

Minnehaha Creek Watershed District

2015 Work Plan Summary

Date: June 5, 2014

Department/Activity: Hydrological Data Monitoring and Research/Program Work Plan

The 2015 work plan for the Hydrodata Department will be continuing many of the same activities as in 2014, and will implement the second year of the Ecosystem Evaluation Program (EEP).

Carryover from 2013 plus the 2014 levy funded the 2014 implementation of the Hydrodata Program and the first year of the EEP Program.

Funding for the second year of EEP is budgeted in the 2015 work plan. This work plan's proposed activities would be funded entirely by the District's ad valorem levy. See below and attached workplan for details.

Highlights of Notable Changes for 2015:

- Ecosystem Evaluation Program +\$ 156,000
- Monitoring Contingency +\$ 50,000
- Water Quality Technician Salary and Benefits +\$ 55,000

Financial Implications

	<u>2014</u>	<u>2015</u>
Hydrodata Fund budget proposed for the work plan:	\$ 328,358	\$ 587,753
Hydrodata Fund tax levy:	\$ 328,358	\$ 587,753

Minnehaha Creek Watershed District

2015 HYDROLOGICAL DATA MONITORING AND RESEARCH DEPARTMENT PROJECT/PROGRAM WORK PLAN

PREPARED BY: Yvette Christianson, Kelly Dooley and Kailey Kreatz

DATE: May 1, 2014

<u>Project</u>	Hydrological Data Monitoring and Ecosystem Evaluation (2201)
<u>Description</u>	<p>One of the main functions of the MCWD is to protect and improve the water quality of the water resources within the District. In order to gauge the effectiveness of the regulatory program, provide data for watershed planning, and to monitor the performance of capital projects that are designed to improve and protect water quality, the district has conducted a regular program of monitoring the lakes and streams since 1968. The hydrological data monitoring and research department is responsible for carrying out hydraulic and water quality monitoring throughout the district.</p> <p>In 2011-2012, the Hydrodata Department underwent a Gap Analysis exercise determine which goals in the District's Comprehensive Water Resource Management Plan (WRMP) were not being met. The results indicated that there were three major WRMP goals not being satisfied by the Hydrodata Department: (1) No statistical analysis had been conducted on the routine lakes and stream data, (2) No macroinvertebrate monitoring was being conducted in the District's streams on a routine basis, (3) No Water Quality Index was being developed. Staff recommended implementing projects/tasks to complete the major WRMP goals and the Hydrodata Committee approved.</p> <p>Beginning in 2013, water quality staff contracted with HDR to conduct statistical analysis on the District's lake data to complete goal #1. Staff also contracted with RMB Environmental Laboratories and University of Minnesota to conduct and analyze macroinvertebrates on 8 of the District's streams to complete goal #2. The number of lakes monitored for vegetation and bathymetric mapping was also increased in 2013 by staff. The addition of biological and physical parameters to the Program are proposed to provide a more comprehensive understanding of the District's water resources, how multiple stressors interact to create impairments, and opportunities for improvements.</p> <p>As WRMP goals #1 and #2 were underway, water quality staff worked throughout 2013 on constructing a water quality index or new grading system to bring to the Board for approval to complete goal #3. After extensive research and meetings with staff and the Program and Planning Committee, staff joined forces with Joe Bischoff, Wenck Associates, Inc., who had presented the Board of Managers an ecosystem based approach for watershed management in 2011. From this collaboration, the Ecosystem Evaluation Program was born. Mr. Bischoff assisted staff with the original scope of work and an estimated timeline and budget for the program.</p> <p>The Ecosystem Evaluation Program's purpose is to develop a watershed ecosystem management evaluation tool to assess watershed conditions on a graded scale, identify target areas that need improvement or protection, and develop management strategies to</p>

