Lessard-Sams Outdoor Heritage Council
Laws of Minnesota 2018 Accomplishment Plan

Date: October 16, 2017

Program or Project Title: Six Mile Creek-Halsted Bay Habitat Restoration Phase I

Funds Recommended: $ 567,000

Manager's Name: Anna Brown
Title: Planner-Project Manager
Organization: Minnehaha Creek Watershed District
Address: 15320 Minnetonka Blvd
City: Minnetonka, MN 55345
Office Number: 952-641-4522
Mobile Number: 603-252-7497
Email: abrown@minnehahacreek.org
Website: minnehahacreek.org

Legislative Citation: ML 2018, Ch. X, Art. 1, Sec. 2, subd XX

Appropriation Language:

County Locations: Carver, and Hennepin.

Regions in which work will take place:

- Metro / Urban

Activity types:

- Restore

Priority resources addressed by activity:

- Habitat

Abstract:

Over the next ten years, the Minnehaha Creek Watershed District (MCWD) and its Partners will engage in one of the Metro's largest habitat restoration and water quality enhancement projects, restoring 2,488 acres of in-lake habitat across 14 connected deep and shallow lakes and creating contiguous corridors of restored wetland and uplands in the Six Mile-Halsted Bay Subwatershed (SMCHB), one of the largest tributaries to Lake Minnetonka. Through one of the most ambitious Common Carp management efforts in the state, the program will improve fisheries and benefit waterfowl and non-game bird communities, improving recreation for fisherman, hunters and bird-watchers.

Design and scope of work:

The Six Mile Creek-Halsted Bay (SMCHB) subwatershed is a 27 square mile geography in the western metro spanning Carver and Hennepin Counties. The subwatershed includes 14 deep and shallow lakes, totaling 2,488 acres, and over 2,900 acres of wetlands. Carver Park Reserve is situated entirely within this subwatershed, providing 5,700 acres of permanently protected open water, wetland, forest, and prairie habitat. Much of the subwatershed is designated as DNR Regionally Significant Ecological Area. The complex of deep and shallow lakes and wetlands are connected through a 12 mile stream system that drains to Halsted Bay, the most impaired water body on Lake Minnetonka - the most heavily used recreation lake in the State.

Habitat for fish, birds and waterfowl has been degraded through much of this system, the results of overabundant common carp and historic agricultural land use, with users reporting decreased fishing success in Halsted Bay. Restoring this system is a priority for the

District and its partners within the region (Cities of Victoria, St. Bonifacius, Minnetrista, and Waconia, Laketown Township, Carver and Hennepin Counties, and Three Rivers Park District). Together, this group is committed to aligning priorities and investments across agencies to accomplish large scale habitat, corridor, and water resource restoration objectives over the next 10-15 years.

Habitat improvements throughout this system will principally involve restoration of lake and marsh habitats through management of common carp,and the restoration of wetland and contiguous uplands to enhance and connect natural resource corridors.

The Common Carp management approach for SMCHB was developed based on a three-year, half-million dollar District investment with the University of Minnesota AIS Research Center from 2014-2017, which provided a cutting-edge scientific assessment of common carp populations, reproduction and migratory patterns in the geography. This assessment revealed some of the largest carp population densities ever observed by the center. Proposed Common Carp management includes:
- Aerating 6 shallow marsh areas known to winterkill, to promote bluegill sunfish survivability and prevent carp recruitment.
- Physical barriers at 4 locations to block carp from accessing spawning areas. The barrier between Mud and Halsted will also trap carp for removal.
- Install a water control structure and barrier between two shallow lake systems to have the ability to block carp passage and manipulate water levels to eliminate carp recruitment and maintain healthy shallow lake systems.
- Remove adult carp through winter or open water seining, box-net trapping, and removing carp in stream channels.

This carp management approach will results in 2,488 acres of restored deep and shallow lakes, of which 66% is littoral habitat. Carp control will allow for the restoration of invertebrate and aquatic plant communities to the benefit of gamefish such as Bass, panfish and northern pike communities, as well as non-game fish and waterfowl, providing hunters and fisherman better opportunities to enjoy the region's outdoor heritage.

