



Title: Opportunity Updates under the Pilot Phase of Responsive Program

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Purpose:

At the September 9, 2021, Operations and Programs Committee (OPC) Meeting, staff will brief the Board of Managers on three active opportunities that are under review through the pilot phase of the Responsive Program and seek Board feedback on staff's evaluation and recommendations.

Background:

Minnehaha Creek Watershed District (MCWD or District) is focused on the protection and improvement of natural resources in ways that support thriving communities. Since what happens on the land is the primary driver of the health of our natural resources, MCWD's Balanced Urban Ecology Policy (BUE Policy) recognizes that the District can deliver the most value to its residents by working in partnership with those who change the landscape. Since adopting the BUE Policy in 2014, the District integrated these founding principles within the District's 2017 Watershed Management Plan (WMP) that articulated an implementation approach that is two-pronged:

- Focusing in areas of high need and opportunity to achieve significant, measurable resource improvement
- Remaining responsive to needs and opportunities district-wide through coordination with partners

In order to carry out the second prong of this approach, the District is developing a Responsive Program to guide the District's process for identifying, evaluating and responding to opportunities. The purpose of the program is to provide support for public and private projects and initiatives that are well-coordinated and align with the District's goals and priorities. The District aims to carry out this approach in a way that provides value to its communities while making efficient use of District resources to allow the District to maintain focus on its highest priority projects and initiatives.

Pilot Phase of Responsive Program

In July 2021, staff presented recommendations for the Responsive Program scope, structure, schedule, and process to the Board of Managers. Staff have been operating the Responsive Program in a pilot phase while continuing to develop supporting materials and refine the program's schedule and services before vetting the program with external stakeholders in early 2022 and then seeking Board adoption. Under this pilot phase, staff have been evaluating partnership requests using the following four criteria categories:

- **Resource Need and Priority:** Alignment with the resource needs and priorities identified in the District's Plan or through ongoing monitoring and diagnostic efforts.
- **Project Benefits:** Estimated benefits across the District's goals of water quality, water quantity, ecological integrity, and thriving communities.
- **Cost Effectiveness:** Cost effectiveness compared to alternatives or other past/current project opportunities.
- **Partnership and Coordination:** Strength of partner's coordination, integration of District goals, and willingness to commit resources to advance the opportunity.

Staff evaluate opportunities by applying the four criteria categories and vetting it through a cross-departmental staff team to inform the recommended response. To date, any opportunity that has required funding and/or significant capacity of District staff has been brought to the Board of Managers (e.g., Long Lake Creek Subwatershed Partnership, 54th Street Streambank Investigation Study).

Summary:

At the September 9th OPC Meeting, staff will provide the Board context and discuss staff recommendations for the below three active responsive opportunities and shown on the overview map (see Attachment 1). The presentation will include:

- details on the three active responsive opportunities, evaluation to-date, and the staff recommendations; and
- on-going insights gathered during the pilot phase that continue to inform the program development.

City of Plymouth – Maple Creek Drainage Improvements

The City of Plymouth has several projects in its capital improvement plan (CIP) within the Gleason Lake drainage area that are focused on addressing local drainage and flooding issues. Because Gleason Lake is impaired for nutrients, the City has been exploring opportunities to incorporate water quality improvements into these projects. On June 30, 2021, the City submitted a funding request for \$405,500 and preliminary cost-benefit information for the Maple Creek Drainage Improvement project. The project was originally estimated to achieve 41 lbs of total phosphorus (TP) reduction. Proposed project elements include iron enhanced sand filtration, expanded flood storage, and stabilization and restoration efforts along Maple Creek and the Steeplechase Development Wetland area.

This opportunity was first discussed with the Board at the July 8th OPC Meeting. Since that meeting, staff has requested additional feasibility information and had submittals reviewed by the District Engineer. Based on the District Engineer's review, the water quality benefit has been refined to an estimated 25 lbs/yr of TP reduction (see Attachment 2). The proposed project is scheduled for construction this winter.

City of Edina – 54th Street Streambank Investigation

The City of Edina requested District assistance to investigate resident concerns with streambank stability and the formation of a sandbar within Minnehaha Creek located downstream of the West 54th Street bridge. At the March 11, 2021, OPC Meeting, District staff provided a background, evaluation, and recommendation to develop a scope of work to investigate potential causes of bank destabilization and to propose potential solutions for long-term bank stability.

