elm creek
Watershed Management Commission

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3235 Fernbrook Lane
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www.elmcreekwatershed.org

TECHNICAL OFFICE
Hennepin County
Dept. of Environment & Energy
701 Fourth Ave S Suite 700
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Email: James.Kujawa@hennepin.us

April 3, 2019

Representatives
Elm Creek Watershed Management
Commission Hennepin County, MN

The meeting packets for these meetings may be found on the Commission's website: http://www.elmcreekwatershed.org/minutes--meeting-packets.html

Dear Representatives:

A **regular meeting** of the Elm Creek Watershed Management Commission will be held on **Wednesday, April 10, 2019, at 11:30 a.m.** in the Mayor's Conference Room at Maple Grove City Hall, 12800 Arbor Lakes Parkway, Maple Grove, MN.

The **Technical Advisory Committee** (TAC) will meet at 10:00 a.m., prior to the regular meeting. TAC meeting materials may also be found on the Commission's website.

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

Thank you.

Regards,

Judie A. Anderson
Administrator
JAA:tim
Encls: Meeting Packet

cc:	Alternates	HCEE	Jeff Weiss	BWSR
	TAC Members	TRPD	Diane Spector	DNR
	City Clerks	MPCA	Met Council	Official Newspaper

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AGENDA
Technical Advisory Committee
April 10, 2019

1. Call TAC meeting to Order.
- **a.** Approve agenda.*
- **b.** Approve Minutes of last TAC meeting.*

2. 2019 Capital Improvement Program.*

a. February TAC Minutes

Line 5	TMDL implementation special study	$25,000
Line 6	Stream Segment Prioritization	$10,000
Line 14	Fox Creek South Pointe, Rogers	$22,500
Line 15	High Priority Stream Project	$125,000
Line 16	Rush Creek Main Stem Restoration, Maple Grove	$25,000
Line 21	Stone's Throw Wetland, Corcoran	$112,500
Line 34	Agricultural BMP Cost-Share Project	$48,000
Line 37	Hickory Drive Stormwater Improvement, Medina	$56,250
Line 39	Downtown Regional Stormwater Pond, Corcoran	$10,000
		$434,250

b. March Regular Minutes

Line 23	Ranchview Wetland Restoration, Maple Grove.	$250,000
Line 46	Brockton Lane Water Quality Improvements, Plymouth.	Placed in 2022
Line 47	Mill Pond Easement, Champlin.	$16,000
Line 48	Meadows Playfield, Plymouth.	Placed in 2022
Line 49	Enhanced Street Sweeper, Plymouth.	Placed in 2020

c. April Updates (projects in red = proposed to move forward)

Line 12	no projects identified	~~$50,000~~
Line 15	no projects identified	~~$125,000~~
Line 16	Rush Creek Main Stem Restoration, Maple Grove*	$25,000
Line 23	Ranchview Wetland Restoration, Maple Grove*	$250,000
Line 30	Mill Pond Rain Gardens, Champlin*	$100,000
Line 34	**SPECIFIC PROJECT IDENTIFIED** Rush Ck SWA Cost-Share/Ag BMPs*	$20,000
Line 37	**COST ADJUSTED** Hickory Dr Stormwater Improvement, Medina*	$76,823
Line 39	Downtown Regional Stormwater Pond, Corcoran*	$10,000
Line 42	Elm Creek Stream restoration Phase IV, Champlin*	$150,000
Line 43	Lowell Pond Raingarden, Champlin*	$100,000
Line 47	Mill Pond Easement, Champlin	Removed
		$731,823

(over)

*in meeting packet
**available at meeting

d. Recommendation to the Commission.
1) Call for Public Meeting – Minor Plan Amendment – May 8, 2019 meeting.

3. Diamond Lake Association Presentaiton.*

4. Other Business.

5. Next meeting _____.

6. Adjourn meeting of TAC.

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(over)

*in meeting packet
**available at meeting

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Technical Advisory Committee *(beginning on page 1)*
and Regular Meeting *(beginning on page 4)*
Minutes -
February 13, 2019

I. A meeting of the **Technical Advisory Committee (TAC)** for the Elm Creek Watershed Management Commission was convened at 10:03 a.m., Wednesday, February 13, 2019 in the Mayor's Conference Room, Maple Grove City Hall, 12800 Arbor Lakes Parkway, Maple Grove, MN.

In attendance were: Todd Tuominen, Champlin; Kevin Mattson, Corcoran; Tom Berry, Wenck Associates, Dayton; Derek Asche and Mark Lahtinen, Maple Grove; Kaci Fisher, Hakanson-Anderson, Medina; Ben Scharenbroich, Plymouth; Andrew Simmons, Rogers; James Kujawa, Jason Swenson, and Kirsten Barta, Hennepin County Dept. of Environment and Energy (HCEE); Brian Vlach, Three Rivers Park District (TRPD); Jeff Weiss, Barr Engineering; and Judie Anderson, JASS.

Also present: Ken Guenthner, Corcoran; Doug Baines, Dayton; Liz Weir and Dusty Finke, Medina; and Catherine Cesnik, Plymouth.

II. Motion by Scharenbroich, second by Asche to **approve the agenda.*** *Motion carried unanimously.*

Motion by Scharenbroich, second by Fisher to **approve the minutes*** of the November 14, 2018 TAC meeting. *Motion carried unanimously.*

III. Subwatershed (SWA) Cost-Share Applications.

A. Two SWA cost-share applications* were received by Hennepin County staff - from the city of Dayton for Diamond Creek and from the city of Corcoran for the South Fork of Rush Creek. Staff reviewed the applications based on criteria agreed upon at the November TAC meeting. Additional criteria that were utilized to fine-tune Staff's recommendations include project readiness, support of partners, and a detailed budget, all of which are requirements of the Board of Water and Soil Resources (BWSR) when applying for any type of Clean Water Fund grant. Meeting these criteria will strengthen an application for a Clean Water Fund Grant. The submitted budgets are summarized below:

	Dayton (Diamond Creek)	Corcoran (S Fork Rush Creek)
Local Partners	$5,000*	$2,940***
Three Rivers Park District	$5,000**	$0
Total Estimated Project Cost	$55,000	$58,800
Funding Gap to be covered via grant and/or Commission	$45,000	$55,860 ($47,040 Outside Grant / $8,820 Commission)

*Local Partners are Dayton, Rogers, and Hennepin County in combined in-kind services
**Three Rivers Park District will provide technical assistance
***Local Partners are Corcoran, Medina, and Maple Grove. Corcoran City council has approved up to $3000.

B. The Metro Conservation District has been awarded a grant as an additional potential funding source to assist with the completion of SWAs. However, this program has not yet defined the process by which grant funds will be distributed and allocated. Based on current assumptions, Hennepin County as a whole will receive approximately $12,000 for use countywide.

C. Based on the stated criteria, Staff feel that both SWA cost share applications are good projects. However, if the Commission decides to fund only one SWA project in 2019, then Dayton's Diamond Creek project would be the recommended project based on several factors:

1. Rural areas are highly prioritized in the TMDL/WRAPs reports, and South Fork of Rush Creek is starting to develop at a much faster rate which will naturally lead to some of the issues that a SWA addresses being taken care of in development plans. Diamond Creek is expected to remain predominantly rural for a longer span of time.

2. Project readiness and partners – Dayton has already begun similar work on mapping septic systems in the area through a BWSR Clean Water Fund grant. Three Rivers Park District and the City of Rogers have been contacted by Dayton and are willing partners in this project. The City of Dayton has also taken the steps of soliciting fairly detailed project proposals and incorporating potential findings and future work into its stormwater plan.

3. The area that the Diamond Creek project proposes to cover includes several lakes and large wetlands that have impairments that, when addressed, would help towards meeting TMDL goals for the Elm Creek watershed which includes Diamond, French and Grass Lakes.

Motion by Kujawa, second by Simmons to recommend to the Commission that both applications be funded up to 25% of the study costs based on the application maps provided. *Motion carried unanimously.*

IV. 2019 Capital Improvement Program.*

A. The Commission has elected to fund capital projects through an ad valorem tax levy. Under the authority provided by MN Stat 103B.251, Subd. 5, the Commission has the authority to certify for payment by the County all or part of the cost of an approved capital improvement. The Commission will pay up to 25 percent of the cost of qualifying projects. This amount will be shared by all taxpayers in the watershed, with the balance of the project cost being shared by the local government(s) participating in or benefiting from the improvement.

The Commission's maximum annual share of an approved project is up to $250,000. The Commission uses a maximum annual levy of $500,000 as a working guideline. The cities' share is a minimum of 75% of the cost of the project. In 2018 the Commission approved four projects totaling $462,500 for funding.

B. The current CIP* shows two studies, two placeholder projects and five capital projects totaling $434,250 for consideration in 2019. They are:

Line 5	TMDL implementation special study	$25,000
Line 6	Stream Segment Prioritization	$10,000
Line 14	Fox Creek South Pointe, Rogers	$22,500
Line 15	High Priority Stream Project	$125,000
Line 16	Rush Creek Main Stem Restoration, Maple Grove	$25,000
Line 21	Stone's Throw Wetland, Corcoran	$112,500
Line 34	Agricultural BMP Cost-Share Project	$48,000
Line 37	Hickory Drive Stormwater Improvement, Medina	$56,250
Line 39	Downtown Regional Stormwater Pond, Corcoran	$10,000

C. Discussion.

1. Corcoran requested that the **Stone's Throw** project be removed from the CIP.

2. It was noted that the **Downtown Regional Stormwater Pond** project will require a feasibility study and demonstrate that the project goes "above and beyond" normal site improvements as they pertain to nutrient loading.

3. Medina indicated that recent cost estimates for the **Hickory Drive Stormwater Improvement** project have increased beyond the costs stated in the CIP. Finke queried whether that increase would necessitate the need for a Minor Plan Amendment (MPA).

a. An MPA is required, *When a capital project is included in the approved Capital Improvement Program and the Commission's share of an updated cost estimate is greater than 125 percent of the Commission's share shown on the CIP, as adjusted by the Construction Cost Index as published by the Engineering News Record.*

b. Addition of a project to the CIP, as may be the case in no. 5 below, will in itself trigger an MPA.

4. Rogers requested that the **Fox Creek South Pointe** project be moved to 2021.

5. Plymouth requested that a new project be added to the 2020 CIP – underground chamber separators from Medina to Brockton Lane. Scharenbroich will provide a feasibility study for the March meeting.

6. Maple Grove requested that the Ranchview Wetland Restoration project, which was not funded in 2018, be moved to 2019. Asche will provide an updated Exhibit A.

Motion by Kujawa, second by Simmons to approve the revisions outlined above pending receipt of the proper documentation where appropriate. *Motion carried unanimously.*

V. Internal Load Projects.

A. Staff's February 6, 2019 memo* was written in response to the TAC's possible development of an Internal Load Projects policy. The memo referenced the Shingle Creek/West Mississippi WMOs' process for funding these projects. Research determined that the Commissions did not have a "policy" as such, but rather agreed to fund internal load projects at 100% rather than at the 25% cost-share formula normally applied to SCWM capital projects. Such projects could include alum treatments, vegetation management, and carp management.

B. Asche volunteered to draft a policy that would include establishing guidelines, prioritizing projects in alignment with Commission priorities, and creating a funding mechanism. The TAC will consider the policy at its next meeting.

VI. Use of Wetlands for Irrigation Purposes.

This topic is a hold-over from the November TAC meeting. Kujawa noted that in his research he has found no literature discussing detrimental effects from using wetlands for irrigation purposes.

VII. Other Business.

A. The next TAC meeting is tentatively scheduled for April 9, 2019.

B The meeting of the Technical Advisory Committee was adjourned at 11:36.