How does the request address MN habitats that have: historical value to fish and wildlife, wildlife species of greatest conservation need, MN County Biological Survey data, and/or rare, threatened and endangered species inventories:

This habitat restoration project will have benefits across the entire trophic chain. As carp populations are reduced, we will see restoration of aquatic vegetation, macroinvertebrates, and water quality, restoring food and habitat for numerous species of fish and wildlife, and in turn, restoring populations of these species.

In particular, carp management will allow shallow lakes to shift to a new, healthier alternative stable state. Much of the subwatershed's littoral area is currently turbid and algae-dominated. However, with fewer carp uprooting vegetation and suspending nutrients, littoral waters can return to clear-water states dominated by submerged aquatic vegetation. Evidence suggests that this alternative stable state positively impacts the food web on many levels. Higher abundance and diversity of aquatic vegetation is related to higher abundance, diversity and growth rates of fish and waterfowl, because vegetation provides better refuge and spawning habitat. These factors, combined with reduced competition for macroinvertebrates and other food, explain why carp management can have indirect effects on many species.

Over 20 species of waterfowl that either breed or migrate through the area will benefit from this restoration. The area contains over 75 species of birds, has over 15 MCBS Sites of Biodiversity significance, and the lakes support over 20 species of fish. These restoration benefits are endorsed by the Minnesota Waterfowl Association and the US Fish and Wildlife Service. Specific species that will benefit include:

Harvested waterfowl: Mallards, Wood ducks, Ring-necked ducks, Blue-winged teals, Canada Goose, Trumpeter Swan, Tundra Swan, American Black Duck, Northern Shoveler, Ring-necked duck, Bufflehead, Common Goldeneye, Hooded Merganser, Common Merganser, Common Loon, Pied-billed Grebe, Pelicans, Great Blue Heron, Great Egret, Green Heron, and Lesser scaup.

Game and non-game fish: Largemouth bass, northern pike, walleye, muskellunge, yellow perch, bluegill, pumpkinseed, shiners, Iowa darter, brook silverside, johnny darter, minnows, white sucker, and black and white crappie.

Water-birds listed on the Minnesota DNR Species in Greatest Conservation Need: Northern pintail, American black duck, Lesser scaup, Trumpeter swan, Common loon, Western grebe, Horned grebe, Red-necked grebe, Eared grebe, Night heron, Franklin's gull, American white pelican, Upland sandpiper, White-rumped sandpiper, Semipalmated sandpiper, and Buff-breasted sandpiper.

Describe the science based planning and evaluation model used:

This program to manage common carp in SMCHB would be the largest, most robust carp management efforts ever conducted in the state. The foundation for this program is a three-year assessment conducted in partnership with the University of Minnesota AIS Research Center which evaluated carp abundance, recruitment patterns, and seasonal movement patterns in SMCHB. This pioneering

work and the resulting data, completed in 2017, has allowed the District to develop a well-timed, and targeted management approach with quantifiable goals.

SMCHB is an incredibly rich ecological system that has seen declining conditions due to over-abundant carp, and land use patterns that have substantially altered the hydrology, nutrient cycling, and ecology of the 2,900 acres of wetland, and its 14 lakes.

SMCHB subwatershed has 5,165 acres of nearly contiguous DNR-designated Regionally Significant Ecological Area that spans the watershed and 15 Minnesota Biological Survey Sites of Biodiversity significance. The 5,700 acre Carver Park Preserve provides habitat for over 75 species of birds and seven species of waterfowl nest in the area that would benefit from enhanced foraging activities once the carp population declines. The Subwatershed lies within the Mississippi flyway, a critical corridor for migratory waterfowl. SMCHB provides all this ecological benefit and value within 25 miles of downtown Minneapolis, making its restoration of preservation that much more critical to support the overall ecological value with the metro region and provide habitat for species negatively impacted by urbanization.