	<p>protect and improve water resources. The objective of the program is to develop a scientifically defensible watershed wide ecosystem evaluation/grading tool for metrics in the following features: Deep and Shallow Lakes, Streams, Wetlands, Terrestrial Habitat, Groundwater, and Precipitation and Hydrology. The scoring of the metrics will be develop using literature research and stressor responses and using indexes that are already available (i.e., macroinvertebrate and fish Index for Biological Integrity (IBI)).</p> <p>The results from the scored metrics will lead to increased collaboration among departments in the following ways: developing management and protection strategies, feasibility studies, rule revisions, and plan development; communicating to the public and other stakeholders the watershed's key resources and ecosystem complexity; and implementation of new monitoring plans to fill in the data gaps. All of which can be used in the development of the 2017 MCWD Comprehensive Water Resources Management Plan.</p> <p>In 2014, the Board of Managers approved the first year of the Ecosystem Evaluation Program, which is a 4 year program. Staff is recommended funding the 2nd year of the Ecosystem Evaluation Program in 2015.</p>
<u>Location</u>	Watershed Wide
<u>Program Element</u>	<p><u>WATER QUALITY MONITORING</u></p> <p>Stream Flow and Water Quality Monitoring: Weekly monitoring stream flow and water quality at 11 sites on the Minnehaha Creek and 38 sites on the creeks in the upper watershed. Chloride sampling at 46 sites.</p> <p>Stream Storm Water Monitoring: There are currently two sites on Minnehaha Creek that are equipped with automated ISCO samplers for storm sampling (I-494 and Browndale Ave) and three site on Six Mile Creek.</p> <p>Lake Water Quality Monitoring: Monthly water quality monitoring for 21 sites on Lake Minnetonka, 11 upper watershed lakes, and 16 canoe lakes (Minnehaha Creek Subwatershed and Six Mile Marsh Subwatershed). Biweekly monitoring will continue to Lake Minnetonka (Halsted and Jennings Bay) and Parley Lake, Wassermann Lake and Lake Virginia. The two year rotation for bottom samples begins again on Lake Minnetonka sites and the upper watershed lakes.</p> <p>MCWD Volunteer Monitoring Program: Recruit, train and manage new and current volunteers interested in monthly lake and/or precipitation monitoring throughout the District. Staff plan to manage up to 14 lake and 6 precipitation volunteers.</p> <p><u>BIOLOGICAL MONITORING</u></p> <p><i>E. coli</i> Analysis: <i>E. coli</i> sampling at 14 sites (10 sites on Minnehaha Creek, 1 site on Six Mile Creek, and 3 sites on Painter Creek).</p> <p>Aquatic Vegetation Surveys: Aquatic vegetation surveys may be conducted on 1 to 5 lakes in the Watershed District.</p>

Macroinvertebrate Monitoring: Biological monitoring of aquatic insects will be conducted on creeks in the following 5 subwatersheds: Christmas, Dutch, Gleason (new sites selected), Langdon, and Virginia.

WATER LEVEL MONITORING

Precipitation Monitoring: Operating and maintaining 7 precipitation gauge sites throughout the district.

Stream Gaging Stations: These stations monitor water level every 15 minutes collecting continuous data for modeling and loading purposes. There are three sites on Minnehaha Creek (Grays Bay, I-494, and Browndale), 3 sites on Six Mile Creek, 2 sites on Painters Creek, and 1 site on Long Lake. All these sites will be updated and maintained on a weekly basis to ensure quality data. Halsted Bay will also have a water level monitor that will also be updated and maintained on a weekly basis.

Telemetry Remote Data Access: Current sites on Minnehaha Creek (Grays Bay, I-494, and Browndale).

Lake Gauges Monitoring: Read and record 21 lake level gauges throughout the District and 2 outside the District. Every month the lake gauge data is sent to the DNR.

ADDITIONAL MONITORING

Bathymetric Mapping: Mapping the bottom of the district lakes. Maps will be accessible via the District's website for public use.

MCWD Weather Station: Operate and maintain a weather station at Minnetonka Yacht Club (MYC) building on Lighthouse Island, Lake Minnetonka.

USGS Operated Stream Flow Monitoring: Contract and manage the stream flow data collection at the Minnehaha Creek outlet at the Minnehaha Falls (\$12,200).