On May 27, 2021, the Board of Managers authorized a contract with Inter-Fluve for this investigation with a total cost of \$38,600, of which the City contributed \$7,000. The investigation report is currently being finalized, and staff have had preliminary discussions with the City regarding the findings and recommendations. The City has indicated that they will be seeking financial support for project implementation costs.

City of Medina - Long Lake Creek Partnership: Wolsfeld Woods Ravine Stabilization

Through the Long Lake Creek Partnership, the District has been working with the Cities of Long Lake, Medina, and Orono and the Long Lake Waters Association (LLWA) to conduct a subwatershed assessment and develop an implementation roadmap to guide implementation by the partners. As part of this effort, the District secured grant funding for the Wolsfeld Woods Ravine Stabilization project, which is being led by the City of Medina. Recent discussions with the DNR have revealed some potential barriers to implementing this project within the Wolsfeld Woods Scientific and Natural Area, including a new designation of the woods as "old growth" which prohibits any tree removal. Staff is coordinating with the City to further evaluate project feasibility and explore potential alternative projects that could utilize the grant funds.

Supporting documents:

Attachment 1: Overview Map

Attachment 2: Maple Creek Drainage Improvement Project Summary

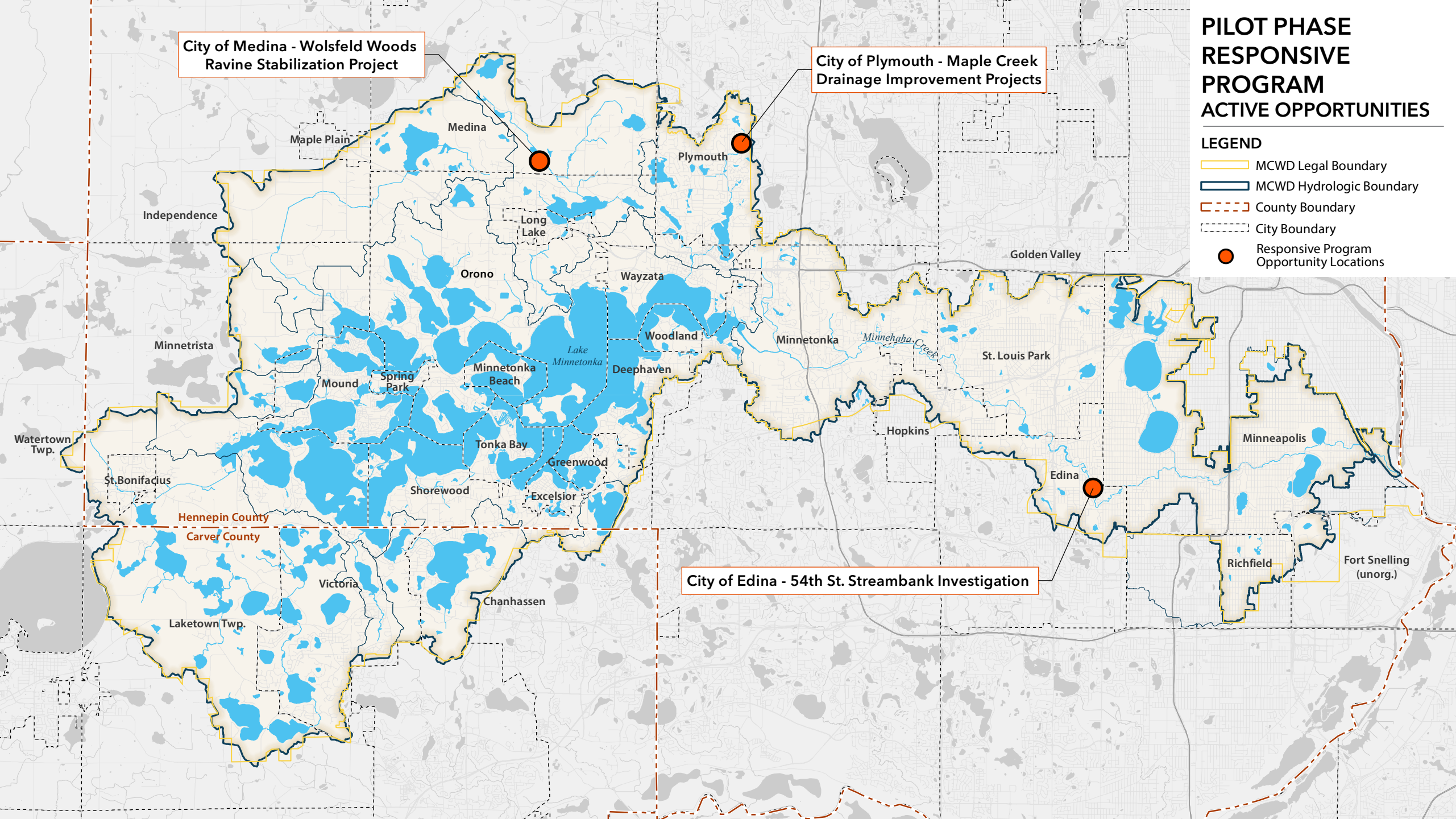
PILOT PHASE RESPONSIVE PROGRAM ACTIVE OPPORTUNITIES

- LEGEND**
- MCWD Legal Boundary
 - MCWD Hydrologic Boundary
 - County Boundary
 - City Boundary
 - Responsive Program Opportunity Locations

City of Medina - Wolsfeld Woods Ravine Stabilization Project

City of Plymouth - Maple Creek Drainage Improvement Projects

City of Edina - 54th St. Streambank Investigation



Memorandum

To: Ben Scharenbroich, City of Plymouth
Chris McKenzie, PE, City of Plymouth

From: Jake Newhall, PE
Kendra Fallon, PE

Date: August 30, 2021

Re: Maple Creek Drainage Improvement Project Summary
WSB Project No. 016858-000

This memo summarizes the drainage proposed improvements along Maple Creek within the City of Plymouth. Approximately 360 acres of drainage within the City is routed through Maple Creek in this area. An analysis was completed to evaluate possible stormwater management improvements. A description of the proposed improvements, the anticipated pollutant removals, secondary benefits, and the estimated life-cycle costs are included in this summary. A figure is included with the memo which shows the location of the proposed improvements as described below. Historic aerials are included with the memo where the basins south of Maple Creek Park playground appear to be present but the basin north of the Maple Creek Park playground does not appear to be present. Based on this initial desktop investigation, the Maple Creek Park basin is referenced to as a pond and the basins south of the Maple Creek Park playground are referenced to as wetlands.