The carp management program leverages restoration work completed by the District and additional restoration to come in subsequent phases of the SMCHB habitat restoration. In 2013 MCWD restored 209 acres of prairie adjacent to Six Mile Marsh within a regionally significant ecological corridor. MCWD is currently restoring a 20 acre wetland complex situated between two MBS sites of biodiversity significance that will enhance the vegetative diversity of the site, providing improved habitat in an area of rapid urbanization. MCWD will continue to strategically implement targeted restorations like these to enhance the impact of the in-lake management approach.

Which sections of the Minnesota Statewide Conservation and Preservation Plan are applicable to this program:

- H4 Restore and protect shallow lakes
- H6 Protect and restore critical in-water habitat of lakes and streams

Which other plans are addressed in this program:

- Long Range Plan for Fisheries Management
- Managing Minnesota's Shallow Lakes for Waterfowl and Wildlife

Which LSOHC section priorities are addressed in this program:

Metro / Urban:

- Protect, enhance, and restore riparian and littoral habitats on lakes to benefit game and nongame fish species

Relationship to other funds:

- Environmental and Natural Resource Trust Fund
- Clean Water Fund

Describe the relationship of the funds:

MCWD has historically been successful leveraging Clean Water Funds for the implementation of water quality implementation projects. However, the targeted benefits of the broader SMCHB restoration strategy are not limited to only to water quality improvement. While Clean Water Funds can be leveraged for implementation elements that will enhance the overall restoration impact, this management program specifically targets habitat restoration that would not typically be funded by the Clean Water Fund.

MCWD intends to seek funding from the Environmental and Natural Resource Trust Fund for future phases of this restoration strategy, potentially including the wetland restoration program phase.

How does this program include leverage in funds or other effort to supplement any OHF appropriation:

MCWD just completed a half-million dollar investment with the University of Minnesota to provide a scientific assessment of common carp in this geography. Those funds were all provided by the District's local levy. Additionally, the District will invest in the necessary monitoring equipment to implement this project, and maintain the project long-term. District will provide in-kind staff time during the duration of the project to complete most tasks, reducing funds needed from OHF .

Carp management is part of a larger strategy to restore aquatic and terrestrial habitat, create protected and enhanced wetland and

upland corridors, and address historic legacy of development and farming practices on SMCHB water resources. The District has conducted several strategic implementation activities to meet these goals including a 209 acre prairie restoration adjacent to Six Mile Creek and a 20 acre wetland restoration between two MCBS designates sites of biodiversity significance.

Several of the longer term restoration strategies including subsequent phases of in-lake restoration and management of flow-throw wetlands are dependent upon carp management being complete, at which time the district will seek to leverage additional State and Regional funding sources as well as continue to implement using levy and local match.

Per MS 97A.056, Subd. 24, Any state agency or organization requesting a direct appropriation from the OHF must inform the LSOHC at the time of the request for funding is made, whether the request is supplanting or is a substitution for any previous funding that was not from a legacy fund and was used for the same purpose:

It is not.

Describe the source and amount of non-OHF money spent for this work in the past:

Appropriation Year	Source	Amount
2014-2015	MCWD Tax Levy	181,386
2015-2016	MCWD Tax Levy	165,649
2016-2017	MCWD Tax Levy	186,355

How will you sustain and/or maintain this work after the Outdoor Heritage Funds are expended:

The Minnehaha Creek Watershed District (MCWD) is a permanent governmental entity created by state statute and operates under a series of 10-year plans that are approved by MNBWSR. SMCHB is an established priority of the next 10-year plan, which will include an extensive investment strategy to implement carp management and subsequent phases of the habitat restoration program.

The MCWD relies on multiple funding sources including a local levy as well as public and private partnerships, including LSOHC. The District has the commitment and funding sources necessary to maintain existing and future natural resource enhancement projects.

MCWD is committed to utilizing its staff and expertise to maintain the results of this aggressive management approach into perpetuity. The District operates an Aquatic Invasive Species Program, whose top priority is to manage high impact AIS, such as common carp, in prioritized geographies of the District. MCWD will monitor the system post-project to identify and respond to any unanticipated recruitment events.