TAC 02

Table 4.5. Elm Creek Third Generation Plan Capital Improvement Program

Description	Location	Priority	Est Proj Cost		Partners	Funding Source(s)	Estimated Commission Cost 2015	2016	2017	2018	2019	2020-2024
Special Studies												
TMDL implementation special study	Watershed	H	$225,000.00		Cities, HCEED	Operating budget	0	25,000	25,000	25,000	25,000	125,000
Stream segment prioritization	Watershed	H	$20,000.00		Cities, HCEED, TRPD	Operating budget	10,000	0	0	0	10,000	0
High Priority Stream Restoration Projects					Cities, TRPD	Cities, TRPD, county levy, grants						
Elm Cr Reach E	Plymouth	H	$1,086,000.00		Commission, Plymouth	County Levy - levied in 2015	250,000					
CIP-2016-RO-01 Fox Cr, Creekview	Rogers	H	$321,250.00		Commission, Rogers	County Levy - levied in 2016	0	80,312	0	0	0	0
Mississippi Point Park Riverbank Repair	Champlin	M	$300,000.00			County Levy - levied in 2016	0	75,000	0	0	0	0
Elm Creek Dam	Champlin	H	$7,001,220.00			County Levy - levied in 2016	0	187,500	0	0	0	0
Tree Thinning and Bank Stabilization Project	Watershed	H	$50,000.00				0		~~50,000~~	50,000	~~50,000~~	~~250,000~~ 300,000
Fox Cr, Hyacinth	Rogers	M	$360,000.00			County Levy - levied in 2017	0	0	~~90,000~~ 112,500	0	0	0
Fox Cr, South Pointe, Rogers **MOVED TO 2021**	Rogers	M	$90,000.00				0	0	~~22,500~~	0	~~22,500~~	22,500
Other High Priority Stream Project	Watershed	H	$500,000.00				0	0	0	125,000	~~125,000~~	250,000
CIP-2016-MG-02 Rush Creek Main	Maple Grove		$1,650,000.00			County Levy - levied in 2016		75,000	~~75,000~~	**75,000**	25,000	
CIP-2016-MG-03 Rush Creek South	Maple Grove		$675,000.00							168,750		
CIP-2017-PL-01 EC Stream Restoration Reach D	Plymouth		$850,000.00		City, County, Comm	City, County, Comm				**212,500**		
High Priority Wetland Improvements					Cities	Cities, Commission						
DNR #27-0437	Maple Grove	L	$75,000.00				0	0	0	0	0	18,750
Stone's Throw Wetland **REMOVED 2019**	~~Corcoran~~	~~M~~					0	0	~~112,500~~	~~112,500~~	~~112,500~~	0
Other High Priority Wetland Projects	Watershed	L	$100,000.00				0	0	0	0	0	25,000
CIP-2016-MG-01 Ranchview Wetland Restoration **MOVED TO 2019**	Maple Grove		2,500,000.00						~~250,000~~	~~250,000~~	250,000	
Lake TMDL Implementation Projects					Cities, lake assns.	Cities, Comm, grants, owners						
Mill Pond Fishery and Habitat Restoration	Champlin	H	$5,000,000.00			County Levy - levied in 2017	0	0	250,000	0	0	0
Other Priority Lake Internal Load Projects	Watershed	M	$100,000.00				0	0	0	0	0	25,000
	Maple Grove	H	$300,000.00		City, TPRD, Comm, lake assn	County Levy - levied in 2016		75,000				
~~Stonebridge~~	~~Maple Grove~~	~~M~~				~~retrofit of some addl stormsewer treatment systems will not occur during street reconstruction~~	~~0~~		~~50,000~~	~~0~~	~~0~~	~~0~~
Rain Garden at Independence Avenue	Champlin	L	$300,000.00			County Levy - levied in 2017	0		75,000	0	0	0
CIP-2016-CH-01 Mill Pond Rain Gardens	Champlin	M	$400,000.00				0	0		~~100,000~~	100,000	0
Other Priority Urban BMP Projects	Watershed	L	$200,000.00				0	0	0	0	0	50,000
Other												
Livestock Exclus, Buffer & Stabilized Access	Watershed	M	$50,000.00		Cities, owners, U Extension, NRCS	Cities, owners, Comm, NRCS	0	0	0	50,000	0	50,000
Agricultural BMPs Cost Share	Watershed	H	$50,000.00		Cities, owners, U Extension, NRCS	Cities, owners, Comm, NRCS	0		~~50,000~~	50,000	~~50000~~ 20,000	~~100,000~~ 150,000
~~CIP-2016-RO-04~~ CIP-2017-RO-1 ~~Ag BMPs~~ Cowley-Sylvan Connections BMPs	Rogers		$300,000.00		City, Comm	City, Comm, BWSR				75,000		
CIP-2016-RO-03 Downtown Pond Exp & Reuse	Rogers		$406,000.00							101,500		
Hickory Drive Stormwater Improvement **CITY WILL PROVIDE ADJUSTED COST**	Medina		$225,000.00		City. Comm, Grants						~~56250~~ 76,823	
SE Corcoran Wetland Restoration	Corcoran		$400,000.00		City. Comm, 319 Grant						~~100,000~~	100,000
Downtown Regional Stormwater Pond **REQUIRES FEASIBILITY STUDY**	Corcoran		$50,000.00		City. Comm						10,000	
Elm Creek Stream Restoration Phase III	Champlin	H	$400,000.00							**100,000**		
Downs Road Trail Raingarden	Champlin	H	$300,000.00							**75,000**		
Elm Creek Stream Restoration Phase IV	Champlin	H	$600,000.00								150,000	
Lowell Pond Raingarden	Champlin	H	$400,000.00								100,000	
Rush Creek Headwaters SWA BMP Implementation	Corcoran/Rogers	H	$200,000.00		cities, county, TRPD	cities, county, TRPD, owners						50,000
Hydrologic & Hydraulic Modeling	Watershed	L	$25,000.00		HCEE	Commission	0	0	0	25,000	0	0
Brockton Lane Water Quality improvements **NEW**	Plymouth		$150,000.00								0	37,500
Mill Pond Easement **NEW**	Champlin		$64,000.00								~~16,000~~	
The Meadows Playfield **NEW**	Plymouth		5,300,00									250,000
Enhanced Street Sweeper **NEW**	Plymouth		$350,000.00									75,000
Fourth Generation Plan	Watershed	L	$70,000.00			Commission	0	0	0	0	0	$70,000
TOTAL STUDIES			245,000			**COMM SHARE TOTAL STUDIES**	**10,000**	**25,000**	**25,000**	**25,000**	**35,000**	**125,000**
TOTAL CIPS			25,898,470			**COMM SHARE TOTAL CIPS**	**$ 250,000**	**$ 492,812**	**$ ~~935,000~~**	**$ 1,032,750**	**$ 932,250**	**$ 1,403,750**
									$ 437,500	**462,500**	**$ 731,823**	

Projects levied in prior years | Projects added/revised in 2017 | Projects levied 2017, payable 2018 | Projects added/revised in 2018 | Projects added/revised in 2019

Line 16 TAC 02c

CIP-15

EXHIBIT A

Elm Creek Watershed Management Commission

Capital Improvement Project Submittal

(This submittal will be rated on its completeness and adherence to the goals of the Commission. A second page may be used to provide complete responses.)

City	Maple Grove
Contact Name	Rick Lestina
Telephone	763-494-6354
Email	rlestina@ci.maple-grove.mn.us
Address	12800 Arbor Lakes Parkway, Maple Grove, MN 55398
Project Name	Rush Creek, Main - Stream Restoration

	1. Is project in Member's CIP? (X) yes ( ) no	Proposed CIP Year = 2016

		Amount
	Total Estimated Project Cost	$1,650,000
	Estimated Commission Share (not to exceed $250,000)	$250,000
	Other Funding Sources (name them)	$
	City of Maple Grove	$1,400,000
		$

	2. What is the scope of the project? The City of Maple Grove is proposing a project to stabilize and restore approximately 11,000 feet of Rush Creek east of I-94 and west of Fernbrook.
	3. What is the purpose of the project? What water resource(s) will be impacted by the project? Decrease the potential for further bank instability that likely would occur subsequent to the development of the watershed and restore the channel with native vegetation for additional stability and habitat purposes.
	4. What is the anticipated improvement that would result from the project? Subsequent to development, it is likely that stormwater discharge from the adjacent and upstream watershed will increase. This project will significantly reduce the potential for bank erosion and sediment transport downstream. The restoration of native vegetation will provide a habitat for wildlife and a natural area for aesthetic value and study.
	5. How does the project contribute to achieving the goals and programs of the Commission? This project improves the water quality within Rush Creek and reduces the amount of sediment and nutrients reaching Elm Creek. This project will increase the oxygenation of water discharged to Elm Creek.
0/10	6. Does the project result from a regulatory mandate? ( ) yes (X) no How? There is no mandate for the City to undertake this project. However, this project will assist with for meeting the water quality goals for Elm Creek.
0/10/20	7. Does the project address one or more TMDL requirements? (X) yes ( ) no Which? Although no formal implementation plan has been approved, projects that address stream bank stability will be critical in meeting the water quality goals for Elm Creek.
0/10/20	8. Does the project have an educational component? (X) yes ( ) no Describe. The project will involve the establishment of a native grass channel and retention of the some quality forest buffer. The area will serve as a City demonstration in regards to the value of a buffer for water quality and wildlife purposes.
0/10	9. Do all the LGUs responsible for sharing in the cost of the project agree to go forward with this project? (X) yes ( ) no Identify the LGUs. Maple Grove
10/20	10. Is the project in all the LGUs' CIPs? (X) yes ( ) no

1-34	*(For TAC use)*	
	11. Does project improve water quality? (0-10)	14. Promote groundwater recharge? (0-3)
	12. Prevent or correct erosion? (0-10)	15. Protect and enhance fish and wildlife habitat? (0-3)
	13. Prevent flooding? (0-5)	16. Improve or create water recreation facilities? (0-3)
TOTAL (poss 114)		

TAC 02c
Line 23

EXHIBIT A

Elm Creek Watershed Management Commission

Capital Improvement Project Submittal

(This submittal will be rated on its completeness and adherence to the goals of the Commission. A second page may be used to provide complete responses.)