LONG TERM DATA TREND ANALYSIS

Statistical Analysis: The results from the Part 1 of the Statistical Analysis on the MCWD lakes have been implemented in the 2014 monitoring season. The number of monitoring sites on Lake Minnetonka were reduced from 27 to 21. The monitoring frequency was reduced from biweekly to monthly sampling events for the majority of sites on Lake Minnetonka sites as well as the upper watershed lakes. The long-term trend analysis results for the lakes have been shared with the Planning Department and have influenced our monitoring program in 2014. Lakes that showed degrading water quality were kept on a biweekly monitoring schedule (i.e., Halsteds, Jennings, and Lake Virginia). Part 1 - Statistical Analysis Report also recommended additional analyses on the lakes (i.e., Halsteds, Jennings and Stubbs Bays) which are currently being conducted. No statistical analyses are planned in 2015.

MONITORING, DATA AND LABORATORY ANALYSIS COSTS

Minnehaha Creek	\$9,052
Upper Watershed Creeks	\$27,005
Lake Minnetonka	\$9,193
Upper Watershed Lakes	\$5,478
Canoe Lakes	\$3,480
Volunteer Monitoring	\$3,080
Wet Weather Contingency	\$15,000
<i>E. coli</i> Analysis	\$8,925
Aquatic Vegetation Surveys	\$10,000
Aquatic Macroinvertebrate Surveys	\$11,040
Bathymetric Mapping	\$5,000
USGS Operated Stream Flow Monitoring	\$12,200
Statistical Analysis	\$0
Total	\$ 119,453

Equipment/Supplies: New equipment and supplies to maintain monitoring program.

Repair/Maintenance: Equipment repair and/or replacement costs. Also, routine maintenance and repairs to monitoring field vehicles, boats, canoes and trailers.

Equipment/Supplies	\$44,300
Repair/Maintenance	\$33,000
Total	\$77,300

ECOSYSTEM EVALUATION PROGRAM

The Program’s purpose is to develop a watershed ecosystem management evaluation tool to assess watershed conditions on a graded scale, identify target areas that need improvement or protection, and develop management strategies to protect and improve water resources. The watershed wide ecosystem evaluation/grading tool needs to be scientifically defensible for metrics in the following features: Deep and Shallow Lakes, Streams, Wetlands, Terrestrial Habitat, Groundwater, and Precipitation and Hydrology. The scoring of the metrics will be developed using literature research and stressor responses and using indexes that are already available. The test subwatersheds are Minnehaha Creek (region east of Hwy 100), Six Mile Marsh and Schutz Lake. Staff will be working with a consultant to complete the 2nd year of the 4 year program (**\$156,000**).

The second year of the Ecosystem Evaluation Program involves the following tasks:

- *Update datasets and Fill data gaps:* Deep/Shallow Lakes and Streams and Wetlands features
- *Follow up meetings with Partners and Consultants:* Streams and Wetlands feature
- *Develop Grade Break Point:* Deep/Shallow Lakes and Stream and Wetlands features
- *Test scoring system:* Deep/Shallow Lakes feature
- *Follow up meetings with Partners and Consultant:* Deep/Shallow Lakes feature
- *Finalize grading process and publish technical paper:* Deep/Shallow Lakes feature

The Ecosystem Evaluation Program throughout the first year will determine data gaps. As the first year is currently underway, the data gaps and the type of monitoring needed to complete those gaps in 2015 are still undefined. The Hydrodata Department budget may be able to cover the monitoring costs needed to complete the data gaps, but it may not. To cover those undefined monitoring costs in 2015, additional funds have been budgeted as a monitoring contingency (**\$50,000**).