MCWD has a robust operations and maintenance program for its physical infrastructure and the maintenance of the aeration and barrier facilities will be rolled into that program, except where another agency has agreed to maintain infrastructure within their jurisdiction.

Explain the things you will do in the future to maintain project outcomes:

Year	Source of Funds	Step 1	Step 2	Step 3
2021 and beyond	MCWD Tax Levy	Maintain aeration units and barriers	Monitor for carp recruitment and gather carp population estimates	engage in carp removal if carp recruitment occurs or if populations exceed 100 kg/ha

Activity Details:

If funded, this program will meet all applicable criteria set forth in MS 97A.056 - **Yes**

Will there be planting of corn or any crop on OHF land purchased or restored in this program - **No**

Will restoration and enhancement work follow best management practices including MS 84.973 Pollinator Habitat Program - **Yes**

Is the activity on permanently protected land per 97A.056, subd 13(f), tribal lands, and/or public waters per MS 103G.005, Subd. 15 - **Yes (Public Waters)**

Accomplishment Timeline:

Activity	Approximate Date Completed
Run electric for aeration units	September 2018
Install aeration units	November 2018
Install permeable berm at outlet of Crown College Pond	September 2018
Install weir and stilling well between North and South Lundsten	September 2019
Replace barrier at Zumbra outlet	September 2018
Install barrier/fish-trap between Mud Lake and Halsted Bay	September 2018
Install barrier at Wassermann outlet	September 2018
Box-net trapping	June 2021
Winter/open-water seining	March 2021
Carp trapping in stream channels	June 2021
Evaluation and effectiveness monitoring	Ongoing - MCWD

Date of Final Report Submission: 11/1/2023

Federal Funding:

Do you anticipate federal funds as a match for this program - **No**

Outcomes:

Programs in metropolitan urbanizing region:

- Improved aquatic habitat indicators *2,488 acres of habitat for fish and wildlife will be restored across 14 connected lakes. Aquatic vegetation will be restored, providing improved conditions that will benefit fish and waterfowl. The macroinvertebrate community will rebound, restoring the food source for waterfowl and many fish species. Evaluating changes in the aquatic plant community will occur by using the DNR's FQI, among other metrics. Fish and macroinvertebrate communities are predicted to improve based on increases in aquatic vegetation. The DNR's Fish IBI will be completed after carp management goals have been met, and can be compared to previously collected data.*

Budget Spreadsheet

Budget reallocations up to 10% do not require an amendment to the Accomplishment Plan

How will this program accommodate the reduced appropriation recoomendation from the original proposed requested amount

Both increasing match and decreasing budget. Primary changes (>$10K):
-MCWD will purchase aeration units ($22,000)
-Reduced funding for carp removal will require increased efficiency of seining ($96,000 reduction)
-All other supplies/maintenance shifted to District ($60,000)
-Elimination of annual rapid response fund ($40,000)

Total Amount of Request: $ 567000

Budget and Cash Leverage

Budget Name	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Personnel	$0	$269,400	MCWD Levy, MCWD Levy, MCWD Levy, USFWS	$269,400
Contracts	$424,000	$3,000	MCWD Levy	$427,000
Fee Acquisition w/ PILT	$0	$0		$0
Fee Acquisition w/o PILT	$0	$0		$0
Easement Acquisition	$0	$0		$0
Easement Stewardship	$0	$0		$0
Travel	$0	$0		$0
Professional Services	$0	$6,000	MCWD Levy	$6,000
Direct Support Services	$0	$0		$0
DNR Land Acquisition Costs	$0	$0		$0
Capital Equipment	$143,000	$22,000	MCWD Levy	$165,000
Other Equipment/Tools	$0	$93,800	MCWD Levy	$93,800
Supplies/Materials	$0	$50,000	MCWD Levy	$50,000
DNR IDP	$0	$0		$0
Total	$567,000	$444,200		$1,011,200