City	City of Maple Grove
Contact Name	Derek Asche, Water Resources Engineer
Telephone	763-494-6354
Email	dasche@maplegrovemn.gov
Address	12800 Arbor Lakes Parkway, Maple Grove, MN, 55398
Project Name	Ranchview Wetland Restoration

	1. Is project in Member's CIP? (X) yes ( ) no	Proposed CIP Year = 2020
	2. Has a feasibility study or an engineering report (circle one) been done for this project? (X)yes ( )no	

		Amount
	Total Estimated Project Cost	$2,500,000
	Estimated Commission Share (up to 25%, not to exceed $250,000)	$250,000
	Other Funding Sources (name them)	$
	City of Maple Grove	$2,250,000

	3. What is the scope of the project? The overall project goal is to restore the water regime and native vegetation to a 70-acre wetland which will result in wildlife habitat improvements and improved flood storage functions within the wetland. In addition, the City anticipates 36.5 acres of banked wetland credit.
	4. What is the purpose of the project? What water resource(s) will be impacted by the project? The purpose is to restore lost groundwater recharge, flood and stormwater attenuation, vegetation diversity and integrity, natural habitat of wildlife, amphibians, and invertebrates and to provide improved aesthetic, recreational and educational opportunities within this wetland.
	5. What is the anticipated improvement that would result from the project? (Include size of area treated and projected nutrient reduction.) 70 acres of restored wetland.
	6. How does the project contribute to achieving the goals and programs of the Commission? Wetland restoration is listed as a strategy in the 2016 Watershed Restoration and Protection Study (WRAPS) for the Elm Creek Watershed. Further flood and stormwater attenuation will reduce downstream erosion which contributes to degraded water quality in Rush Creek. Meets ECWMC Goal D.2: Promote wetland enhancement or restoration of wetlands in the watershed.
0/10	7. Does the project result from a regulatory mandate? (X) yes ( ) no How? The Elm Creek WRAPS and the strategy's contained within, address waters not meeting state standards and which are still listed as impaired and for which a Total Maximum Daily Load study will still be performed, but facilitates a more cost-effective and comprehensive characterization of multiple water bodies and overall watershed health.
0/10/20	8. Does the project address one or more TMDL requirements? (X) yes ( ) no Which? This wetland restoration is less than 4,000 feet from Rush Creek which has TMDL's approved for DO, E.Coli, Fishes Bio-assessments, and Invertebrate Bio-assessments. Improved water quality discharges from this wetland will support improvements within Rush Creek.
0/10/20	9. Does the project have an educational component? (X) yes ( ) no Describe. This area is also part of master planning for future development including recreational trails adjacent to the restored wetland.
0/10	10. Do all the LGUs responsible for sharing in the cost of the project agree to go forward with this project? (X) yes ( ) no Identify the LGUs. City of Maple Grove
10/20	11. Is the project in all the LGUs' CIPs? (X) yes ( ) no
1-34	*(For TAC use)* 12. Does project improve water quality? (0-10) 13. Prevent or correct erosion? (0-10) 14. Prevent flooding? (0-5) 15. Promote groundwater recharge? (0-3) 16. Protect and enhance fish and wildlife habitat? (0-3) 17. Improve or create water recreation facilities? (0-3)
TOTAL (poss 114)	Adopted April 11, 2012

TAC 02c

Line 30

CIP -2016-CH-01

EXHIBIT A

Elm Creek Watershed Management Commission

Capital Improvement Project Submittal

(This submittal will be rated on its completeness and adherence to the goals of the Commission. A second page may be used to provide complete responses.)

City	CHAMPLIN
Contact Name	TODD TUOMINEN
Telephone	763-923-7120
Email	ttuominen@ci.champlin.mn.us
Address	11955 Champlin Drive Champlin MN 55316
Project Name	Mill Pond Rain Gardens

	1. Is project in Member's CIP? (x) yes CIP-28	Proposed CIP Year = ~~2017~~ 2018
	2. Has a feasibility study or an engineering report (circle one) been done for this project? ( ) yes ( ) no	

		Amount
	Total Estimated Project Cost	$400,000
	Estimated Commission Share (up to 25%, not to exceed $250,000)	$100,000
	Other Funding Sources (name them)	$
		$
	3. What is the scope of the project?	
	4. What is the purpose of the project? What water resource(s) will be impacted by the project?	
	5. What is the anticipated improvement that would result from the project? (Include size of area treated and projected nutrient reduction.)	
	6. How does the project contribute to achieving the goals and programs of the Commission?	
0/10	7. Does the project result from a regulatory mandate? ( ) yes ( ) no How?	
0/10/20	8. Does the project address one or more TMDL requirements? ( ) yes ( ) no Which?	
0/10/20	9. Does the project have an educational component? ( ) yes ( ) no Describe.	
0/10	10. Do all the LGUs responsible for sharing in the cost of the project agree to go forward with this project? ( ) yes ( ) no Identify the LGUs.	
10/20	11. Is the project in all the LGUs' CIPs? ( ) yes ( ) no	
1-34	*(For TAC use)* 12. Does project improve water quality? (0-10) 13. Prevent or correct erosion? (0-10) 14. Prevent flooding? (0-5)	15. Promote groundwater recharge? (0-3) 16. Protect and enhance fish and wildlife habitat? (0-3) 17. Improve or create water recreation facilities? (0-3)
TOTAL (poss 114)		Adopted April 11, 2012

TAC 02c

LINE 34

EXHIBIT A

Elm Creek Watershed Management Commission

Capital Improvement Project Submittal

(This submittal will be rated on its completeness and adherence to the goals of the Commission. A second page may be used to provide complete responses.)

City	Hennepin County
Contact Name	Kirsten Barta
Telephone	612-543-3373
Email	Kirsten.barta@hennepin.us
Address	701 4th Ave S, Suite 700, Minneapolis, MN 55415
Project Name	Rush Creek SWA Cost Share Projects/Ag BMP installations

	1. Is project in Member's CIP? ( ) yes ( ) no	Proposed CIP Year =
	2. Has a feasibility study or an engineering report (circle one) been done for this project? (x) yes ( ) no	

		Amount
	Total Estimated Project Cost	$ 200,000
	Estimated Commission Share (up to 25%, not to exceed $250,000)	$20,000
	Other Funding Sources (name them) BWSR	$142,110
	Hennepin County + Resident contribution	$37,890

	3. What is the scope of the project? The Rush Creek SWA has identified a number of best practices and projects that landowners can install to improve water quality. Hennepin staff have reached out to residents about potential cost share projects sites and come up some projects with more expected. These funds would be used to help reduce the 25% landowner match for the cost share projects
	4. What is the purpose of the project? What water resource(s) will be impacted by the project? The purpose of the project is to reduce pollutant loads to Rush Creek (North Fork) and subsequently Elm Creek. Both streams are impaired. Bacteria and nutrients are being especially targeted.
	5. What is the anticipated improvement that would result from the project? (Include size of area treated and projected nutrient reduction.) Depends on which landowners agree to participate and which practices they allow on their property, but bacteria reductions in particular are expected as well as substantial TSS and P reductions.
	6. How does the project contribute to achieving the goals and programs of the Commission? Contributes to goal B.4 (high priority areas to contribute financial and technical assistance to), Actions E and G (develop cost share projects/BMPs in high priority areas and pursue grant funding) and also goal F.2 (Foster implementation of priority TMDL goals by sharing cost and seeking grant funds).
0/10	7. Does the project result from a regulatory mandate? ( ) yes (X) no How?
0/10/20	8. Does the project address one or more TMDL requirements? (x) yes ( ) no Which? Nutrients, TSS and bacteria reductions in Rush Creek
0/10/20	9. Does the project have an educational component? (x) yes ( ) no Describe. Residents are being educated on the impacts of agricultural practices on the stream and several have asked staff to come and speak to various groups they belong to about it.
0/10	10. Do all the LGUs responsible for sharing in the cost of the project agree to go forward with this project? (x) yes ( ) no Identify the LGUs. Hennepin County
10/20	11. Is the project in all the LGUs' CIPs? (X) yes ( ) no
1-34	*(For TAC use)* 12. Does project improve water quality? (0-10) 13. Prevent or correct erosion? (0-10) 14. Prevent flooding? (0-5) 15. Promote groundwater recharge? (0-3) 16. Protect and enhance fish and wildlife habitat? (0-3) 17. Improve or create water recreation facilities? (0-3)
TOTAL (poss 114)	Adopted April 11, 2012

TAC 02c
Line 37

EXHIBIT A

Elm Creek Watershed Management Commission

Capital Improvement Project Submittal

(This submittal will be rated on its completeness and adherence to the goals of the Commission. A second page may be used to provide complete responses.)

City	City of Medina
Contact Name	Steve Scherer, Public Works Director; Dusty Finke, City Planner
Telephone	763-473-8842; 763-473-8846
Email	Steve.scherer@medinamn.gov; dusty.finke@medinamn.gov
Address	2052 County Road 24; Medina, MN 55340
Project Name	Hickory Drive Stormwater Improvement

1. Is project in Member's CIP? (X) yes ( ) no **Proposed CIP Year =** 2019

2. Has a feasibility study or engineering report (circle one) been done for this project? ( ) yes (X) no

	Amount
Total Estimated Project Cost 307,920	~~$ 225,000~~
Estimated Commission Share (up to 25%, not to exceed $250,000) 76,823	~~$ 56,250~~
Other Funding Sources (name them) – City will seek additional grant or clean water funding; City stormwater utility and assessments for remainder	~~$168,750~~
	$

3. What is the scope of the project? Install stormwater pond for 8.3 acre drainage area (50% impervious). Stabilize approximately 300 linear feet of gully erosion. Install approximately 700 feet of curb and 600 feet of storm sewer to capture and direct stormwater to improvements.

4. What is the purpose of the project? What water resource(s) will be impacted by the project? The purpose of the project is to reduce nutrient loading to Elm Creek, which is adjacent to the project area. Drainage to Elm Creek is currently not treated.

5. What is the anticipated improvement that would result from the project? (Include size of area treated and projected nutrient reduction.) Jim Kujawa has estimated the phosphorus removal would be approximately 26.6 lbs/year. This removal is estimated to consist of an estimated 16 lbs/year for the pond plus 10.6 lbs/year phosphorus reduction for the gully/erosion improvements.

6. How does the project contribute to achieving the goals and programs of the Commission? The proposed project will reduce nutrient loading to Elm Creek, reduce runoff rate to Elm Creek, address implementation of the Elm Creek Watershed TMDL, and reduce erosion of the gully draining to Elm Creek.

0/10 **7. Does the project result from a regulatory mandate?** ( ) yes (X) no **How?** The stormwater improvement is not triggered by a permit requirement, but is consistent with TMDL implementation.

0/10/20 **8. Does the project address one or more TMDL requirements?** (X) yes ( ) no **Which?** Elm Creek Watershed TMDL

0/10/20 **9. Does the project have an educational component?** (X) yes ( ) no **Describe.** Information related to the benefits of the project will be included in newsletters and public meetings related to the project. The anticipated location of the pond does not lend itself well to educational signage, but the City will search for options.

0/10 **10. Do all the LGUs responsible for sharing in the cost of the project agree to go forward with this project?** (X) yes ( ) no **Identify the LGUs.** City of Medina

10/20 **11. Is the project in all the LGUs' CIPs?** (X) yes ( ) no

1-34 *(For TAC use)*

12. Does project improve water quality? (0-10)
13. Prevent or correct erosion? (0-10)
14. Prevent flooding? (0-5)
15. Promote groundwater recharge? (0-3)
16. Protect and enhance fish and wildlife habitat? (0-3)
17. Improve or create water recreation facilities? (0-3)

TOTAL (poss 114)

Adopted April 11, 2012

TAC 02c

LINE 39

EXHIBIT A

Elm Creek Watershed Management Commission

Capital Improvement Project Submittal

(This submittal will be rated on its completeness and adherence to the goals of the Commission. A second page may be used to provide complete responses.)

