

Our Mission:

"To educate and provide opportunities for people of diverse interests to work together to improve the environmental, recreational, cultural, and economic resources of the Rock River Basin"



**Building a Robust Citizen Stream Monitoring Program
in the Yahara River Watershed
*Year 1 Final Report***

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Introduction

High levels of phosphorus and sediment which can lead to lower levels dissolved oxygen and degraded habitats threaten the health of streams and lakes throughout the Yahara River watershed (YRW). Of the approximately 580 stream miles within the Yahara River watershed, 14% are currently listed as “impaired” by the Wisconsin Department of Natural Resources (WDNR). These streams do not meet water quality standards established by the Clean Water Act Section 303(d). One of the main contributors of pollution is phosphorus.

There have been many efforts over the years to protect and promote clean water in the YRW. A promising new approach to improving water quality and meeting in-stream water quality standards for phosphorus is called adaptive management. AM allows point sources to work collaboratively with multiple entities within a watershed to meet regulatory requirements for phosphorus reduction in a cost-effective manner.

Within the Yahara River watershed, the Madison Metropolitan Sewerage District (MMSD) is working collaboratively with multiple partners -- both point and non-point sources -- to reduce phosphorus. Over 30 entities including Dane County, municipalities, businesses, farmers, individuals and not-for-profit organizations have joined this partnership called Yahara Watershed Improvement Network (Yahara WINs). Since 2012, Yahara WINs has focused efforts within a pilot project area. Partners are promoting a mix of phosphorus control practices.

Over a five year period the Yahara WINs partners will evaluate the associated phosphorus reductions by modeling as well as assessing in-stream water quality data. Both traditional in-stream water quality monitoring and edge-of field monitoring are integral to Yahara WINs as they determine whether to extend the adaptive management program beyond the pilot project area.

Because many of stream segments within the YRW lacked sufficient in-stream water quality data, the Rock River Coalition (RRC) put forth a proposal to fund an extensive network of citizen stream monitors that could augment existing stream monitoring stations established by the WDNR, MMSD and USGS. The RRC proposed program had three goals:

1. to include more stream segments within the overall water quality monitoring framework;
2. to build awareness of the threats to water quality in the Yahara River Watershed by hosting stream monitoring workshops and organizing stream monitoring volunteer opportunities; and
3. to strengthen networks among Yahara WINs partners and non-profit organizations actively engaged in water quality projects.

The RRC project proposed the following activities:

Activity #1: Establish ten (10) *Level 1* stream monitoring sites where volunteers were to collect monthly baseline water quality data.¹

Activity #2: Establish five (5) *Level 2* stream monitoring sites where volunteers were to collect monthly water quality trends data.²

Activity #3: Establish five (5) *Level 3* nutrient sampling sites where volunteers were to collect monthly water samples and deliver these samples to MMSD for analysis.

Activity #4: Host one workshop for non-profit organizations such as Friends groups to share information on stream water quality initiatives within the Yahara River Watershed.

Activity #5: Host three stream monitoring training workshops: one *Level 1* training; one *Level 2* training and one *Level 3* training.

Project Performance Against Project Timeline

In May 2013, the RRC submitted a three year citizen stream monitoring program to Yahara WINs. In April 2013, Yahara WINs agreed to fund Year 1 of this multi-year program with the understanding that the RRC could seek funding for Year 2 of the program at a future date. The Year 1 proposed budget was for the amount of \$20,005.60. Project activities began in April 2013 and ended in June 2014. All project activities were completed by June 2014, except the final report.

Project Performance Against Proposed Objectives

The RRC has accomplished all objectives set out in the grant proposal as well as additional objectives not included in the original proposal.

Activity #1: Establish ten (10) *Level 1* stream monitoring sites.

The RRC established **11** *Level 1* stream monitoring sites. These *Level 1* volunteer stream monitors entered their monthly data into a statewide water quality database hosted by the WAV Program.

¹ instantaneous dissolved oxygen and dissolved oxygen percent saturation (using a HACH chemistry kit); instantaneous water and air temperature (degrees Celsius) using a hand held thermometer, instantaneous clarity readings using a 120cm transparency tube; stream flow using methods developed by the Water Action Volunteers Program (WAV), and, Biotic Index score using methods developed by WAV.

² instantaneous dissolved oxygen and dissolved oxygen percent saturation using YSI DO meters; instantaneous water temperature (degrees Celsius) using YSI DO meters; continuous (hourly) water temperature (degrees Celsius) using a thermistor affixed to the bottom of the stream bed; and instantaneous clarity readings using a 120cm transparency tube.

Activity #2: Establish five (5) *Level 2* stream monitoring sites.

The RRC established **6** *Level 2* stream monitoring sites. These *Level 2* volunteer stream monitors entered their monthly data into a statewide water quality database hosted by the WDNR.