Personnel

Position	FTE	Over # of years	LSOHC Request	Anticipated Leverage	Leverage Source	Total
MCWD Position 1	0.60	4.00	$0	$151,900	MCWD Levy	$151,900
MCWD Position 2	0.50	4.00	$0	$72,200	MCWD Levy	$72,200
MCWD Position 3	0.30	4.00	$0	$43,300	MCWD Levy	$43,300
USFWS technical assistance	0.00	1.00	$0	$2,000	USFWS	$2,000
Total	1.40	13.00	$0	$269,400		$269,400

Capital Equipment

Item Name	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Permeable Berm (Crown College Pond)	$20,000	$0		$20,000
Fish Barrier/Fish Trap (Mud to Halsted Bay)	$75,000	$0		$75,000
Stilling Well and Weir (North and South Lundsten)	$30,000	$0		$30,000
Semi-Permanent Barrier (Wassermann)	$18,000	$0		$18,000
Aeration Units	$0	$22,000	MCWD Levy	$22,000
Total	$143,000	$22,000		$165,000

Amount of Request:	$567,000
Amount of Leverage:	$444,200
Leverage as a percent of the Request:	78.34%
DSS + Personnel:	$0
As a % of the total request:	0.00%

Does the amount in the contract line include R/E work?

The contract line amount going directly to R/E work is the amount dedicated to contracts for carp removal, which totals $324,000, or 76% of the total request for contract services.

Describe and explain leverage source and confirmation of funds:

The leverage will be primarily met through the District's ad valorem tax levy. All equipment costs will be leverage in Year 1 and be available in 2018. The personnel costs will use existing full time staff positions, so additional board approvals are not required.

Output Tables

Table 1a. Acres by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	0	0	0	2,488	2,488
Protect in Fee with State PILT Liability	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0
Protect in Easement	0	0	0	0	0
Enhance	0	0	0	0	0
Total	0	0	0	2,488	2,488

Table 2. Total Funding by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	$0	$0	$0	$567,000	$567,000
Protect in Fee with State PILT Liability	$0	$0	$0	$0	$0
Protect in Fee W/O State PILT Liability	$0	$0	$0	$0	$0
Protect in Easement	$0	$0	$0	$0	$0
Enhance	$0	$0	$0	$0	$0
Total	$0	$0	$0	$567,000	$567,000

Table 3. Acres within each Ecological Section

Type	Metro Urban	Forest Prairie	SE Forest	Prairie	N Forest	Total
Restore	2,488	0	0	0	0	2,488
Protect in Fee with State PILT Liability	0	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0	0
Protect in Easement	0	0	0	0	0	0
Enhance	0	0	0	0	0	0
Total	2,488	0	0	0	0	2,488

Table 4. Total Funding within each Ecological Section

Type	Metro Urban	Forest Prairie	SE Forest	Prairie	N Forest	Total
Restore	$567,000	$0	$0	$0	$0	$567,000
Protect in Fee with State PILT Liability	$0	$0	$0	$0	$0	$0
Protect in Fee W/O State PILT Liability	$0	$0	$0	$0	$0	$0
Protect in Easement	$0	$0	$0	$0	$0	$0
Enhance	$0	$0	$0	$0	$0	$0
Total	$567,000	$0	$0	$0	$0	$567,000

Table 5. Average Cost per Acre by Resource Type

Type	Wetlands	Prairies	Forest	Habitats
Restore	$0	$0	$0	$228
Protect in Fee with State PILT Liability	$0	$0	$0	$0
Protect in Fee W/O State PILT Liability	$0	$0	$0	$0
Protect in Easement	$0	$0	$0	$0
Enhance	$0	$0	$0	$0

Table 6. Average Cost per Acre by Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest
Restore	$228	$0	$0	$0	$0
Protect in Fee with State PILT Liability	$0	$0	$0	$0	$0
Protect in Fee W/O State PILT Liability	$0	$0	$0	$0	$0
Protect in Easement	$0	$0	$0	$0	$0
Enhance	$0	$0	$0	$0	$0

Target Lake/Stream/River Feet or Miles

3.89 square miles

Parcel List

For restoration and enhancement programs ONLY: Managers may add, delete, and substitute projects on this parcel list based upon need, readiness, cost, opportunity, and/or urgency so long as the substitute parcel/project forwards the constitutional objectives of this program in the Project Scope table of this accomplishment plan. The final accomplishment plan report will include the final parcel list.