Water Quality Technician Salary and Benefits: Based on the Ecosystem Evaluation Program and the need for the position, staff is requesting a 3 year contract for the Water Quality Technician position. The Water Quality Technician position will be incorporated into Springsted's Human Resources and Organizational documents for the District. The Water Quality Technician's responsibilities are training and scheduling existing and new FTEs, lead the management of the Volunteer Monitoring Program, manage the maintenance/repair/installation of equipment, and assist with data management and analysis. This allowed the Department Leads to focus on the development of the Ecosystem Evaluation Program, management of other projects, publications of recent District projects, reorganization of files, completion of department documentation, conduct quality assurance and quality control on the data, and write up the annual reports. Most of these responsibilities and more will extend beyond 2014 for the Department Leads, which creates the need for establishing the Water Quality Technician position on a permanent basis (**\$55,000**).

Department Name Change: With the addition of the Ecosystem Evaluation Program, staff will be bringing to the Board a request to change the Department's name from the Hydrological Data Monitoring and Research Department to the Monitoring and Evaluation Department.

TECHNOLOGY MAINTENANCE/UPGRADE

For staff to maintain and upgrade the water quality database. Interactive maps highlighting water quality issues (i.e., monitoring locations, lake grades, bathymetry, etc.) will be made to be used by all staff as well as the public. Staff also budgeted a portion of the record retention system (**\$50,000**).

Contracted Services:

Ecosystem Evaluation Program (Year 2)	\$156,000
EEP Monitoring Contingency	\$50,000
Water Quality Technician Salary/Benefits	\$55,000
Technology Maintenance/Upgrades	\$50,000
Engineering Contract Services	\$15,000
Consultants Contract Services	\$30,000
Legal Services	\$30,000
Total	\$386,000

Staff Training/Expenses: For staff to attend workshops, training and conferences for continuing education and career advancement (**\$5,000**).

Budget Total:

Monitoring/Data and Laboratory Analysis:	\$119,453
Equipment/Supplies:	\$44,300
Repair/Maintenance:	\$33,000
Contracted Services:	\$386,000
Staff Training/Expenses:	\$5,000
Total	\$587,753

Outcome

Annual monitoring and technical reports for the Minnehaha Creek Watershed District. Development of Ecosystem Evaluation Program.

Schedule

2015:

January - March: Complete the 2014 annual monitoring and technical reports; Prepare for field work, continue management of the Ecosystem Evaluation Program, and continue to work on any additional project management;

March - October: Monitoring streams and lakes; conducting macroinvertebrate and lake vegetation surveys, bathymetry, continue management of the Ecosystem Evaluation Program, and continue to work on any additional project management;

November - December: Data entry for annual monitoring and technical reports; monitoring streams for chloride; submittal of data to state agencies; and continue management of the Ecosystem Evaluation Program, and continue to work on any additional project management.

Monitoring and Evaluation Department Budget/Levy History:

Year	Budget	Revenue	Expenditures	Transfer In (out)	Carryover
2006	\$190,000	\$144,549	(\$181,226)	\$ 55,123	\$ 114,084
2007	\$190,465	\$144,827	(\$258,911)		\$ 84,032
2008	\$190,595	\$178,203	(\$157,265)		\$ 104,970
2009	\$195,534	\$173,834	(\$232,869)		\$ 45,935
2010	\$195,913	\$193,749	(\$144,950)		\$ 94,734
2011	\$206,440	\$206,440	(\$228,149)		\$ 117,645
2012	\$324,085	\$205,755	(\$143,295)		\$ 180,105
2013	\$305,711	\$304,607	(\$281,196)		\$ 203,516
2014	\$328,358	\$328,358	(\$531,874)		\$0
2015	\$587,753	\$587,753			

Recommended 2015 Budget and Levy

Budget: \$587,753
 Levy: \$587,753

Detailed Budget:

Budget	Monitoring and Evaluation Dept. (2201)	
	Contracted Services (4320)	341,000
	Engineering/Consulting (4340)	15,000
	Staff Tuition & Training (4065)	5,000
	Legal Fees (4350)	30,000
	Monitoring/Lab Analysis/Inventories (4520)	119,453
	Equipment, Supplies, Maintenance (4575)	77,300
	sub-total	587,753
	TOTAL	587,753