Activity #3: Establish five (5) *Level 3* nutrient sampling sites.

The RRC established **7** *Level 3* nutrient sampling sites.

Activity #4: Host one workshop.

The RRC organized two gatherings.

The RRC collaborated with Dane County Office of Lakes and Watersheds, the Water Action Volunteers Program and the River Alliance to host a network gathering meeting for non-profit organizations working in the YRW.

The RRC also organized a conference for volunteer stream and lake monitors as well as members of various *Friends* groups working in the Yahara River watershed. The conference allowed volunteers and other participants to exchange ideas and learn about water quality monitoring as well as efforts to protect water quality.

Activity #5: Host three stream monitoring training workshops.

The RRC organized three stream monitoring training workshops in which 27 residents of the Yahara River watershed participated. The RRC also provided on-line and face-to-face support for volunteers throughout the monitoring season.

Volunteer Contributions to Project Success

This project was powered by volunteers. Volunteers contributed approximately 500 volunteer hours thereby ensuring the success of this project. Table #1 provides a breakdown of estimated volunteer hours.

Table #1: Estimated Contribution By Volunteer	
# Sites Monitored by Volunteers	Estimated Volunteer Hours
11 <i>Level 1</i> Stream Monitoring Sites ^a	330 volunteer hours
6 <i>Level 2</i> Stream Monitoring Sites ^b	54 volunteer hours
7 <i>Level 3</i> Nutrient Sampling Sites ^c	84 volunteer hours
4 <i>Level 3</i> Nutrient Sampling Sites ^d	32 volunteer hours
Total Volunteer Hours	500 volunteer hours

^a *Level 1:* Assumes 2 volunteers per *Level 1* team; 2.5 hours per site visit; 6 mos season.

^b *Level 2:* Assumes 1 volunteer per *Level 2* team; 1.5 hours per site ; 6 mos season.

^c *Level 3:* Assumes 1 volunteer per *Level 3* team; 2 hours per site visit; 6 mos season.

^d *Level 3:* Assumes 1 volunteer per *Level 3* team; 2 hours per site visit; 4 mos season.

Project Performance Against Proposed Budget

The RRC has accomplished all outcomes within the proposed budget of **\$20,006** with a “savings” of **\$6,580.46**. Unanticipated savings resulted from discounted prices on the YSI dissolved oxygen meters and the decision of project holders to not purchase Oakton pH meters. Thus, instead of expending **\$11,225** to cover equipment purchases, the RRC expensed only **\$6,313.67** which resulted in a “savings” of **\$4,911.33**. In addition, RRC staff also saved on labor costs which contributed to a savings of **\$1,769.95**. The only underestimation from proposed costs to actual costs was in the area of mileage. The RRC proposed a mileage budget of **\$113** but actual costs amounted to **\$370.03**. Table #2 provides a budget summary.

Table #2			
Item	Budget	Expenses Yr 1 Proposed Items Only	Balance Remaining in Year 1 Budget
Pay and Fringe	\$7,868.00	\$6,098.05	\$1,769.95
Mileage	\$113.00	\$370.03	\$(257.03)
Misc	\$350.00	\$193.79	\$156.21
Administration	\$450.00	\$450.00	\$0
Year 1 Equipment	\$11,225.00	\$6,313.67	\$4,911.33
Total	\$20,006.00	\$13,425.54	\$6,580.46

With the agreement of project funders, the RRC used Year 1 project “savings” to purchase a portion of equipment needs necessary to continue the citizen stream monitoring program into Year 2. The overall expenses incurred by the RRC during Year 1 of the citizen stream monitoring program – including equipment to be used during Year 2 -- can be found on Table #3.

Table #3			
Item	Proposed Budget	Actual Expenses incurred during Year 1 ^d	Balance Remaining
Project Management ^a <i>including collaboration with non-profit & friends groups^b</i>	\$7,868.00	\$6,098.05	\$1,769.95
Administrative Support and other expenses ^c	\$913.00	\$1,013.82	(\$100.82)
Equipment Expenses ^d	\$11,225.00	\$12,894.13	(\$1,669.13)
Total for Year 1	\$20,006.00	\$20,006.00	(\$0.00)

^a Recruitment, organization, facilitation of training workshops, equipment management, internet support and site visits, data management, reporting, general project management

^b Communications, workshop organization, facilitation

^c Administrative and financial management, materials development, mileage, room reservations

^d 6,313.67 expensed for Yr 1 equipment + \$6580.46 expensed – Yr1 for Y 2 equipment.