Section 1 - Restore / Enhance Parcel List

Carver

Name	TRDS	Acres	Est Cost	Existing Protection?
10	11624203	0	$0	
11	11624204	0	$0	
12	11624201	0	$0	
13	11624207	0	$0	
14	11624208	0	$0	
15	11624211	0	$0	
16	11624212	0	$0	
17	11624209	0	$0	
18	11624210	0	$0	
19	11624213	0	$0	
20	11624216	0	$0	
21	11624215	0	$0	
22	11624214	0	$0	
23	11624217	0	$0	
24	11624221	0	$0	
25	11624223	0	$0	
26	11624222	0	$0	
27	11624226	0	$0	
28	11624227	0	$0	
29	11624228	0	$0	
7	11624206	0	$0	
8	11624205	0	$0	
9	11624202	0	$0	

Hennepin

Name	TRDS	Acres	Est Cost	Existing Protection?
1	11724228	0	$0	
2	11724227	0	$0	
3	11724234	0	$0	
4	11724233	0	$0	
5	11724232	0	$0	
6	11724235	0	$0	

Section 2 - Protect Parcel List

No parcels with an activity type protect.

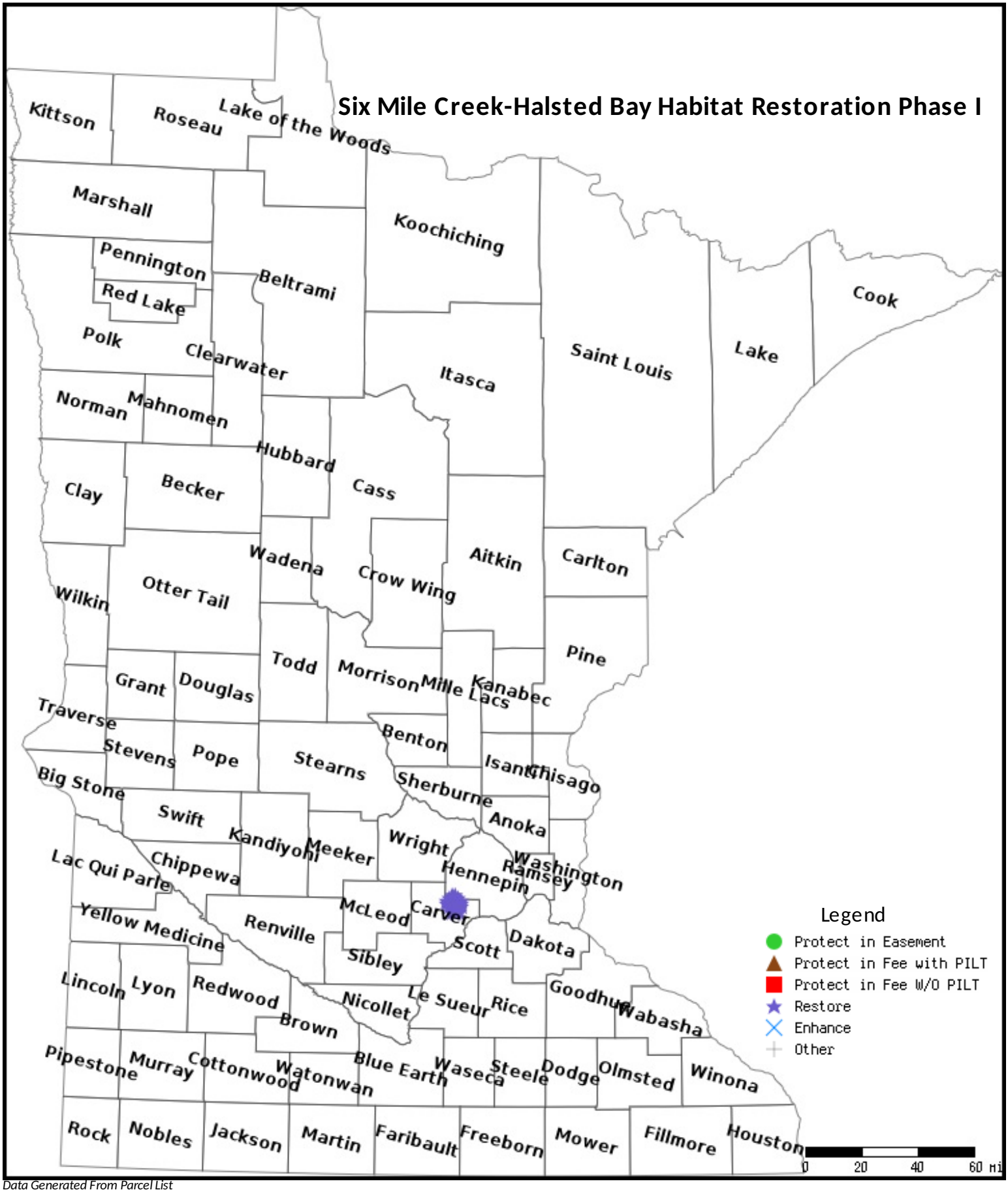
Section 2a - Protect Parcel with Bldgs

No parcels with an activity type protect and has buildings.

Section 3 - Other Parcel Activity

No parcels with an other activity type.

Parcel Map



Data Generated From Parcel List

All restoration is on public waters

Lessard-Sams Outdoor Heritage Council
Comparison Report

Program Title: 2018 - Six Mile Creek-Halsted Bay Habitat Restoration Phase I
Organization: Minnehaha Creek Watershed District
Manager: Anna Brown

Budget

Requested Amount: $795,000
Appropriated Amount: $567,000
Percentage: 71.32%

	Total Requested		Total Appropriated		Percentage of Request	
Budget Item	LSOHC Request	Anticipated Leverage	Appropriated Amount	Anticipated Leverage	Percentage of Request	Percentage of Leverage
Personnel	$0	$269,400	$0	$269,400	-	100.00%
Contracts	$568,000	$0	$424,000	$3,000	74.65%	-
Fee Acquisition w/ PILT	$0	$0	$0	$0	-	-