MAPLE CREEK POND IMPROVEMENTS

Improvements to the pond area north of 27th Place North near Maple Creek Park include a dredging project to excavate the settled sediment within the permanent pool of the pond, construction of an iron enhanced sand filtration (IESF) bench at the pond's normal water level, and reconstruction of the existing outlet structure for the pond. The reconstructed outlet would be designed to allow the basin to bounce so water will filter through the IESF bench without increasing the pond's high water level. Realigning the existing trail in the area is proposed with these improvements in order to maximize the footprint of the proposed filtration bench on the southeast side of the existing pond.

The improvements to the Maple Creek Park Pond area are anticipated to remove an additional 1,900 lbs/yr of total suspended solids (TSS) and 19 lbs/yr of total phosphorus (TP). The improvements will also help to create additional flood storage within the Maple Creek subwatershed.

STEEPLECHASE WETLAND IMPROVEMENTS

Improvements to the Steeplechase Development Wetland area include ditch maintenance on the Zanzibar Ditch, wetland enhancements/expansion, and construction of a diversion structure near the Steeplechase Development. Erosion in the Zanzibar Ditch would be proposed to be fixed with stabilization measures and removal of sediments which have settled in the bottom of the ditch. These improvements would help to reduce the pollutant loading into the Maple Creek Wetlands.

A ponding area in the upland area between Maple Creek and the turf grass open area just north of the trail crossing is proposed. In addition, it is proposed to enhance and expand portions of the

existing wetlands adjacent to the Steeplechase Development to improve the wetlands and the habitat in the area.

The existing primary outlet for the Steeplechase Development wetland is a wooden weir routed to a 36-inch pipe which conveys stormwater southeast from the wetland and connects into the trunk storm sewer. Currently water bypasses the wooden weir and simply drains through the 36-inch pipe. When flows are high enough the water spills over the weir and is routed through a 12-inch culvert outletting southwest from the wetland. This acts as a secondary outlet and takes drainage further downstream to another wetland complex. A diversion structure is proposed to replace the existing outlet configuration and control how much water is routed to the Steeplechase development and allow a split flow that meets the needs of the area. Discharge rates for the Maple Creek drainage system were analyzed at the proposed Steeplechase Diversion Structure to confirm reductions to both downstream systems.

