. The standard Commission/Member Cooperative Agreement will be executed prior to project construction.

Adopted February 2015 Revised February 2019



# Shingle Creek and West Mississippi Watershed Management Commissions Cost-Share Program Application

City:	Brooklyn Park
Contact Name:	Mitch Robinson
Contact Phone:	763-493-8291
Contact Email:	Mitchell.robinson@brooklynpark.org
Project Name:	River Park
Year of Construction:	2020
Total Project Cost:	\$2,600,000 (\$660,000 in stormwater basin costs)
Amount Requested:	\$50,000
Project Location:	81 <sup>st</sup> Ave and Mississippi Ln

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).

The City wishes to incorporate water quality treatment into the design of River Park both to reduce the loads on the impaired Mississippi River and to provide an educational space for residents to learn about water quality treatment. The stormwater best management practice (BMP) will contribute to the overall natural feel of the park while adding additional benefit for the residents, animals and insects.

A stormwater pond is proposed near the exiting 60" piped outlet to the river. The pond would be designed to have a natural feel, with slight drops in elevation from one cell of the pond to the next and slowly sloping to the river. A diversion structure would be placed upstream of the ponds with the primary outlet routed to the pond and the secondary outlet routed directly to the river. During low flow storm events the majority of the water would be routed through the pond and would be treated prior to discharge into the river. During larger storm events, high flows would bypass the stormwater pond and discharge directly to the river similar to existing conditions. This would provide water quality treatment during small events while reducing the risk of washing out of the stormwater pond during larger events. Table 1 below shows the proposed water quality treatment pond.

Load to Mississippi River		Removed	d by BMP	Removal	Efficiency
TSS	TP	TSS	TP	TSS	TP
(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)	(lbs/yr)
32,008	169.4	31,260	50.1	60%	29%

## Table 1: Stormwater Pond Water Quality Conditions

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

This is a new stormwater facility to treat 250 acres of previously untreated stormwater discharge to the Mississippi River.

3. Show total project cost, amount of cost share requested, and the amount and source of matching funds.

The City is requesting \$50,000 from West Mississippi Watershed Public Cost Share project in 2020 to help cover a portion of the design and construction administration costs. Funding for the project is shown in Table 2 below:

## Table 2: River Park Project Funding

	, ,
Total Project Cost	\$2,600,000
Stormwater Basin Costs	\$660,000
Hennepin County Grant	\$100,000
Shingle Creek West Mississippi CIP	\$121,500
State of MN Legacy Heritage Grant	\$250,000

It should be noted that half of the State of MN Legacy Heritage Grant is for stormwater funding while the other half is in shore restoration and natural resources.

This is a similar situation to funding received for Becker Park where funds were received from both the CIP funding as well as cost share funds.

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

The project was bid out in early March 2020 and construction is expected to commence in summer 2020.



wsb	Brooklyn Pa
WSB PROJECT NO.: 013799-000	

	SCALE:	DESIGN BY:
	AS SHOWN	KF
ark 🄊 🕅	PLAN BY:	CHECK BY:
	CKJ	BA

NO.	DATE	BY	СНК	REVISION	

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.		
BILL ALMS, PE		
DATE: XX/XX/2019	LIC. NO: XXXXX	

# RIVER PARK STORMWATER PLAN

CITY OF BROOKLYN PARK





Exhibit C: River Park Trunk Storm Sewer Drainage Areas City of Brooklyn Park











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То:	Whom it may concern
From:	Ed Matthiesen, P.E. Diane Spector Katie Kemmitt
Date:	February 20, 2020
Subject:	Effectiveness of the Preserver and

Subject: Effectiveness of the Preserver and SAFL Baffle in removing and retaining suspended sediment in sumps.

#### Introduction

The purpose of this report is to compare the effectiveness of two commonly used sump BMPs (i.e., hydrodynamic separators): the Preserver and SAFL Baffle. Both BMPs are designed to prevent scouring of accumulated sediments in sumps. The hydrodynamic separators work by inhibiting vortexing flow patterns that develop due to high flows through the manhole. These vortexing flow patterns resuspend sediment that has settled out and allow it to be transported further downstream. With reduction in the resuspension and transport of sediment in the manhole, downstream BMPs will require less maintenance. Additionally, both the Preserver and SAFL baffle work to stop floating debris and oil from flowing downstream by directing flow underneath the barriers and blocking floating materials from entering the outlet pipe.

The Preserver (Figure 1) is product developed by Momentum Environmental. It is made of recycled HDPE and stainless-steel brackets and hardware. The Preserver consists of an energy dissipator and a skimmer covering the inlet and outlet pipes, respectively. SAFL baffle is a completely stainless-steel plate that bisects the sump and extends 6 inches above the highest pipe and 12 in below the lowest pipe (Figure 2). The Preserver is not in the Sizing Hydrodynamic Separators and Manholes (SHSAM) program, but SAFL baffle is.

The efficiency of each device in removing sediment from inflow was measured using the protocol developed by the University of Minnesota (Mohseni 2011). Performance of the Preserver was assessed at the University of Iowa and performance of SAFL baffle was assessed at the University of Minnesota. Fine, medium, and coarse sediments were mixed and loaded into the manhole inlet pipe. Table 1 shows the sediment particle size distributions were used to test the Preserver and SAFL baffle. Sediment removal was quantified by measuring the mass of sediment in the sump before and after the test. Multiple flow conditions were used during testing, ranging from 2.7--19 cfs. The Peclet Froude Jet Squared number, a dimensionless number dependent on sediment particle size and flow rates (Equation 1), was used to directly compare the efficiencies of each device (Figure 3).