City	Corcoran
Contact Name	Kevin Mattson
Telephone	763 400 7028
Email	kmattson@ci.corcoran.mn.us
Address	8200 County Road 116, Corcoran, MN 55340
Project Name	Downtown Regional Stormwater Improvement Project

	1. Is project in Member's CIP? (X) yes ( ) no	Proposed CIP Year = 2019
	2. Has a feasibility study or an engineering report (circle one) been done for this project? (X) yes () no	

		Amount
	Total Estimated Project Cost	$ 50,000
	Estimated Commission Share (up to 25%, not to exceed $250,000)	$10,000
	Other Funding Sources (name them) *City Budget, City in-kind*	$ 40,000
		$

	3. What is the scope of the project? *Cleanout regional stormwater pond and retrofit with filtration for enhanced water quality treatment.*
	4. What is the purpose of the project? What water resource(s) will be impacted by the project? *South Fork of Rush Creek.*
	5. What is the anticipated improvement that would result from the project? (Include size of area treated and projected nutrient reduction.) *Industrial Park treatment of +/- 25 acres.*
	6. How does the project contribute to achieving the goals and programs of the Commission? *Improved water quality treatment of existing development.*
0/10	7. Does the project result from a regulatory mandate? ( ) yes (X) no How?
0/10/20	8. Does the project address one or more TMDL requirements? (X) yes ( ) no Which? *Nutrients*
0/10/20	9. Does the project have an educational component? (X) yes ( ) no Describe. *Educate business owners and public.*
0/10	10. Do all the LGUs responsible for sharing in the cost of the project agree to go forward with this project? ( ) yes ( ) no Identify the LGUs. *Unknown at this time*
10/20	11. Is the project in all the LGUs' CIPs? ( ) yes (X) no

1-34	*(For TAC use)* 12. Does project improve water quality? (0-10) 13. Prevent or correct erosion? (0-10) 14. Prevent flooding? (0-5)	15. Promote groundwater recharge? (0-3) 16. Protect and enhance fish and wildlife habitat? (0-3) 17. Improve or create water recreation facilities? (0-3)
TOTAL (poss 114)		Adopted April 11, 2012

TAC 02c
Line 42

EXHIBIT A

Elm Creek Watershed Management Commission

Capital Improvement Project Submittal

(This submittal will be rated on its completeness and adherence to the goals of the Commission. A second page may be used to provide complete responses.)

City	CHAMPLIN
Contact Name	TODD TUOMINEN
Telephone	763-923-7120
Email	ttuominen@ci.champlin.mn.us
Address	11955 Champlin Drive, Champlin MN 55316
Project Name	**ELM CREEK STREAM RESTORATION PHASE IV, IMPROVEMENT PROJECT**

	1. Is project in Member's CIP? (X) yes ( ) no	Proposed CIP Year = 2019
	2. Has a feasibility study or an **engineering report** (circle one) been done for this project? (X) yes ( ) no	

		Amount
	Total Estimated Project Cost	$600,000
	Estimated Commission Share (up to 25%, not to exceed $250,000)	$150,000
	Other Funding Sources (name them)	$450,000
		$600,000

	3. What is the scope of the project? **The Elm Creek Stream Restoration Phase IV is located ½ MILE upstream of the Mill Pond. This phase includes 5,000 linear feet of stream bank restoration of Elm Creek which is located up-gradient of the 2012 Elm Creek Stream Stabilization Project.** .
	4. What is the purpose of the project? What water resource(s) will be impacted by the project? **The proposed Elm Creek Stream improvement will restore stream bank and aquatic habitat installation of habitat structures and restoration of stream bank habitat, removal of excess nutrient laden sediments.**
	5. What is the anticipated improvement that would result from the project? (Include size of area treated and projected nutrient reduction.) **Elm Creek is impaired water with low dissolved oxygen, restoring the stream banks and providing habitat structure will reduce downstream sedimentation and provide native habitat improvements including root wads, boulder vanes, toewood, boulder clusters and rock riffles with varied substrate to enhance aquatic species habitat including sensitive species such as Blandings Turtle.**
	6. How does the project contribute to achieving the goals and programs of the Commission? **Elm Creek is impaired water with low dissolved oxygen, high TSS and high Total P. The Improvements to the Mill Pond and Elm Creek is part of Champlin's WLA from the Elm Creek TMDL.**
0/10	7. Does the project result from a regulatory mandate? (X) yes ( ) no How?
0/10/20	8. Does the project address one or more TMDL requirements? (X) yes ( ) no Which? **TSS, TOTAL P, Increases DO.**
0/10/20	9. Does the project have an educational component? (X) yes ( ) no Describe. **The project will be included in Elm Creek Mill Pond Educational program, which will be coordinated with the Champlin Environmental Resources Commission and area schools.**
0/10	10. Do all the LGUs responsible for sharing in the cost of the project agree to go forward with this project? (X) yes ( ) no Identify the LGUs. **City of Champlin**
10/20	11. Is the project in all the LGUs' CIPs? (X) yes ( ) no

1-34	*(For TAC use)* 12. Does project improve water quality? (0-10) 13. Prevent or correct erosion? (0-10)	15. Promote groundwater recharge? (0-3) 16. Protect and enhance fish and wildlife habitat? (0-3)

TAC 02c
Line 43

EXHIBIT A

Elm Creek Watershed Management Commission

Capital Improvement Project Submittal

(This submittal will be rated on its completeness and adherence to the goals of the Commission. A second page may be used to provide complete responses.)

City	CHAMPLIN
Contact Name	TODD TUOMINEN
Telephone	763-923-7120
Email	ttuominen@ci.champlin.mn.us
Address	11955 Champlin Drive, Champlin MN 55316
Project Name	**ELM CREEK CIRCLE-LOWELL POND RAINGARDEN IMPROVEMENT PROJECT**

	1. Is project in Member's CIP? (X) yes ( ) no	Proposed CIP Year = 2019
	2. Has a feasibility study or an **engineering report** (circle one) been done for this project? (X) yes ( ) no	

		Amount
	Total Estimated Project Cost	$400,000
	Estimated Commission Share (up to 25%, not to exceed $250,000)	$100,000
	Other Funding Sources (name them)	$300,000
		$400,000

	3. What is the scope of the project? **Construct Rain Garden and other BMP's for areas tributary to Mill Pond /Elm Creek (directly upstream-adjacent to the Mill Pond)** .
	4. What is the purpose of the project? What water resource(s) will be impacted by the project? **The proposed raingarden will improve water quality in the Mill Pond and Elm Creek.**
	5. What is the anticipated improvement that would result from the project? (Include size of area treated and projected nutrient reduction.) **Elm Creek is impaired water with low dissolved oxygen, excess TSS AND Total P. Project will reduce sedimentation and total P going into Mill Pond. Project will help improve conditions for aquatic species habitat including sensitive species such as Blandings Turtle.**
	6. How does the project contribute to achieving the goals and programs of the Commission? **Elm Creek is impaired water with low dissolved oxygen, high TSS and high Total P. The Improvements to the Mill Pond and Elm Creek is part of Champlin's WLA from the Elm Creek TMDL.**
0/10	7. Does the project result from a regulatory mandate? (X) yes ( ) no How?
0/10/20	8. Does the project address one or more TMDL requirements? (X) yes ( ) no Which? **TSS, TOTAL P, Increases DO.**
0/10/20	9. Does the project have an educational component? (X) yes ( ) no Describe. **The project will be included in Elm Creek Mill Pond Educational program, which will be coordinated with the Champlin Environmental Resources Commission and area schools.**
0/10	10. Do all the LGUs responsible for sharing in the cost of the project agree to go forward with this project? (X) yes ( ) no Identify the LGUs. **City of Champlin**
10/20	11. Is the project in all the LGUs' CIPs? (X) yes ( ) no

1-34	*(For TAC use)* 12. Does project improve water quality? (0-10) 13. Prevent or correct erosion? (0-10) 14. Prevent flooding? (0-5)	15. Promote groundwater recharge? (0-3) 16. Protect and enhance fish and wildlife habitat? (0-3) 17. Improve or create water recreation facilities? (0-3)
TOTAL (poss 114)		Adopted April 11, 2012

TAC 02c
line 39.

From: Kevin Mattson <kmattson@ci.corcoran.mn.us>
Sent: Thursday, April 04, 2019 3:50 PM
To: James C Kujawa <James.Kujawa@hennepin.us>
Cc: Judie Anderson <Judie@jass.biz>; Kent C. Torve <ktorve@wenck.com>
Subject: RE: Corcoran Regional Stormwater Pond CIP for ECWMC

Hi Jim and Judie,

Please find the attached information to be included on the TAC and watershed agendas.

1. Feasibility memo, plans, and revised cost estimate for the Downtown Corcoran Stormwater Pond Improvements and Ditch Maintenance project
    a. Note that the watershed's CIP match of 25% increased from $10,000.00 to $26,477.50
2. 2018 Annual Stormwater Update – City of Corcoran
    a. Commission agenda only

Kent Torve is planning on attending the TAC meeting to answer any design questions related to this project.

Let me know if you have any questions.

Thanks,

Kevin Mattson, PE
Public Works Director
City of Corcoran
763-400-7028
www.ci.corcoran.mn.us

CITY OF CORCORAN

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www.ci.corcoran.mn.us

2018 Stormwater Annual Report

The City of Corcoran made significant progress toward stormwater pollution prevention in 2018. This report highlights several of the year's projects that will reduce loads of nutrients and sediment reaching surface waters in the City, most notably Rush Creek and its tributaries. These improvements are expected to benefit downstream waters as less pollution enters the Elm Creek and Mississippi River watersheds. Continued progress is expected in 2019 as the City continues to implement opportunity-based water quality improvement projects.

Selected 2018 Projects

Ravinia Residential Development

Development of this 260-acre site in southeast Corcoran includes 19 stormwater ponds for settling of particulates in stormwater runoff. Seventeen of the ponds have sand filtration shelves that control the rate of runoff and preserve pond storage volume. In addition, pond outlets are fitted with slotted weirs to slow outflow and protect the integrity of the downstream channel.

According to an evaluation by the Elm Creek Watershed Management Commission, with all stormwater Best Management Practices (BMPs) in place, the runoff rate from the Ravinia development will be reduced for 2-year, 10-year and 100-year peak flows when compared to pre-development conditions. In addition, nutrient (phosphorus) loads in runoff from the site are estimated to decrease from 157 pounds per year to 145 pounds per year.

Rush Creek Headwaters Subwatershed Assessment

The Rush Creek Headwaters Subwatershed Assessment was completed in 2018 with funding from a Clean Water Fund Grant, the Elm Creek Watershed Management Commission, and the City of Corcoran. The purpose of the assessment was to evaluate conditions in the North Fork Rush Creek and upper part of the South Fork Rush Creek and to identify the most cost-effective practices to correct impaired water quality caused by excess nutrients, excess *E. coli* (fecal bacteria) and low dissolved oxygen.

For each of the six management units in the study, the report identified the top ten practices that would cost-effectively correct the impairments. It also identified specific locations where additional practices, such as wetland restoration, grassed waterways, alternative tile intakes, manure management, or streambank stabilization would have the greatest potential to improve water quality.

Implementation of these practices largely depends on the voluntary participation of property owners and the availability of funding. In late 2018, the Elm Creek Watershed Management Commission applied for a Clean Water Fund Grant from the Board of Water and Soil Resources to begin one or more of the recommended projects. If the grant is awarded, a Hennepin County Rural Conservationist would lead recruitment and implementation efforts.

Continued on next page...

Completing one or more recommended projects would likely have a significant impact on water quality. The highest priority project in the entire study area – a wetland restoration in the South Tributary management unit – would reduce total suspended solids (TSS) by an estimated 157 tons (314,000 pounds) per year and total phosphorus (TP) by an estimated 203 pounds per year. Together, the top ten projects for the entire study area would reduce TSS by more than 1,700 tons (3,400,000 pounds) per year and reduce TP by more than 700 pounds per year.

The City's challenge in implementing any improvement depends largely on landowner cooperation and funding which is significant. The subwatershed assessment is an effective tool to help staff identify opportunity-based projects via development or other grant opportunities.

Smaller Development Projects

Several smaller projects in Corcoran also helped improve surface water quality in 2018. A few of them are featured here.

1. Expansion of Park Place Storage in southwest Corcoran installed three ponds, two detention basins, and one filtration shelf that will reduce the nutrient load and rate of runoff from the site. According to a review by the Elm Creek Watershed Management Commission, these BMPs will cut the TP load by an estimated 1.6 pounds per year and the TSS load by an estimated 7,128 pounds per year.