Fee Acquisition w/o PILT	$0	$0	$0	$0	-	-
Easement Acquisition	$0	$0	$0	$0	-	-
Easement Stewardship	$0	$0	$0	$0	-	-
Travel	$0	$0	$0	$0	-	-
Professional Services	$0	$0	$0	$6,000	-	-
Direct Support Services	$0	$0	$0	$0	-	-
DNR Land Acquisition Costs	$0	$0	$0	$0	-	-
Capital Equipment	$167,000	$0	$143,000	$22,000	85.63%	-
Other Equipment/Tools	$0	$91,300	$0	$93,800	-	102.74%
Supplies/Materials	$60,000	$0	$0	$50,000	0.00%	-
DNR IDP	$0	$0	$0	$0	-	-
Total	$795,000	$360,700	$567,000	$444,200	71.32%	123.15%

How will this program accommodate the reduced appropriation recommendation from the original proposed requested amount?

Both increasing match and decreasing budget. Primary changes (>$10K):
-MCWD will purchase aeration units ($22,000)
-Reduced funding for carp removal will require increased efficiency of seining ($96,000 reduction)
-All other supplies/maintenance shifted to District ($60,000)
-Elimination of annual rapid response fund ($40,000)

Output

Table 1a. Acres by Resource Type

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	2,488	2,488	100.00%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	0	-

Table 2. Total Funding by Resource Type

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	795,000	567,000	71.32%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	0	-

Table 3. Acres within each Ecological Section

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	2,488	2,488	100.00%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	0	-

Table 4. Total Funding within each Ecological Section

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	795,000	567,000	71.32%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	0	