Figure 3 shows higher sediment removal efficiency by the Preserver with higher flow and/or finer sediment (a lower Peclet Froude Jet Squared number), and higher removal efficiency by SAFL baffle with

lower flow and/or larger sediment (a higher Peclet Froude Jet Squared number). SAFL baffle becomes more efficient in removing sediment at Peclet Froude Jet Squared number equal to about 100. Notice the log-scaled x axis in Figure 3.

Sumps must be cleaned of sediment and debris on a regular basis. Depending on the protocol and equipment used for sump maintenance, either SAFL baffle or the Preserver may be a better choice. SAFL baffle bisects the sump and could prevent pump access, while the Preservers installation around the inlet and outlet pipes could interfere with access to the pipes and outer edges of the sump.

Both devices are effective in removing suspended sediment from sump inflow, but their performance differs based on flow rate and sediment particle size. The choice between SAFL baffle and the Preserver should depend on predicted flow rates and sediment size in the sump and other construction, installation, and maintenance logistics.



**Figure 1.** Side view of the preserver installed in a manhole. The Preserver consists of an energy dissipator on the inflow side of the manhole and a skimmer on the outflow side.



**Figure 2.** Cartoon side view of the SAFL baffle installed in manhole (A) and a close-up view of SAFL baffle plate that is installed vertically in manhole (B).



**Figure 3.** Hydrodynamic separator (HDS) removal efficiencies versus the Peclet Froude Jet Squared number  $(Pe/Fr_j^2)$  on a log scale. Testing was performed at the University of Iowa at the request of Momentum Environmental according to University of Minnesota protocol (Mohseni 2011).

Sediment Size Distribution	Specifications
Fine	Passing sieve #100, 10.98% retained on sieve #120, 87.69% retained on sieve #170, and 1.32% passing sieve #170.
Medium	Passing sieve #35, 1.05% retained on sieve #40, 36.73% retained on sieve #45, 62.22% retained on sieve #60.
Coarse (batch 1)	Passing sieve #25, 0.94% retained on sieve #30, 95.18% retained on sieve #35, 3.65% retained on sieve #40, and 0.22% retained on sieve #45
Coarse (batch 2)	Passing sieve #25, 1.27% retained on sieve #30, 96.58% retained on sieve #35, 1.93% retained on sieve #40, and 0.22% retained on sieve #45

Table 1. Sediment size distributions used in the testing of the Preserver and SAFL baffle, a	is specified in
the University of Minnesota HDS testing protocol.	

# Equation 1.

Peclet Froude Jet Squared = 
$$\frac{Pe}{Fr_j^2} = \frac{V_s \cdot h \cdot d^2 \cdot g}{Q \cdot v_j^2}$$

- V<sub>s</sub> = particle settling velocity
- H & d = length scale factors (typically sump depth and diameter)
- Q = flow rate
- G =gravitational constant
- V<sub>j</sub> = influent jet velocity

#### References

Mohseni, Omid. (2011). Assessment and Recommendations for the Operation of Standard Sumps as Best Management Practice for Stormwater Treatment (Volume 1). Minnesota Department of Transportation. Retrieved from the University of Minnesota Digital Conservancy, http://hdl.handle.net/11299/112919. From: Derek Asche <dasche@maplegrovemn.gov>
Sent: Monday, March 23, 2020 9:13 AM
To: Ed A. Matthiesen <ematthiesen@wenck.com>
Cc: Judie Anderson <Judie@jass.biz>; Richard McCoy (rmccoy@ci.robbinsdale.mn.us)
<rmccoy@ci.robbinsdale.mn.us>; Mark Ray (Mark.Ray@crystalmn.gov) <Mark.Ray@crystalmn.gov>;
Ben Scharenbroich <bscharenbroich@plymouthmn.gov>; Andrew Hogg (ahogg@ci.brooklyn-center.mn.us) <a hogg@ci.brooklyn-center.mn.us>; gwithers@ci.osseo.mn.us; Jesse Struve
<Jesse.Struve@BrooklynPark.Org>; Elizabeth Stout (Elizabeth.Stout@minneapolismn.gov)
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Mitchell Robinson <Mitchell.Robinson@BrooklynPark.Org>
Subject: RE: Hydrodynamic separator comparison SAFL Baffle vs Preserver

## Ed,

Our experience with at least one Preserver, is that the energy dissipater is fine and allows for maintenance with a vac truck, but the skimmer has been difficult to install and has been crushed, blocking the outlet pipe. We are concerned there may be some design or material strength issues with the Preserver skimmer when the inlet and outlet are not "in-line" with each other.

The SAFL baffle has been easy to install and we can maintain easily with a vac truck.

I suspect in lab testing they are similar when it comes to trapping material, however, when it comes to practical details in the field such as how pipes come into manholes, as well as maintenance, there could be differences in performance.

Given Maple Grove's standard operating procedure to regularly vac sump manholes (many with SAFL baffles) and inspect all outfalls, the SAFL baffle works better in our community.

Thanks!



# **Derek Asche**

Water Resources Engineer 763-494-6354 dasche@maplegrovemn.gov