All the Steeplechase improvements together would help to remove an additional 4,430 lbs/yr of TSS and 6 lbs/yr of TP from Maple Creek. The work within and around the existing wetlands would be restored with a native seed mix and live stakes to enhance the wetland habitat. In addition to water quality and habitat benefits, the additional storage created by the proposed pond and wetland enhancements would provide additional flood storage and help control rates throughout this portion of the Maple Creek subwatershed.

ANTICIPATED COSTS

The anticipated costs and water quality cost benefit for the improvements are broken out for the Maple Creek Park Pond Improvements and the Steeplechase Wetland Improvements and are outlined in **Table 1**. The expected 20-year life cycle costs are broken down in **Table 2** and the Opinion of Probable Cost Tables for the project can be found in the attachments.

It is recommended the City request \$405,500 in funding from MCWD for all projects costs excluding payment for the dredging of the Maple Creek Park Pond.

Table 1: Improvement Cost Benefit

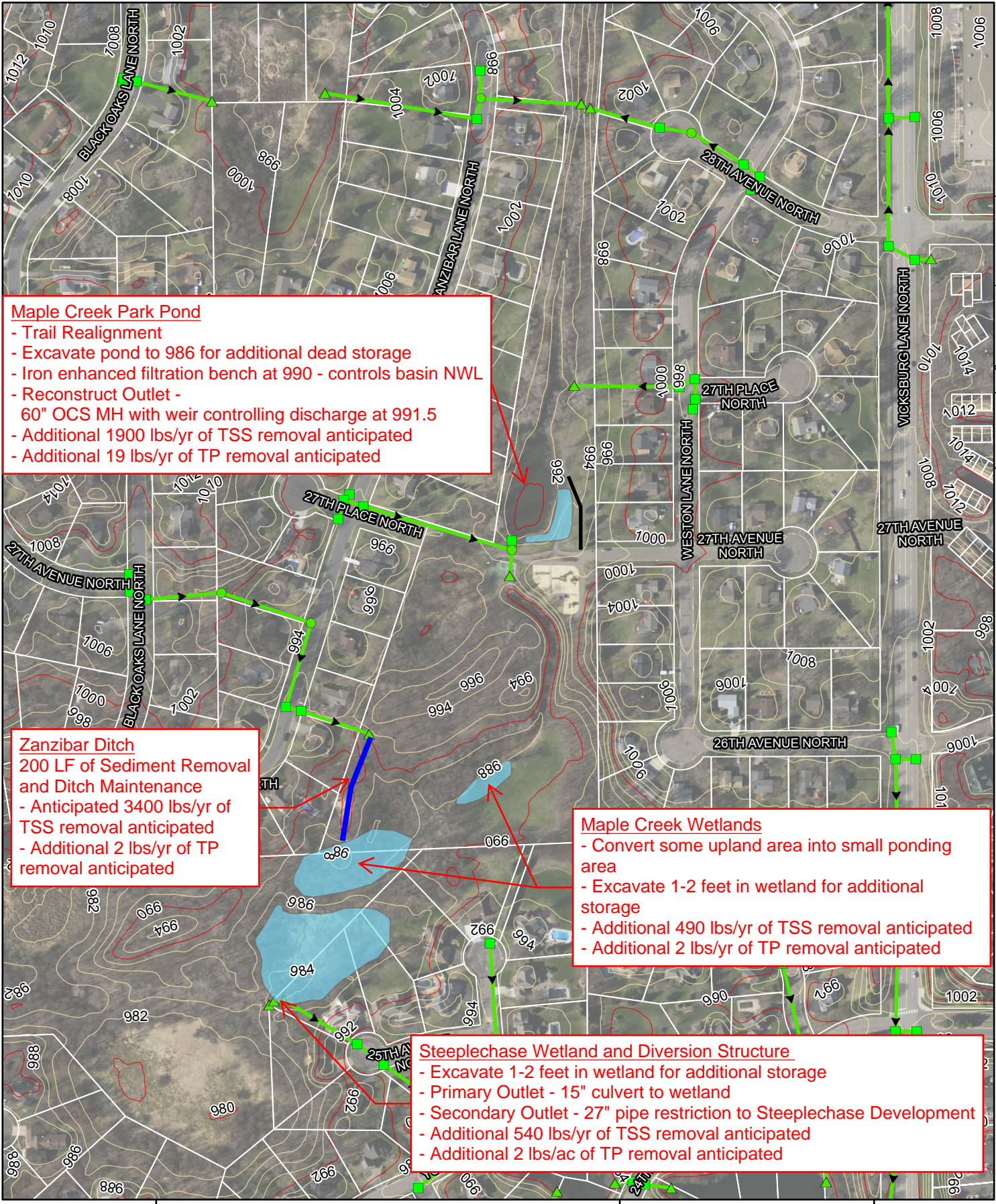
	Construction + Contingency + Indirect Costs	20-Yr Life Cycle Costs	Overall Project Costs	TP Removals (lbs/yr)	TP Removals Over 20-Yr Life Cycle (lbs)	Life Cycle Cost Benefit (\$/lb TP)
Schedule A. Maple Creek Park Pond	\$241,000	\$175,000	\$416,000	19	380	\$1,094.73
Schedule B. Steeplechase Wetland Improvements	\$209,000	\$40,000	\$249,000	6	120	\$2,075.00
Project Total	\$450,000.00	\$215,000.00	\$665,000	25	500	\$1,330.00