2. Sunrise Energy Ventures installed a solar garden on 80 acres of former pasture northwest of the intersection of County Roads 19 and 50, in the headwaters area of Rush Creek. Stormwater will be absorbed into the soil under and between the panels, the latter area seeded with short grass prairie species. According to an evaluation by the Elm Creek Watershed Management Commission, the change in land use and incorporation of small storage areas for runoff will reduce peak runoff rates for the 2-year, 10-year, and 100-year events when compared to pre-development conditions. In addition, perennial native vegetation and increased wetland buffer setbacks will reduce the TP load from this site by an estimated 10.1 pounds per year.

3. Bass Lake Crossing is a residential development on former cropland north of County Road 10 and east of Maple Hill Road in east Corcoran. Two stormwater ponds in the development are now active, and the area for two more ponds has been graded. According to a review by the Elm Creek Watershed Management Commission, when all BMPs are installed and functioning, flow rates from the site will decrease for 2-year, 10-year, and 100-year events compared to existing conditions. In addition, phosphorus export is estimated to decline by 12.6 pounds per year. (TSS reduction was not estimated by the watershed's technical staff.)

4. Bass Lake Crossing South (formerly Bass Lake Estates) is a residential and future cold storage development on former cropland south of County Road 10 and west of Lions Park in east Corcoran. One stormwater pond with a filtration bench will reduce the overall runoff rate from the site and decrease nutrient and sediment export. According to a review by the Elm Creek Watershed Management Commission, the TP and TSS loads will decrease by 0.96 and 770 pounds per year, respectively.

Individual Sewage Treatment Systems (ISTS) Disconnections

Until recently, all homes and businesses in Corcoran disposed of wastewater using Individual Sewage Septic Treatment Systems (ISTS) commonly referred to as septic systems. Infrastructure for water and wastewater treatment now extends (or will extend) into the Ravinia, Bellwether, Bass Lake Crossing, and Bass Lake Crossing South developments. As construction began at each of these sites, a total of 11 older homes were removed and their septic systems eliminated.

Continued on next page...

Wastewater infrastructure has also been extended into Downtown Corcoran. In 2018, 10 businesses connected to water and sewer utilities and disconnected their septic systems. In 2019, another 24 businesses will disconnect their septic systems.

According to the MPCA, septic systems are potential sources of surface water and groundwater contamination and eliminating them can be beneficial. Approximate TSS and TP reductions resulting from a septic system disconnection can be calculated using the University of Minnesota's Septic System Improvement Estimator (SSIE). Using conservative values for several variables in the estimator, the following potential removals are calculated.

Systems removed in 2018-2019	Pounds TSS per year removed	Pounds TP per year removed
Business (34)	4,500	180
Residential (11)	1,226	48
Total	*5,726*	*228*

Ditch Maintenance Projects

Several ditch maintenance projects were completed by the Public Works Department in 2018 including the Lion's Park Ditch Restoration and Maintenance Project. The project is located north of the Ravinia development and work included removing deadfall and sediment from the ditch in addition to establishing vegetation along its banks to prevent erosion. Although estimates of TSS or TP removal are not yet complete, this project and other ditch improvements have improved water quality in tributaries to Elm and Rush Creeks.

Stormwater Outlook for 2019

New and continuing projects in 2019 are expected to further reduce surface water pollution in Corcoran. As the projects described in the previous section continue, more stormwater BMPs will be installed and begin functioning to reach their maximum combined benefit. In addition, new projects are expected in 2019 that will likely improve stormwater quantity and quality over existing conditions. The major improvement for the watershed is the Maple Hill Estates WWTP closure.

Maple Hill Estates Wastewater Treatment Plant Closure

To improve water quality in Rush Creek, the Elm Creek Total Maximum Daily Load study and implementation plans recommended reducing phosphorus in the discharge from the Maple Hill Estates wastewater treatment plant. Options were to reduce the effluent phosphorus concentration by 60 percent or close the plant and connect this mobile home community to the Metropolitan Council's regional interceptor. The latter option was chosen and connection is expected in 2019.

The amount of phosphorus prevented from entering Rush Creek by closing the plant can be estimated from the Discharge Monitoring Report data from the MPCA. Using 2017 data for the main discharge station (average flow and phosphorus content), the estimated reduction is approximately 160 pounds of phosphorus per year.

Additional Developments

The following development projects (or potential developments) will incorporate stormwater BMPs to improve the quality of Corcoran's surface waters:

- Bass Lake Crossings 2nd Addition, adjacent to Maple Hill Road in east Corcoran
- Bellwether (formerly Encore), a senior housing development west of County Road 101 and straddling Stieg Road in northeast Corcoran

Continued on next page...

Restorations and Retrofits

In addition to development projects, several potential wetland restorations and a stormwater pond retrofit will be planned or considered in 2019.

- Downtown regional stormwater pond retrofit
- Wetland #9 restoration in the Ravinia development
- Study of the Southeast Corcoran wetland restoration project (north of the Ravinia development)
- South Fork of Rush Creek Subwatershed Assessment

Other Best Management Practices

Non-structural practices are also effective methods of stormwater pollution prevention. In 2019, Corcoran expects to begin updating its Stormwater Pollution Prevention Plan (SWPPP) and reapply for coverage under the MPCA's reissued MS4 permit. The SWPPP includes education on a variety of stormwater-related topics, including septic system education which is one of the recommendations of the Rush Creek Headwaters Subwatershed Assessment. Chloride management and manure management will be additional areas of focus when staff review policies, practices, and ordinances in 2019.

Summary of Projected Benefits, 2018-2019

The following table summarizes the estimated reductions in TSS and TP loads resulting from 2018 and known 2019 projects. The projected benefit will increase as more projects are launched in 2019.

Project	Estimated TSS load reduction, lbs/yr	Estimated TP load reduction, lbs/yr
Ravinia Development	--	12
Park Place Storage Expansion	7,128	1.6
Sunrise Energy Ventures Solar Garden	--	10.1
Bass Lake Crossing	--	12.6
Bass Lake Crossing South	770	0.96
Septic system disconnections	5,726	228
Maple Hill Estates WWTP closure	--	160
Total	*13,624*	*425*

Technical Memo

WENCK
Responsive partner.
Exceptional outcomes.

To: City of Corcoran

From: Daniel Elemes, PE, Wenck Associates, Inc.

Date: April 1st, 2019

Subject: Water Quality Improvements at Corcoran Downtown Pond

Wenck created a P8 model to evaluate the pollutant removal efficiency of the wet pond north of Commerce Street and Auger Avenue. Four scenarios in total were analyzed:

- Scenario 1: existing conditions.
- Scenario 2: sediment removed from pond.
- Scenario 3: retrofit a four-foot wide sand filter bench along pond perimeter.
- Scenario 2 + 3: sediment removal from the pond and a four-foot wide sand filter bench along pond perimeter.

Results in terms of total suspended sediment (TSS) removed and total phosphorus (TP) removed are summarized in the below tables for the four scenarios. Influent loading is modeled based on a NURP-50 gradation. Removal rates listed likely underestimate TSS and TP removal, as the NURP-50 gradation likely overrepresents the mass of slowly settling, finer particles than what would be expected at an industrial park.

Dredging the pond has a minor effect on TSS and TP removal rates; installing filtration benches has a more significant impact. It should be noted that the installation of filtration benches will require reconfiguring the pond's outlet structure.

Table 1: TSS Removal Rates

Scenario	Watershed Load (lb-TSS/yr)	Load Trapped (lb-TSS/yr)	Removal Efficiency
1	15,100	8,600	57%
2	15,100	8,900	59%
3	15,100	2,800	19%
2+3	15,100	11,700	77%

Table 2: TP Removal Rates

Scenario	Watershed Load (lb-TP/yr)	Load Trapped (lb-TP/yr)	Removal Efficiency
1	50.3	12.1	24%
2	50.3	13.1	26%
3	50.3	9.8	19%
2+3	50.3	22.9	46%

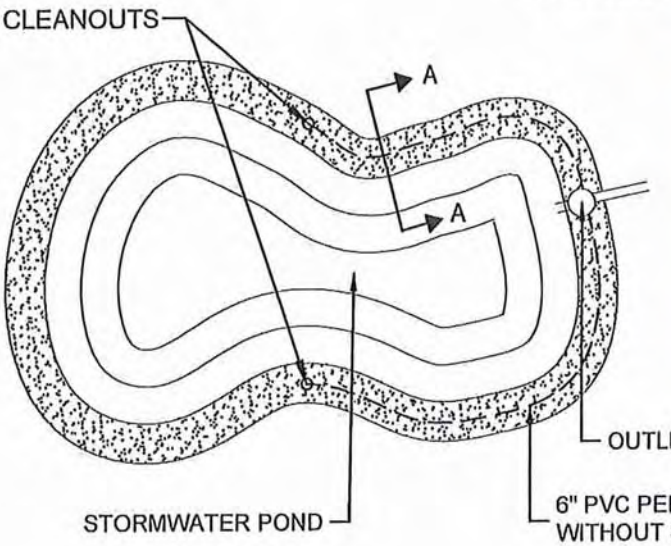
The next steps are to prepare cost estimates for the various design options, select an alternative and evaluate pond hydraulics to ensure proposed changes do not adversely affect upstream property.

