

Minnehaha Creek Watershed District

2015 Work Plan Summary

Date: June 5, 2014

**Department/Activity: Hydrological Data Monitoring and Research/
Lake Nokomis Biomanipulation Project- Part II**

The 2015 work plan before the Operations and Programs Committee proposes to establish a 10 year (\$12,700/year) fish stocking program for Lake Nokomis, in partnership with the Minneapolis Park and Recreation Board (MPRB). The money budgeted for expenditure in fiscal year 2014 is planned to fund the final report and publication of the Lake Nokomis Biomanipulation Project.

Biomanipulation on Lake Nokomis has previously aided the lake in temporarily achieving Total Maximum Daily Load (TMDLs) goals, which also align with the MPCA’s nutrient criteria for the lake. Most biomanipulation programs fail, because they are not actively maintained. Therefore, Blue Water Science, staff at MPRB and staff at Minnehaha Creek Watershed District feel strongly that continued annual management activities will have to be conducted to meet and sustain in-lake nutrient goals.

Consequently, the 2015 work plan is proposing a 10 year walleye stocking program that is anticipated to manage lake ecology, such that Lake Nokomis will meet state water quality standards.

The MPRB is currently seeking, with MCWD support, Outdoor Heritage funds for the first five years of stocking. Should this grant be awarded, MCWD may fund the final five years, and/or participate in reporting and publication. In the event the MPRB does not receive funding, MCWD may choose to fund on an annual basis, the entire 10 year program. These options are delineated in the attached workplan.

In order to preserve program flexibility while grants are being pursued, staff is recommending \$12,700 be budgeted and levied, to establish one year of funding for Lake Nokomis fish stocking and reporting.

Financial Implications

	<u>2014</u>	<u>2015</u>
Nokomis-Part II fund budget proposed for the work plan:	\$ 3,700	\$ 12,700
Nokomis-Part II fund tax levy	\$ 0	\$ 12,700

Minnehaha Creek Watershed District
2015 LAKE NOKOMIS BIOMANIPULATION – PART II: WALLEYE STOCKING PROGRAM WORK PLAN

PREPARED BY: Kelly Dooley

DATE: June 5, 2014

<u>Project</u>	Implementing 1 st year of a 10 Year-Walleye Stocking Program to Improve Lake Nokomis Water Quality (Part II of the Lake Nokomis Biomanipulation Study) (3101-500-4320)
<u>Description</u>	In 2013, the last year of biomanipulation was performed on Lake Nokomis. The water quality in Lake Nokomis met the nutrient criteria set by the MPCA in two of the four years (2011-2012), but was not sustained. In 2015, annual walleye stocking is proposed to help improve and then maintain the water quality in Lake Nokomis to meet the TMDLs goals.
<u>Location</u>	Lake Nokomis, City of Minneapolis, Minnehaha Creek Watershed District
<u>Program Element(s)</u>	<p>Biomanipulation has been performed on numerous lakes with varying degrees of success. Some lakes had improvements in water quality and macrophyte communities after the biomanipulation treatment, while other lakes only saw improvements in the fish community.</p> <p>In 2010, the Watershed District and Blue Water Science with cooperation from the Minnesota Department of Natural Resources (DNR) and Minneapolis Parks and Recreation Board (MPRB), embarked on a 4 year biomanipulation study to improve the water quality in Lake Nokomis. The objectives of the study were in Lake Nokomis (1) to reduce the black bullhead population, (2) to increase the game fish (i.e., walleyes) in the lake by stocking, (3) increase native aquatic plants to 40% of the lake area, and (4) to meet the Minnesota Pollution Control Agency's (MPCA) nutrient criteria.</p> <p>During those 4 years at Lake Nokomis, the results focus on three features of the lake ecosystem: (1) the fish community (2) the aquatic plant community, and (3) the water quality. 4410 lbs of black bullheads were removed to decrease sediment feeding and hence the release of phosphorus into the water column. The fish surveys showed black bullhead population declined from 5.7 fish/trapnet to 0.5 fish/trapnet. 4623 lbs of walleye were stocked to control the bluegills, yellow perch and remaining black bullheads populations. The fish surveys showed that the blue gills numbers declined from 474 fish/trapnet to 46 fish/trapnet, and that their body size of the blue gill population increased over the course of the study. The results indicate that the walleyes were managing the blue gill population. The walleye population; however, was not sustainable near the end of the study, most likely due to angler pressure.</p> <p>The aquatic plant community in Lake Nokomis was composed of only 3 plants at the beginning of the study, but by 2013, there were 8 species established. The</p>

coverage of aquatic plants also changed throughout the study, the coverage increased slightly from 12 acres to 22 acres of the 100 acre littoral zone.

The water quality in Lake Nokomis met the nutrient criteria set by the MPCA in two of the four years (2011-2012), but was not sustained. If the aquatic plant community had established faster within the four years, it is hypothesized that improvements in water quality that met the MPCA's nutrient criteria would have been maintained.