Table 2: 20-Year Life-Cycle Costs

	Occurrences Over 20-Yr Life Cycle	Cost Per Occurrence	20-Yr Life Cycle Cost
Schedule A. Maple Creek Park Pond			
Tilling of Media	10	\$2,500	\$25,000
Media Replacement	3	\$50,000	\$150,000
	Schedule A. Total Life 20-Yr Cycle Cost		\$175,000
Schedule B. Steeplechase Wetland Improvements			
Sediment Delta Removal (\$5,000 per wetland)	1	\$15,000	\$15,000
Vegetation Maintenance	10	\$2,500	\$25,000
	Schedule B. Total Life 20-Yr Cycle Cost		\$40,000

Attachments

- Proposed Improvements Figure
- Opinions of Probable Cost Tables
- Historic Aerials



Maple Creek Park Pond

- Trail Realignment
- Excavate pond to 986 for additional dead storage
- Iron enhanced filtration bench at 990 - controls basin NWL
- Reconstruct Outlet - 60" OCS MH with weir controlling discharge at 991.5
- Additional 1900 lbs/yr of TSS removal anticipated
- Additional 19 lbs/yr of TP removal anticipated

Zanzibar Ditch

- 200 LF of Sediment Removal and Ditch Maintenance
- Anticipated 3400 lbs/yr of TSS removal anticipated
- Additional 2 lbs/yr of TP removal anticipated

Maple Creek Wetlands

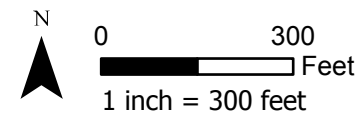
- Convert some upland area into small ponding area
- Excavate 1-2 feet in wetland for additional storage
- Additional 490 lbs/yr of TSS removal anticipated
- Additional 2 lbs/yr of TP removal anticipated

Steeplechase Wetland and Diversion Structure

- Excavate 1-2 feet in wetland for additional storage
- Primary Outlet - 15" culvert to wetland
- Secondary Outlet - 27" pipe restriction to Steeplechase Development
- Additional 540 lbs/yr of TSS removal anticipated
- Additional 2 lbs/ac of TP removal anticipated



Project Location
Maple Creek Drainage Improvements
City of Plymouth, MN



Maple Creek Drainage Improvements

WSB Project: Maple Creek Drainage Improvements
 Project Location: City of Plymouth
 WSB Project No: 016858-000