Table 1.
Downtown Pond Retrofit

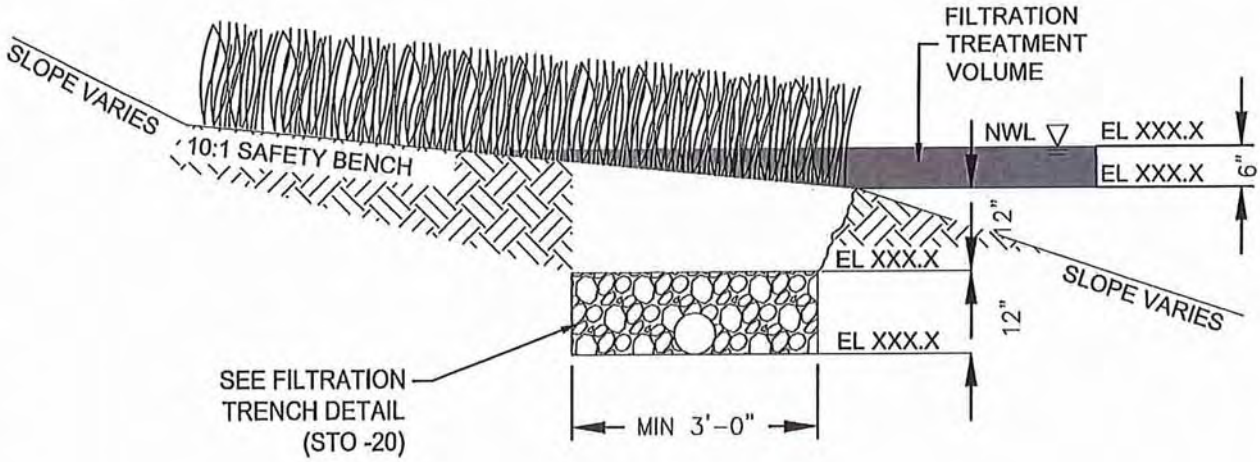
April 1, 2019

Item	Description	Units	Quantity	Unit Price	Subtotal	Maintenance		Water Quality	
						Quantity	Subtotal	Quantity	Subtotal
1	MOBILIZATION & DEMOBILIZATION	LUMP SUM	1	$ 5,000.00	$ 5,000.00	0.5	$ 2,500.00	0.5	$ 2,500.00
2	TRAFFIC CONTROL	LUMP SUM	1	$ 1,500.00	$ 1,500.00	0.5	$ 750.00	0.5	$ 750.00
3	CLEARING AND GRUBBING	SQ YD	900	$ 3.00	$ 2,700.00	900	$ 2,700.00		$ -
4	MUCK EXCAVATION (LV)(POND)	CU YD	1,000	$ 25.00	$ 25,000.00	1,000	$ 25,000.00		$ -
5	DEWATERING	LUMP SUM	1	$ 10,000.00	$ 10,000.00	0.5	$ 5,000.00	0.5	$ 5,000.00
6	REMOVE EXISTING PIPE	LIN FT	60	$ 10.00	$ 600.00		$ -	60	$ 600.00
7	INSTALL OUTLET CONTROL STRUCTURE	EACH	1	$ 5,000.00	$ 5,000.00		$ -	1	$ 5,000.00
8	24" RCP	LIN FT	60	$ 75.00	$ 4,500.00		$ -	60	$ 4,500.00
9	24" RCP FES	EACH	1	$ 1,500.00	$ 1,500.00		$ -	1	$ 1,500.00
10	EROSION CONTROL AND RESTORATION	LUMP SUM	1	$ 7,500.00	$ 7,500.00	0.5	$ 3,750.00	0.5	$ 3,750.00
11	DITCH CLEANOUT	LIN FT	1,000	$ 25.00	$ 25,000.00	1,000	$ 25,000.00		$ -
12	COMMON EXCAVATION (EV)(WQ BENCH)	CU YD	70	$ 20.00	$ 1,400.00		$ -	70	$ 1,400.00
13	6" DRAINTILE	LIN FT	150	$ 15.00	$ 2,250.00		$ -	150	$ 2,250.00
14	COARSE AGGREGATE	TON	50	$ 30.00	$ 1,500.00		$ -	50	$ 1,500.00
15	SELECT GRANULAR	TON	90	$ 25.00	$ 2,250.00		$ -	90	$ 2,250.00
16	GEOTEXTILE FABRIC	SQ YD	170	$ 3.00	$ 510.00		$ -	170	$ 510.00
17	RIPRAP	CU YD	85	$ 100.00	$ 8,500.00		$ -	85	$ 8,500.00
18	TURF REINFORCEMENT MAT	SQ YD	60	$ 20.00	$ 1,200.00	60	$ 1,200.00		$ -
	COMMENTS:			TOTAL	$ 105,910.00		$ 65,900.00		$ 40,010.00
								25%	$ 26,477.50

PLAN VIEW



SECTION A - A



CALCULATIONS FOR TILE LENGTH

TO DETERMINE THE AREA(SF)OF TRENCH NEEDED, DIVIDE THE PONDED VOLUME (CF)BY 17 CF/SF. (5,000 CF / 17 CF/SF = 294 SF TRENCH / 3 FT = 98 LF OF TRENCH)

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Responsive partner. Exceptional outcomes.
1600 PIONEER CREEK CENTER 763-479-4200
MAPLE PLAIN, MN 55359 763-479-4242
Web Site: www.wenck.com

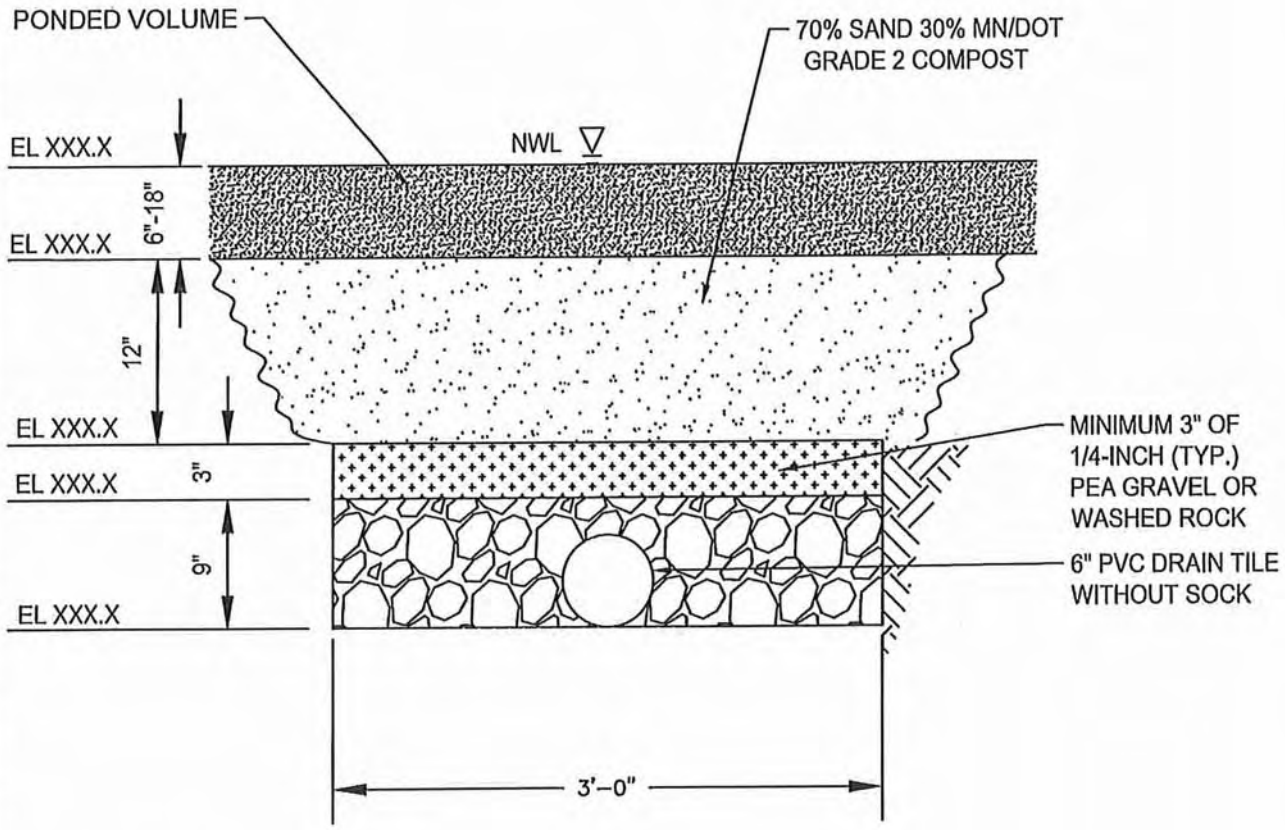
CLIENT: CITY OF CORCORAN

PROJECT: STANDARD PLATES

SHEET TITLE: TYPICAL FILTRATION BENCH

REV	DWN	APP	REV DATE	DWN BY	CHK'D	APP'D	DWG DATE
			FEB 2015	SKH	RWS	RWS	SCALE

PROJECT NO.	SHEET NO.	REV NO.
2294-00	STO-19	



WENCK ASSOCIATES
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1800 PIONEER CREEK CENTER 763-479-4200
MAPLE PLAIN, MN 55359 763-479-4242
Web Site: www.wenck.com

CLIENT: CITY OF CORCORAN

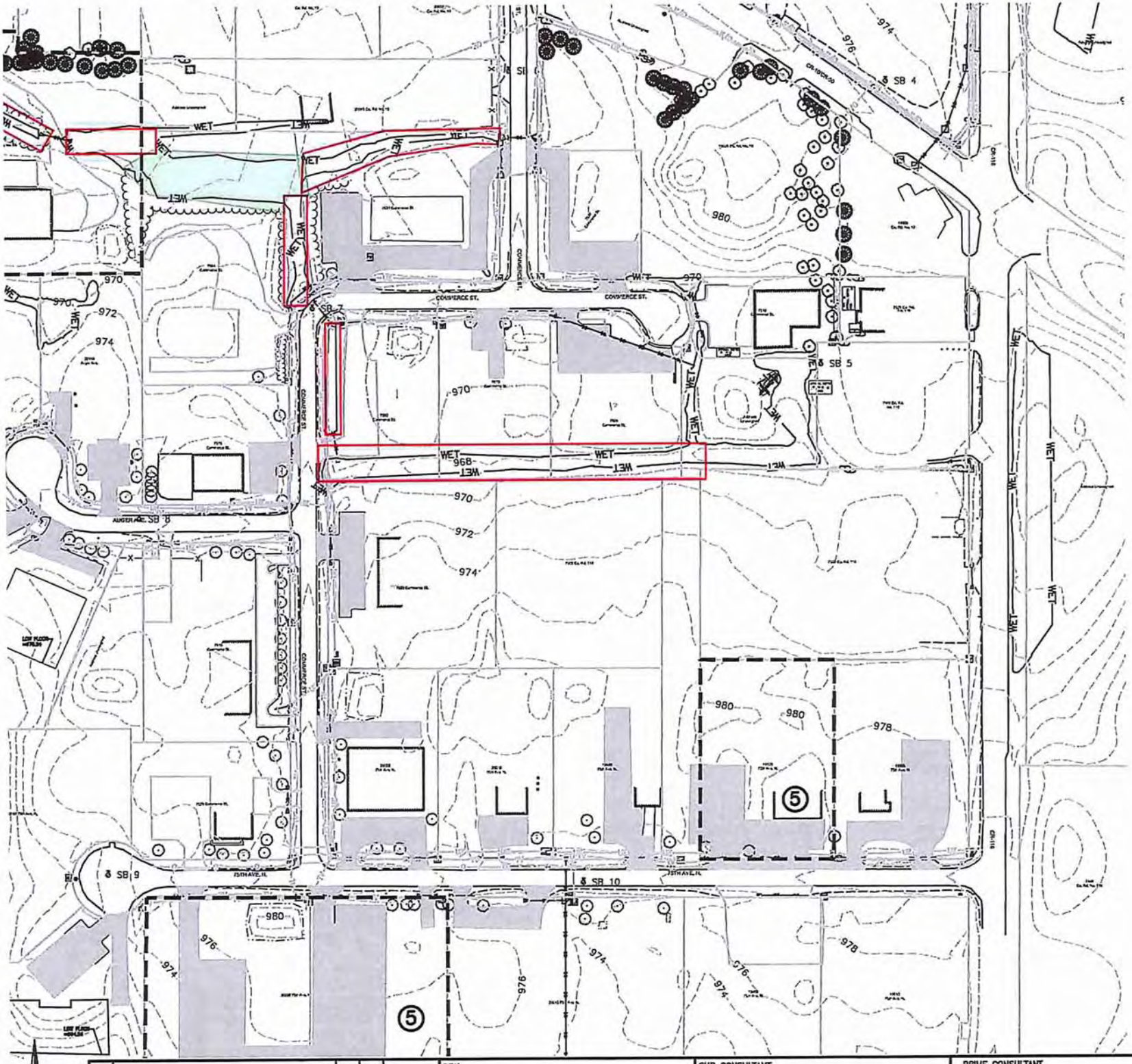
PROJECT: STANDARD PLATES

SHEET TITLE: TYPICAL FILTRATION TRENCH

REV	DWN	APP	REV DATE	DWN BY	CHK'D	APP'D	DWG DATE
			FEB 2017	NPW	RWS	RWS	SCALE

PROJECT NO.	SHEET NO.	REV NO.
2294–00	STO–20	

TAC 02c



PROJECT PHASING CRITERI

1. THE CONTRACTOR IS RE SUBMIT A CONSTRUCTIO REVIEW. NO WORK CAI PHASING PLAN HAS BEE

2. DURING LIFT STATION C(TRUNK SEWER INSTALLA CONTRACTOR IS RESPOI SECONDARY GRAVEL AC(PROPERTY LOCATED AT

3. CONTRACTOR IS REQUIR WEEKS OF BEGINNING C

4. INTERSECTION OF COMM REMAIN OPEN AT ALL TI VIA COMMERCE STREET

5. BUSINESSES LOCATED A RECEIVE HEAVY TRUCK TRAILERS). CONTRACTOR BUSINESS OWNERS AND COORDINATE ANY POTEN OWNER AND ENGINEER TO RESTRICTION.