Biomanipulation on Lake Nokomis has aided the lake in temporarily achieving Total Maximum Daily Load (TMDLs) goals, which also align with the MPCA's nutrient criteria for the lake. Blue Water Science, staff at MPRB and staff at Minnehaha Creek Watershed District feel strongly that continued annual management activities will have to be conducted to meet and sustain the TMDL goals. Most biomanipulation programs fail, because they are not actively maintained. Staff and partners propose a 10-year walleye stocking program to thoroughly test the concept above.

There are 3 funding options below:

Option 1: Minnehaha Creek Watershed District will fund the entire costs of the 10 Year Stocking and Reporting program. In addition to the walleye stocking, seasonal water quality monitoring and annual fish and plant surveys will be conducted to monitor the success improving the water quality on Lake Nokomis.

Currently the DNR's plan has been to stock every other year in Lake Nokomis. This may result in MCWD stocking walleye during the DNR's off years, which could reduce costs. Since MCWD staff do not want to rely solely on the DNR's plans, staff will budget for stocking the entire 10 years.

Option 2: MPRB will be applying for a Lessard-Sams Outdoor Heritage grant that focuses on Lake Nokomis improvement projects (i.e., shoreline restoration and in-lake habitat restoration, and walleye stocking program). The grant funds will cover the five years of the walleye stocking program. The Watershed District will cover the reporting costs of the 5 year stocking program. The stocking and reporting program ends after the 5th year.

Option 3: MPRB will be applying for a Lessard-Sams Outdoor Heritage grant that focuses on Lake Nokomis improvement projects (i.e., shoreline restoration and in-lake habitat restoration, and walleye stocking program). The grant funds will cover the five years of the walleye stocking program. After the first 5 years, the Watershed District will cover final 5 years in stocking and the entire 10 years in reporting costs of the program.

Budget Total:

Option 1	
10 Year Stocking and Reporting Program (Years: 2015-2025)	
Walleye Stocking (10 years)	\$54,000
Annual Fish Survey (10 years)	\$35,000
Annual Point-Intercept Plant Survey (10 years)	\$20,000
Report and Publication (9 annual reports, 1 final report and publication)	\$18,000
Total Cost:	\$127,000
Option 2	
5 Year Reporting Only Program (Years: 2015-2020)	
Evaluation Reports and Publication (4 annual reports and 1 final report and publication) <i>(Note: Evaluation reports costs are not covered in the grant funds)</i>	\$9,000
Total Cost:	\$9,000
Option 3	
Final 5 Year Stocking (Years: 2020-2025) and 10 Year Reporting Program (Years: 2015-2025)	
Walleye Stocking (5 years)	\$27,000
Annual Fish Survey (5 years)	\$17,500
Annual Point-Intercept Plant Survey (5 years)	\$10,000
Evaluation Reports and Publication (9 annual reports (2015-2025) and 1 final report and publication) <i>(Note: Evaluation report costs are not covered in the grant funds)</i>	\$18,000
Total Cost:	\$72,500

This is a cost effective water quality improvement approach that also enhances shoreline and wildlife habitat. At this time, based on the TMDL plan for Lake Nokomis, there are no projects that are less expensive to get the lake off the impaired waters list. The long term biomanipulation approach could be very cost-effective, if it works, and would be applicable to other lakes in Minnehaha Creek Watershed District.

To preserve program flexibility until grant funding is finalized, staff recommends for budgeting purposes **Option 1**. If the Lessard-Sams Outdoor Heritage Council decides to fund the Lake Nokomis Improvement Project, the District would be able to roll over the budgeted funds during the first 5 years of the walleye stocking program.

Outcome

Determine if annual walleye stocking in Lake Nokomis will be a cost effective approach to meeting the TMDL goals for the lake.

Schedule**2015**

January - March: Planning for the **Option 1 project activities** for 2015.

April - October: Contracting and completing the 1st year post-biomanipulation of walleye stocking. Contracting and completing the 1st year post-biomanipulation of aquatic plant and fish surveys.

October - December: Preparing the summary of the 2015 project activities.

Budget/Levy History:

<u>Year</u>	<u>Budget</u>	<u>Grants & Other</u>		<u>Transfer In (out)</u>	<u>Carryover</u>
		<u>Tax Revenue</u>	<u>Revenues</u>		
2007					\$ 232,815
2008	\$ 0			(\$ 3,568)	\$ 229,247
2009	\$ 0			(\$ 7,293)	\$ 221,954
2010	\$20,000			(\$ 366)	\$ 221,588
2011	\$20,000			(\$ 24,211)	\$ 199,377
2012	\$15,000			(\$114,808)	\$ 82,569
2013	\$20,000			(\$ 15,050) (\$63,819)	\$ 3,700
2014	\$ 3,700			(\$ 3,700)	\$ 0
2015	\$12,700				

Recommended 2015 Budget and Levy

Budget: \$ 12,700
 Levy: \$ 12,700

Detailed Budget:

<u>Budget</u>		
	Implementing 1st year of 10 Year-Walleye Stocking Program to Improve Lake Nokomis Water Quality (XXXX-500-4320)	
	Contracted Services (4320)	12,700
	Survey/Data Collection	
	Engineering/Consulting	
	Equipment/Supplies	
	Meetings/Seminars	
	Maintenance Plan Dev.	
	Legal	
	Other/Miscellaneous	
	sub-total	12,700
	Total=	12,700