Design By: KJF
 Checked By: JHN
 Date: 8/6/2021

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
SCHEDULE A. MAPLE CREEK PARK POND						
1	2021.501	MOBILIZATION	LS	1	\$10,000.00	\$10,000.00
2	2101.524	CLEARING & GRUBBING	TREE	5	\$800.00	\$4,000.00
3	2104.503	REMOVE SEWER PIPE (STORM)	L F	10	\$25.00	\$250.00
4	2104.502	REMOVE DRAINAGE STRUCTURE	EACH	1	\$1,500.00	\$1,500.00
5	2104.503	REMOVE BITUMINOUS PAVEMENT	S Y	170	\$15.00	\$2,550.00
6	2105.601	DEWATERING	LS	1	\$7,500.00	\$7,500.00
7	2105.604	COMPOSITE LINER	S Y	500	\$30.00	\$15,000.00
8	2105.507	POND EXCAVATION (LV)	C Y	1700	\$25.00	\$42,500.00
9	2105.504	GEOTEXTILE FABRIC TYPE 4	S Y	20	\$5.00	\$100.00
10	2360.504	3 INCH THICK BITUMINOUS TRAIL	S Y	190	\$45.00	\$8,550.00
11	2451.507	COARSE FILTER AGGREGATE (CV)	C Y	100	\$50.00	\$5,000.00
12	2451.607	FILTER MEDIA SPECIAL	C Y	300	\$175.00	\$52,500.00
13	2501.502	24" RC PIPE APRON	EACH	1	\$1,750.00	\$1,750.00
14	2502.503	6" PERF PVC PIPE DRAIN	L F	400	\$18.00	\$7,200.00
15	2502.503	6" PVC PIPE DRAIN	L F	30	\$20.00	\$600.00
16	2502.602	6" PVC PIPE DRAIN CLEANOUT	EACH	4	\$350.00	\$1,400.00
17	2503.503	24" RC PIPE SEWER DES 3006 CL III	L F	24	\$100.00	\$2,400.00
18	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	1	\$2,500.00	\$2,500.00
19	2506.503	CONST DRAINAGE STRUCTURE DESIGN SPEC 1	EACH	1	\$8,000.00	\$8,000.00
20	2511.507	RANDOM RIPRAP CLASS III (FIELDSTONE)	C Y	10	\$150.00	\$1,500.00
21	2571.524	DECIDUOUS TREE 2.5" CAL B&B	TREE	3	\$900.00	\$2,700.00
22	2573.503	FLOTATION SILT CURTAIN TYPE MOVING WATER	L F	30	\$40.00	\$1,200.00
23	2573.502	TEMPORARY ROCK CONSTRUCTION ENTRANCE	EACH	1	\$1,000.00	\$1,000.00
24	2575.504	EROSION CONTROL BLANKETS CATEGORY 3N	S Y	500	\$3.00	\$1,500.00
25	2575.505	SEEDING	ACRE	0.1	\$6,000.00	\$600.00
26	2575.509	SEED MIXTURE 25-131	LB	10	\$15.00	\$150.00
27	2575.509	SEED MIXTURE 34-171	LB	3	\$50.00	\$150.00
CONSTRUCTION TOTAL						\$182,100.00
CONTINGENCY TOTAL (15%)						\$27,315.00
SUBTOTAL						\$209,415.00
INDIRECT COST TOTAL (15%)						\$31,412.25
SCHEDULE A. TOTAL						\$240,827.25

Maple Creek Drainage Improvements

WSB Project: Maple Creek Drainage Improvements
 Project Location: City of Plymouth
 WSB Project No: 016858-000