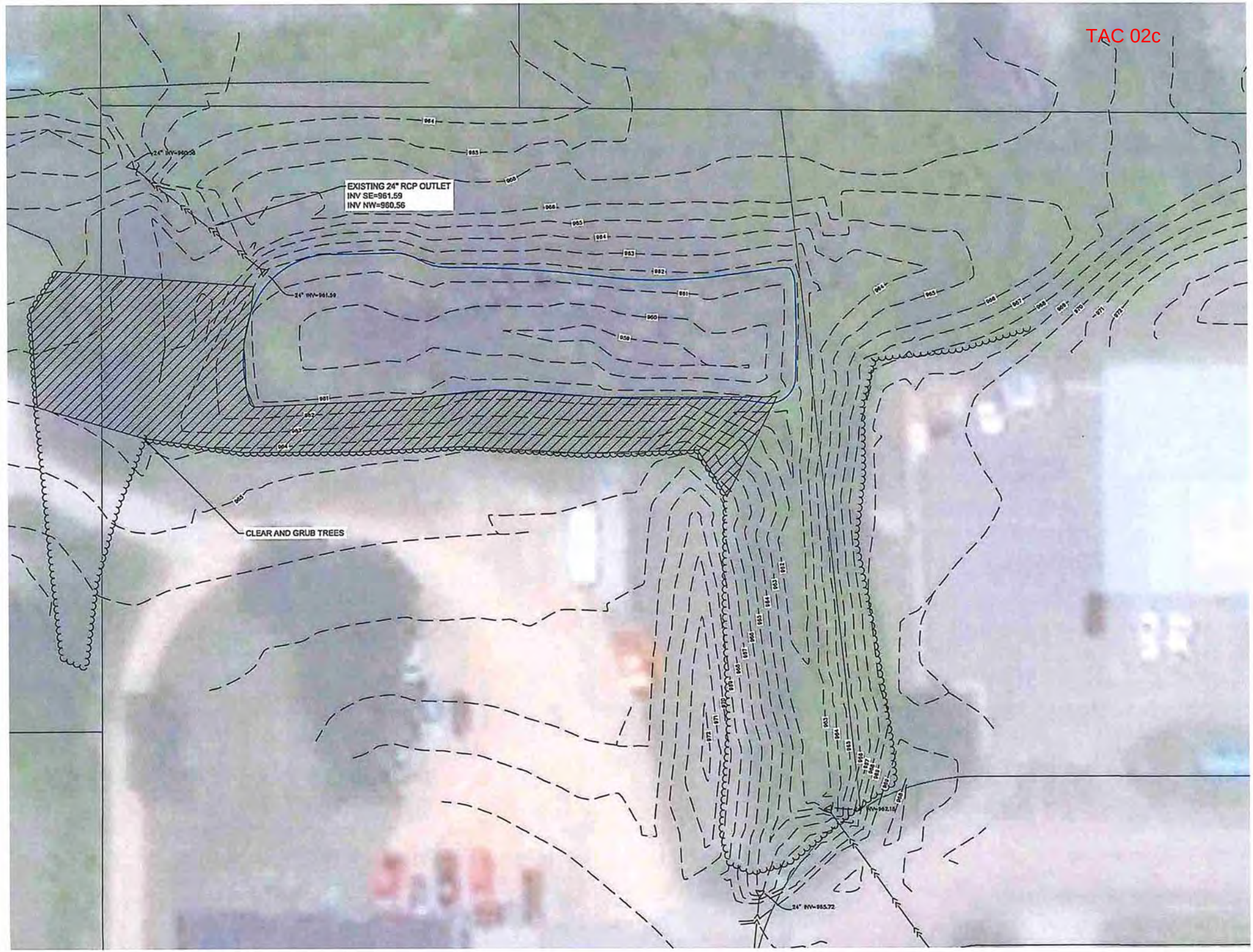
   NOTE 5 ABOVE IDENTIFI HOWEVER THE NOTE GE IMPACTED PROPERTIES.

6. A BID ITEM HAS BEEN I BUSINESS SIGNAGE. SIGI HOURS BEFORE WORK E CONTRACTOR IS RESPOI SIGN LAYOUT FOR CITY

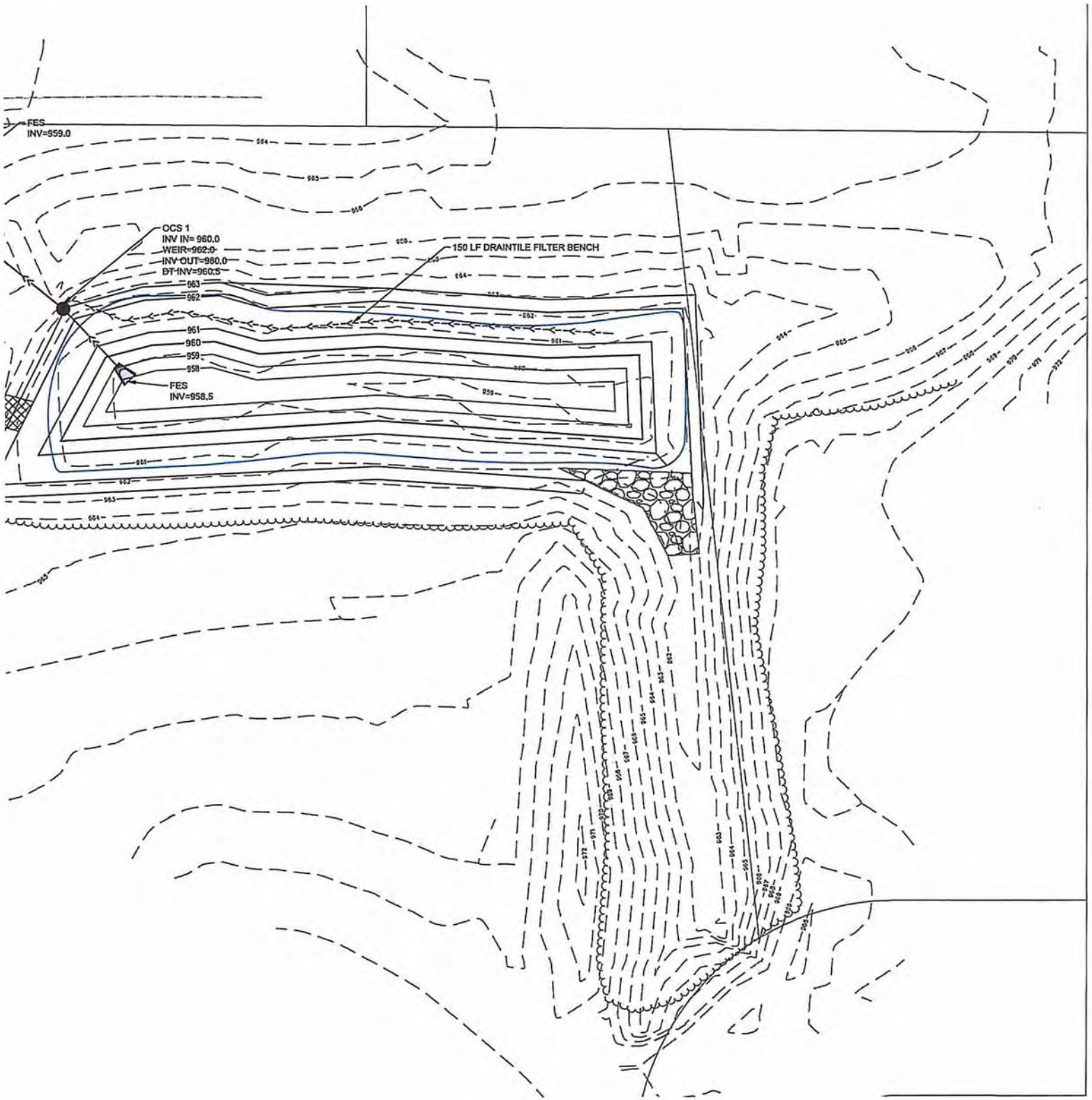
7. TEMPORARY MAILBOXES TO BE COORDINATED BY IS RESPONSIBLE TO NO ANY UPCOMNG MAIL DEI