Appendix

Table #4: List of Streams Included in Year 1 Citizen Stream Monitoring Program

Table #5: Year 1 Accomplishments-Summary

Table #4: List of Streams Included in Year 1 Citizen Stream Monitoring Program

Level of Monitoring Program	Stream Name	Latitude	Longitude
Level 3	Yahara River at Prospect Street	42.92079	-89.218925
Level 3	Six Mile Creek at State Highway 113	43.19576	-89.462
Level 3	Spring (Dorn) Creek - Meffert Road	43.1647	-89.47475
Level 3	Six Mile Creek at County Hwy M	43.146824	-89.43684
Level 3	Spring Creek (Dorn Cr) at County Highway M Bridge	43.140285	-89.44221
Level 3	Six Mile Creek at Woodland Drive Bridge	43.159992	-89.43189
Level 3	Six Mile Creek at Mill Rd Bridge	43.174683	-89.432915
Level 1	Six Mile Creek at Division St and Knightsbridge Rd	43.18381	-89.44664
Level 1	Starkweather Creek E Branch at Milwaukee St	43.0994	-89.3315
Level 1	Wingra Creek at Gardner Marsh	43.04916667	-89.39611111
Level 1	Door Creek	43.0994	-89.3315
Level 1	Swan Creek at Lalor Rd	42.9995	-89.3614
Level 1	Willow Creek at Linden Drive foot bridge	43.0756	-89.4218
Level 1	Pheasant Branch at Middleton High School	43.1035	-89.514
Level 1	Starkweather Creek at Melvin Ct 200 ft upstream of bike path	43.0994	-89.3315
Level 1	Murphy Creek	42.9833	-89.363
Level 1	Six Mile Creek at Woodland Drive	43.1598	-89.4324
Level 1	Yahara River at Prospect St	42.92097	-89.21866
Level 2	Six Mile Creek at Mill Rd Bridge	43.174683	-89.432915
Level 2	Six Mile Creek at Sth 113	43.19576	-89.462
Level 2	Yahara River - Upstream Of Windsor Rd.	43.216328	-89.34947
Level 2	Spring (Dorn) Creek - Meffert Road	43.1647	-89.47475
Level 2	Nine Springs at Jenni and Kyle Preserve	43.023567	-89.40029

Table #5: Year 1 Accomplishments

Accomplishments	Description of Activities
Establish 11 Baseline <i>Level 1</i> Water Quality Monitoring Sites	<ol style="list-style-type: none"> 1. In collaboration with Dane County LWRD, identified 11 Baseline <i>Level 1</i> Water Quality Monitoring Sites. 2. Organized one spring-training and facilitated several stream-side training for 15 prospective volunteer monitors. 3. Procured equipment for 10 <i>Level 1</i> teams. (Note: Some teams shared equipment) 4. Collaborated with volunteers to “staff” each monitoring site. 5. Conduced site visits with each volunteer team and conducted periodic water quality data checks as each team entered data.
Establish 6 Trends <i>Level 2</i> Water Quality Monitoring Sites	<ol style="list-style-type: none"> 1. In collaboration with Dane County LWRD, WAV Program Coordinators, MMSD and WDNR, identified 6 Trends <i>Level 2</i> Water Quality Monitoring Sites. 2. Organized one spring-training for 6 prospective volunteer stream monitors. 3. Procured equipment for 5 <i>Level 2</i> teams. (Note: Some teams shared equipment) 4. Collaborated with volunteers to “staff” each monitoring site. 5. Conduced site visits with each team and water quality data checks as each team entered data.
Established 7 Nutrient Sampling <i>Level 3</i> Water Quality Monitoring Sites	<ol style="list-style-type: none"> 1. In collaboration with Dane County LWRD, WAV Program Coordinators, MMSD, USGS and WDNR, identified 7 Nutrient Sampling <i>Level 3</i> Water Quality Monitoring Sites. 2. Organized one spring-training for six prospective volunteer stream monitors. 3. Procured equipment for 7 <i>Level 3</i> teams. 4. Collaborated with volunteers to “staff” each monitoring site. 5. Conduced site visits with each team and periodically reviewed sample results.
Collaborate with local non-profit resource groups; organized two gatherings to share information on watershed health.	<ol style="list-style-type: none"> 1. Provided formal presentations for Friends of Starkweather Creek Annual Meeting and City of Fitchburg Green Thursdays. 2. Met with Friends of Yahara River Headwaters and Village of Deforest. 3. Met with City of Fitchburg and Resource Conservation Committee. 4. Conducted calls and initiated email communications with Token Creek Conservancy Committee and Town of Windsor, Yahara Lakes Association and Clean Wisconsin. 5. Met with Stoughton Senior Center members. 6. Participated in the planning and provided a formal presentation during the Dane County Watershed Network Gathering meeting focused on citizen monitoring. 7. Organized RRC Confluence – a gathering of volunteer lake and stream monitors
<i>Not included in original budget</i>	<ol style="list-style-type: none"> 1. Analysis of <i>Level 3</i> nutrient sampling April 2013 to October 2013 period only. 2. Established and supported <i>Level 3</i> Volunteers willing to collect samples from Nov ‘13 -Mar ‘14.