Design By: KJF
 Checked By: JHN
 Date: 8/6/2021

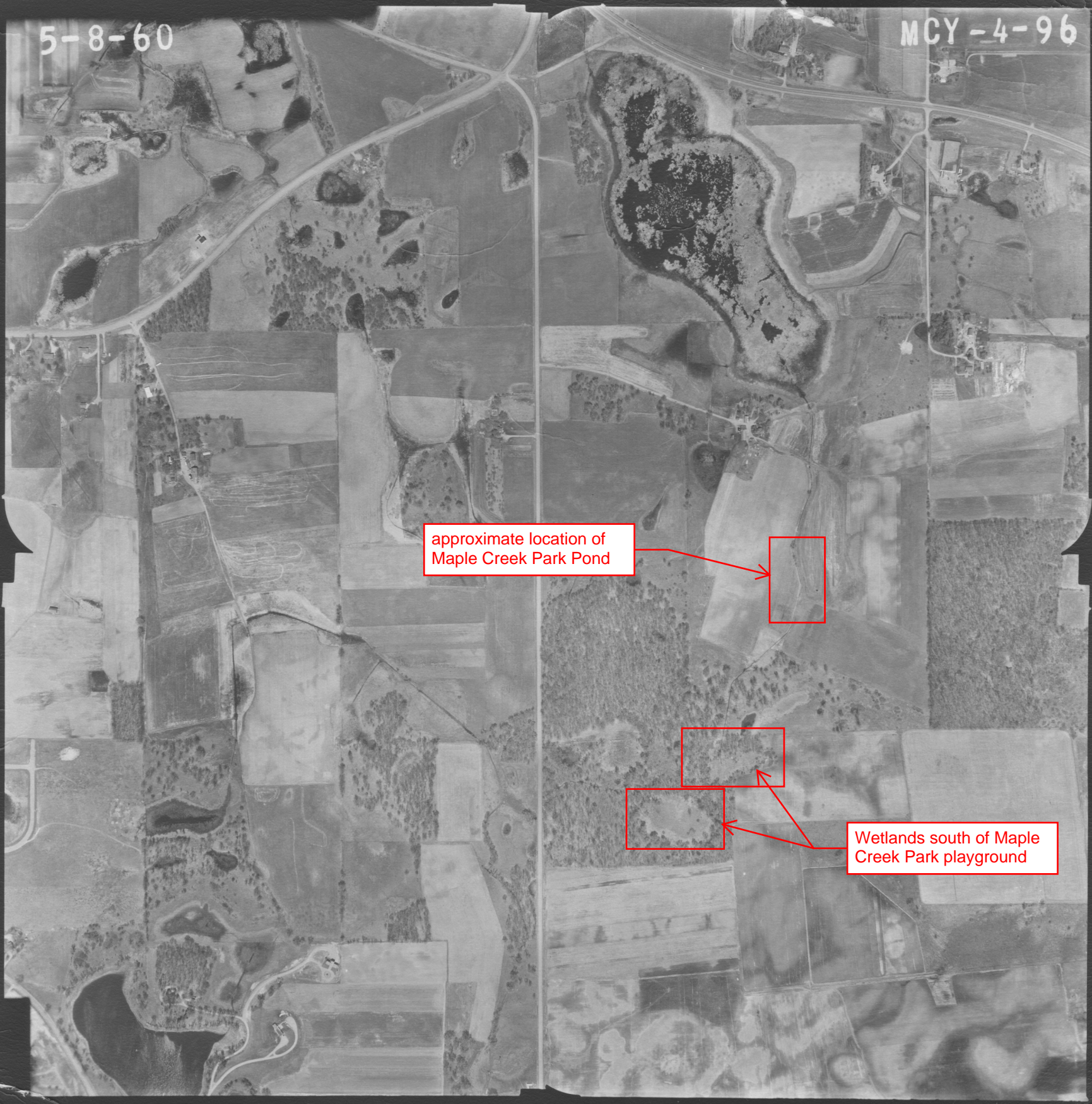
Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
SCHEDULE B. STEEPLECHASE WETLAND IMPROVEMENTS						
1	2021.501	MOBILIZATION	LS	1	\$15,000.00	\$15,000.00
2	2101.505	CLEARING & GRUBBING	TREE	15	\$800.00	\$12,000.00
3	2104.503	REMOVE SEWER PIPE (STORM)	L F	25	\$25.00	\$625.00
4	2104.502	REMOVE DRAINAGE STRUCTURE	EACH	1	\$750.00	\$750.00
5	2104.502	SALVAGE DRAINAGE STRUCTURE	EACH	1	\$1,000.00	\$1,000.00
6	2105.507	COMMON EXCAVATION (LV)	C Y	4600	\$18.00	\$82,800.00
7	2105.504	GEOTEXTILE FABRIC TYPE 4	S Y	60	\$5.00	\$300.00
8	2501.502	15" RC PIPE APRON	EACH	1	\$1,500.00	\$1,500.00
9	2503.503	15" RC PIPE SEWER DES 3006 CL V	L F	20	\$60.00	\$1,200.00
10	2503.503	36" RC PIPE SEWER DES 3006 CL III	L F	8	\$150.00	\$1,200.00
11	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	1	\$2,500.00	\$2,500.00
12	2506.503	CONST DRAINAGE STRUCTURE DESIGN SPEC 2	EACH	1	\$8,000.00	\$8,000.00
13	2511.507	RANDOM RIPRAP CLASS III (FIELDSTONE)	C Y	45	\$150.00	\$6,750.00
14	2571.524	DECIDUOUS TREE 2.5" CAL B&B	TREE	7	\$900.00	\$6,300.00
15	2573.503	FLOTATION SILT CURTAIN TYPE MOVING WATER	L F	30	\$40.00	\$1,200.00
16	2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER	L F	200	\$3.00	\$600.00
17	2573.502	TEMPORARY ROCK CONSTRUCTION ENTRANCE	EACH	2	\$1,000.00	\$2,000.00
18	2573.602	ROCK DITCH CHECK	EACH	1	\$1,500.00	\$1,500.00
19	2575.504	EROSION CONTROL BLANKETS CATEGORY 3N	S Y	1000	\$3.00	\$3,000.00
20	2575.505	SEEDING	ACRE	1.8	\$4,000.00	\$7,200.00
21	2575.509	SEED MIXTURE 25-131	LB	15	\$15.00	\$225.00
22	2575.509	SEED MIXTURE 34-171	LB	15	\$50.00	\$750.00
23	2577.502	LIVE STAKES, DOGWOOD	EACH	200	\$8.00	\$1,600.00
CONSTRUCTION TOTAL						\$158,000.00
CONTINGENCY TOTAL (15%)						\$23,700.00
SUBTOTAL						\$181,700.00
INDIRECT COST TOTAL (15%)						\$27,255.00
SCHEDULE B. TOTAL						\$208,955.00
PROJECT TOTAL						\$449,782.25