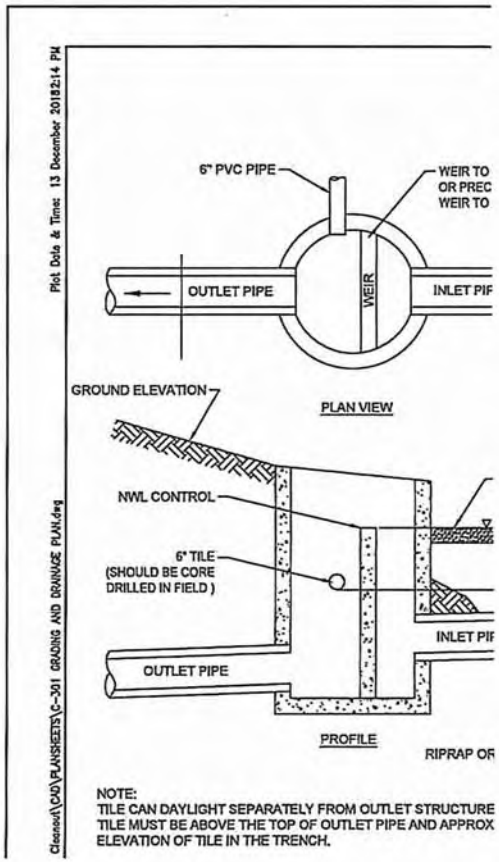
SEAL | SUB CONSULTANT | PRIME CONSULTANT | PROJECT TITLE

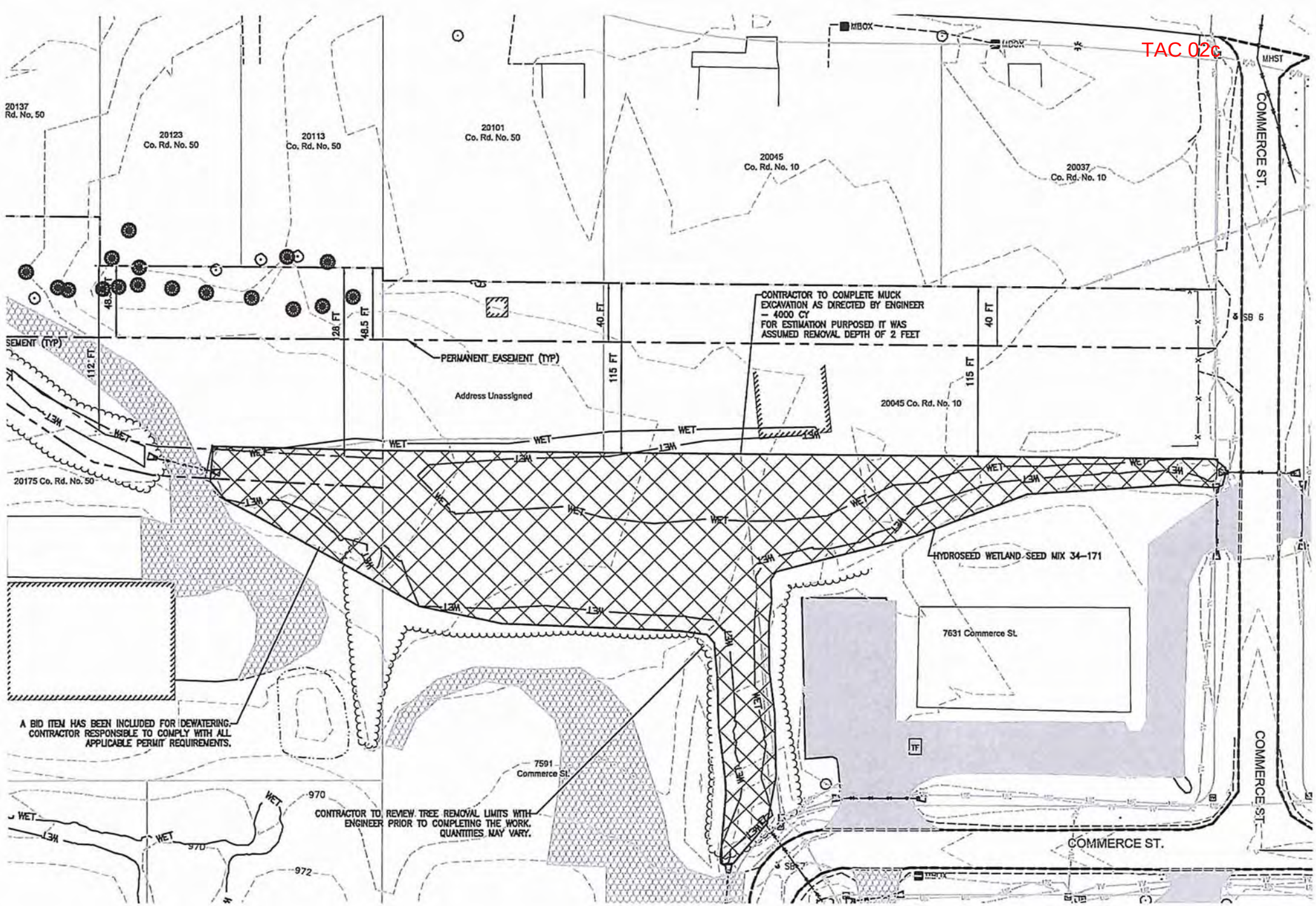
TAC 02c


EXISTING 24" RCP OUTLET
INV SE=961.59
INV NW=960.56
CLEAR AND GRUB TREES

TAC 02c


FES
INV=959.0
OCS 1
INV IN= 960.0
WEIR=962.0
INV OUT=960.0
DT INV=960.5
150 LF DRAINTILE FILTER BENCH
FES
INV=958.5


6" PVC PIPE
WEIR TO
OR PREC
WEIR TO
OUTLET PIPE
WEIR
INLET PIP
PLAN VIEW
GROUND ELEVATION
NWL CONTROL
6" TILE
(SHOULD BE CORE
DRILLED IN FIELD)
INLET PIP
OUTLET PIPE
PROFILE
RIPRAP OR
NOTE:
TILE CAN DAYLIGHT SEPARATELY FROM OUTLET STRUCTURE
TILE MUST BE ABOVE THE TOP OF OUTLET PIPE AND APPROX
ELEVATION OF TILE IN THE TRENCH.
Plot Date & Time: 13 December 2018 2:14 PM
Cleanout\CAD\PLANSHEETS\C-301 GRADING AND DRAINAGE PLAN.dwg


TAC 02c
20137
Rd. No. 50
20123
Co. Rd. No. 50
20113
Co. Rd. No. 50
20101
Co. Rd. No. 50
20045
Co. Rd. No. 10
20037
Co. Rd. No. 10
COMMERCE ST.
MHST
MBOX
CONTRACTOR TO COMPLETE MUCK EXCAVATION AS DIRECTED BY ENGINEER – 4000 CY
FOR ESTIMATION PURPOSED IT WAS ASSUMED REMOVAL DEPTH OF 2 FEET
40 FT
115 FT
48.5 FT
28 FT
112 FT
PERMANENT EASEMENT (TYP)
Address Unassigned
20045 Co. Rd. No. 10
20175 Co. Rd. No. 50
WET
HYDROSEED WETLAND SEED MIX 34–171
7631 Commerce St.
A BID ITEM HAS BEEN INCLUDED FOR DEWATERING. CONTRACTOR RESPONSIBLE TO COMPLY WITH ALL APPLICABLE PERMIT REQUIREMENTS.
7591
Commerce St.
CONTRACTOR TO REVIEW TREE REMOVAL LIMITS WITH ENGINEER PRIOR TO COMPLETING THE WORK. QUANTITIES MAY VARY.
970
972
SB 5
SB 7
SEAL
SUB CONSULTANT
PRIME CONSULTANT
PROJECT TITLE

Diamond Lake Improvement Association

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Who are we?

- A 501(c)(3) organization established in 2012 in response to the severely impaired water quality of Diamond Lake

Our Purpose…

- To support and conduct non-partisan research, education, and informal activities to increase public awareness of Diamond Lake
- To improve lake quality and habitat
- To prevent further lake quality deterioration

Why are we here?

- To share and gather information
- Build relationships and lake improvement partners
- Ask for funding assistance from the Elm Creek Watershed Management Commission for the treatment of CLPW in Diamond Lake
  - 3-year whole lake Fluridone Treatment (2019, 2020, 2021)
  - Continue point intercept studies in Spring and late summer 2019, 2020, and 2021

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PROJECT DESCRIPTION

3-Year Whole (Diamond) Lake Fluridone Treatment

Objective: Reduce internal loads to meet TMDL allocations in Diamond Lake
- Greatly reduce and/or eradicate Curly Leaf Pondweed and CLPW turions
- Greatly reduce excess nutrients (phosphorus) causing algae blooms
- Improve water clarity and lake quality score

Long-Term Plan:
- Years 1-3: Whole lake Fluridone treatment
- Year 4+: Spot treat Diamond Lake using smaller amounts of chemicals such as Aquathol K (Endothol) and/or Diquat
- Year 4+: Alum water treatments
- Year 4+: Aeration

Potential Collaborating Partners:
- Diamond Lake Improvement Association
- MN DNR (Keegan Lund)
- City of Dayton
- Freshwater Scientific (James Johnson)
- PLM Lake & Land Management Corp. (Patrick Selter)
- Three Rivers Park District
- Elm Creek Watershed Management Commission

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PROJECT DESCRIPTION - Continued

PROTOCOL FOR SONAR (FLURIDONE) USE ON CLPD

Approximately 1-2 weeks after ice-out, the initial dose of 4 ppb Sonar lake-wide concentration is applied to the lake. At no more than 21 days post treatment or with a 2 ppb sample event, a second "bump" application is applied to the whole lake based upon residue levels collected at Day 14. This treatment procedure with Sonar A.S. provides the best possible native plant protection, as it exposes Curlyleaf Pondweed to a systemic process in hopes that the roots and rhizomes could be controlled.

Timeline and Responsibilities

- One week post ice-out: initial application of Sonar A.S. (performed by PLM)
- 7 days post-treatment: 4 water samples collected for residue analysis (handled by PLM)
- 14 days post-treatment: 4 water samples collected for residue analysis; "bump" application will be based upon these results (handled and performed by PLM)
- 21 days post-treatment: second "bump" application (performed by PLM)
- 28 days post-treatment: final residue analysis

Goals

1. Control Curlyleaf Pondweed in Diamond Lake systemically, rather than with a contact herbicide
2. Promote growth of Native Plants and preserve water clarity
3. Monitor effects of lake-wide Sonar application on Curlyleaf Pondweed populations in Diamond Lake

Objectives

1. By utilizing a systemic (ALS inhibitor) rather than a contact herbicide, CLPD plants in Diamond Lake growing from roots and rhizomes could be controlled providing for long term control and a reduction in need for treatment in the future.
2. By treating early, it is expected that Sonar degradation of Curlyleaf Pondweed due to clearer water (in comparison with less water clarity in late spring and summer) would be more rapid and allow native plants to grow. It is imperative that the second application take place no more than 28 days following initial treatment (if warranted by the residue analysis).

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Funding Ask…

- Treatment Funding Year 1 (2019): $6,590.93 (1/3 of year 1 treatment: $19,772.80) – See slide 8
  - $19,772.80 / Maximum Load (1240 lbs./yr.) = $15.95/lb. of phosphorus reduction per year
  - $19,772.80 / Minimum Load (641.4 lbs./yr.) = $30.82/lb. of phosphorus reduction per year

- Treatment Funding Year 2 (2020): $6,788.66* (1/3 of year 2 treatment: $19,772.80 x 3% = $20,365.98) – See slide 8
  - $20,365.98 / Maximum Load (1240 lbs./yr.) = $16.42/lb. of phosphorus reduction per year
  - $20,365.98 / Minimum Load (641.4 lbs./yr.) = $31.75/lb. of phosphorus reduction per year

  *Includes a 3% annual price increase based on high end quote

- Treatment Funding Year 3 (2021): $6,992.31* (1/3 of year 3 treatment: $20,365.98 x 3% = $20,976.95) – See slide 8
  - $20,976.95 / Maximum Load (1240 lbs./yr.) = $16.92/lb. of phosphorus reduction per year
  - $20,976.95 / Minimum Load (641.4 lbs./yr.) = $32.70/lb. of phosphorus reduction per year

  *Includes a 3% annual price increase based on high end quote

- Point Intercept Studies (2 per year for 3 years): $3,000.00 annually (approximate cost)
  - Commissioned by the Elm Creek Watershed Management Commission
  - Contract with Three Rivers Park District to perform studies

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Funding Ask Supporting Information

To meet the TMDL, a net reduction in TP load affecting Diamond Lake of 2,062.2 lbs./yr. will be needed, equal to a 71.2% reduction of the current total load of 2,898.0 lbs./year. However, the gross reduction from all sources must include the MOS as well, and therefore is 2,062.2 lbs./yr. + 41.8 = 2,104.0 lbs./yr. It is not possible to meet the TMDL through watershed load reductions alone (i.e, the sum of the existing loads from atmospheric deposition and internal loading exceed the total loading capacity for Diamond Lake). Therefore, a combination of watershed load reduction and internal load reduction will be necessary to meet the TMDL. The total load reduction needed can be achieved through:

- Watershed load reductions of 73.5%, and
- Internal load reductions of 80.5%, aimed at reducing CLPW to non-nuisance conditions

*Reference (Page 42, Section 4.2.7.3 of the Elm Creek Watershed Management Commission Watershed Total Maximum Daily Load Report (12/16)

Table C-8: Diamond Lake annual internal load estimate attributed to curly-leaf pondweed senescence.

Condition	CLP Load (lbs/acre-year)	Surface Area (Acres)	Load (lbs/year)
Minimum Load	1.65	388.7	641.4
Maximum Load	3.19	388.7	1240.0

*Reference (Page 105, Section 4.1.3 of the Elm Creek Watershed Management Commission Watershed Total Maximum Daily Load Report (12/16)

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CURRENT FUNDING SOURCES

Source	Amount Annually
City of Dayton	$4,500
DLIA Member Donations & Lake Improvement Fund	$6,250*
DLIA Fundraiser (Golf Tournament)	$3,800*

*Amounts are estimated and vary year-to-year

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Contractor Estimate

PLM Lake & Land Management Corp.

2019 Estimated Budget			
Item	Low End (4 ft avg depth)	High End (5 ft Avg Depth)	PLM Best Estimate
Sonar A.S.	6 gals $13,824.00	8.2 gallons($18,892.80)	7.36 Gallons($16957.44)
Concentration Samples	8 ($880.00)	8 ($880.00)	8 ($880.00)
TOTAL	$14,704.00	$19,772.80	$17,837.44

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Thank you for your consideration

It’s a great day on the lake!