5-8-60

MCY-4-96

approximate location of
Maple Creek Park Pond

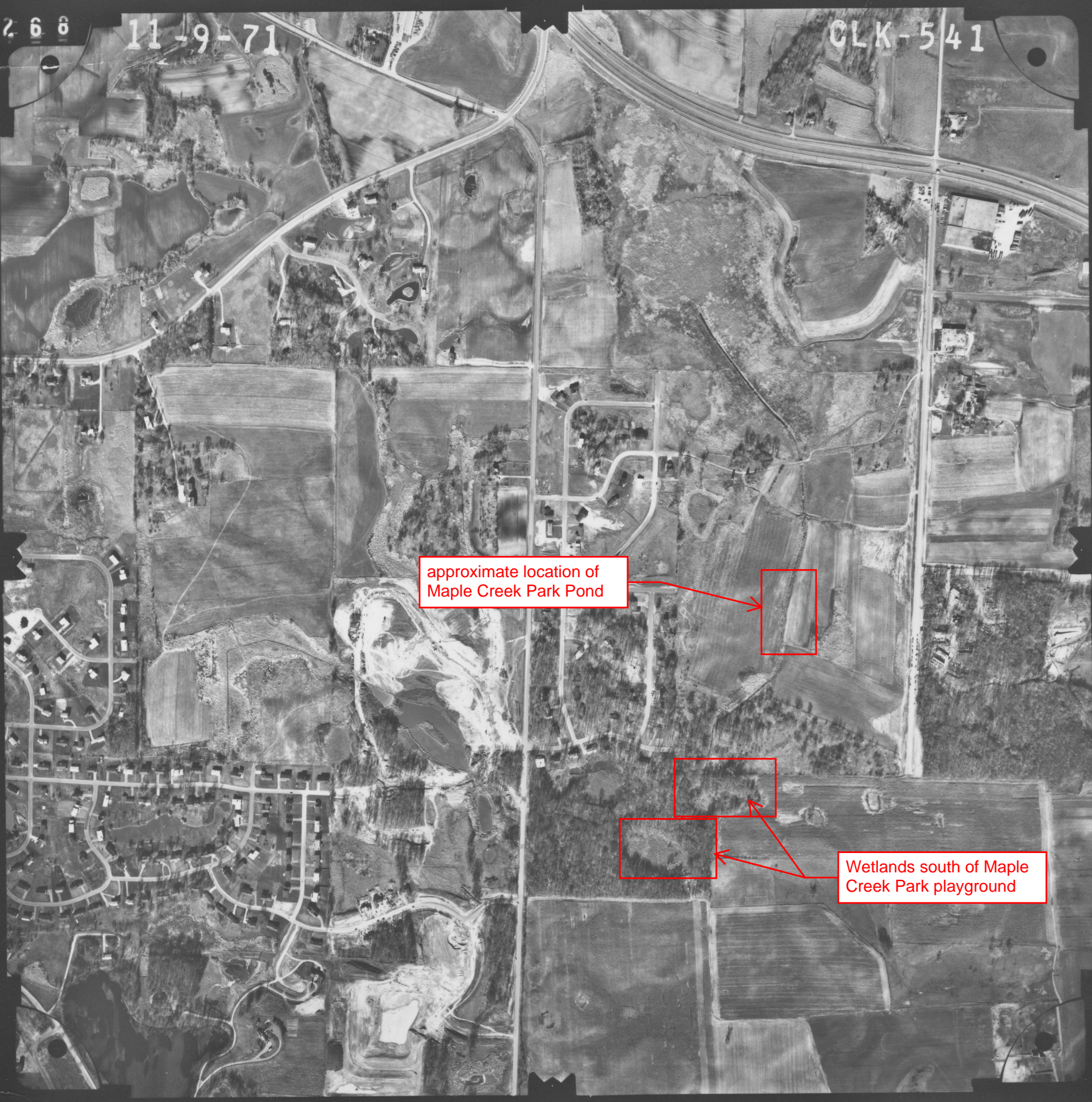
Wetlands south of Maple
Creek Park playground



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approximate location of
Maple Creek Park Pond

Wetlands south of Maple
Creek Park playground