Rock River Coalition

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"

Volunteer Stream Monitoring Program
Yahara River Watershed

Project Continuance Proposal: January 2016 –March 2017



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1.0 2016 Project Proposal Request

With this proposal, the Rock River Coalition (RRC) requests **$23,280** to build on accomplishments achieved in the first three years of this volunteer stream monitoring program in the Yahara River watershed. Project activities will begin in January 2016 with a completion date of March 2017. Table 1 summarizes this project request.

Table 1: Project Request	
Volunteer Recruitment and Training	**$3,570**
Volunteer Support and Communication	**$7,945**
Data Management and Analysis	**$4,655**
Equipment Purchases and Mileage and Travel Expenses	**$7,110**
Total Request	**$23,280**

2.0 2016 Stream Monitoring Program

2.1 Program Summary

The RRC seeks funding to maintain, rather than significantly expand, existing stream monitoring sites in 2016. In 2016, the RRC coordinator will:

- continue to support **53** baseline water quality monitoring sites throughout the Yahara River watershed;
- ensure nutrient samples are collected at **35** sites;
- establish and maintain continuous temperature data loggers at **27** sites; and,
- provide opportunities for new volunteers to participate in at least **4** entry level stream monitoring sites.

Table 2 summarizes monitoring program changes and activities for 2016. Table 5 (Appendix 1) lists all sites to be included during the 2016 monitoring season.

Table2: Summary Of Monitoring Program Changes and Activities in 2016		
Goals	**Monitoring Program Changes**	**Monitoring Program Activities**
53 sites by end 2016		
51 sites		**Monthly dissolved oxygen, water temperature, clarity and biotic index**
	• *47 sites maintained from 2015* • *2 sites to be retired in 2016* • *6 sites to be added in 2016*	
27 sites		**Continuous stream temperature**
	• *22 sites maintained from 2015* • *1 site to be "retired" in 2016 [Door Creek at Cty MN]* • *6 sites to be added in 2016*	
35 sites		**Monthly nutrient sampling**
	• *32 sites maintained from 2015* • *1 site to be "retired" in 2016 [Rutland Branch]* • *1 existing site to include sampling in 2016 [Swan Creek at Haight Farm Road]* • *2 site to be added in 2016 [Door Creek at Hope Road & Yahara Rv at Cty AB]*	
~4 sites	• *Approximately 4 sites to be added as educational/entry level sites*	

2.2 Budget Explanation

List of project activities appear in Table 3. All project costs appear on Table 4.

Capital Equipment and Travel Costs: The RRC requests **$7,110** to equip all volunteers for this 2016 monitoring program. Costs include the purchase of

- 6 HOBO TidbiT v2 water temperature data loggers to record continuous stream water temperatures
- 5 YSI 550A dissolved oxygen meters
- 4 transparency tubes (120cm)
- 6 D-nets
- Replacement chemicals for dissolved oxygen HACH kits
- Mileage and travel expenses

Project Management Costs: The RRC requests **$16,170** to accomplish all activities required to establish and maintain 53 volunteer stream monitoring sites. RRC will continue to work collaborative with various partners to recruit, train and support volunteers, analyze data for selected parameters for all sites, and organize two volunteer gatherings. Partners include (but are not limited to) the WDNR, MMSD, Yahara WINs partners, Water Action Volunteers Program, Dane County Office of Lakes and Watersheds, Dane County Land and Water Resources Division, Friends of Starkweather Creek, Friends of Pheasant Branch Conservancy, Friends of Yahara River Headwaters, the Village of DeForest, Town of Windsor, Token Creek Conservancy Committee, Friends of Lake Kegonsa, Friends of Cherokee Marsh, City of Fitchburg, Town of Dunn, and Friends of Capital Springs Recreation Area.

Table 3: List of Volunteer Program Activities

Volunteer Recruitement and Training
•Organize 1 entry level stream monitoring training for new participants--location TBD *[Recruitment Need: ~4 new entry level sites]*
•Organize 1 nutrient sampling and advanced monitoring training workshop for exsting volunteers--location most likely to be Token Creek Conservancy *[Recruitment Need: ~8 advanced level sites]*
•Conduct on-site training for volunteers needing more support
Volunteer Support
•Conduct QA/QC checks at two stream sites
•Conduct site visits on an as needed basis *[up to 10]*
•Collect samples for volunteers in case of emergency absenses *[up to 10]*
•Organize workshop to launch 2016 season *[objectives: share water quality results for 2015; hand out equipment; review protocols]*
•Organize end of season equipment drop off
•Organize winter sampling *[up to 4 sites for two winter sampling dates]*
•Organize conference for all volunteers in Rock River Basin
•Maintain equipment inventory
Water Quality Data and Data Management and Analysis
•Assist volunteers with WAMS registration and SWIMS data entry
•Review data entries
•Create site reports for 2016 sites

Budget: 2016 Yahara River Watershed Citizen Stream Monitoring Program			
Volunteer Recruitment and Training	**Hours**	**Rate**	**Total Costs**
Organize two stream monitoring training workshops	60	$35	$2,100
Collaborate with partners to recruit new members, publicize workshops and share information about program	42	$35	$1,470
Subtotal	**102**		**$3,570**
Volunteer Support and Communication	**Hours**	**Rate**	**Total Costs**
Purchase, prepare, track and maintain stream monitoring equipment	37	$35	$1,295
Conduct routine communication with volunteers regarding monitoring protocols and other project requirements -- includes stream-side site visits and QA/QC sites visits	92	$35	$3,220
Organize winter sampling for 4 sites in 2015-2016 season (two sampling dates)	10	$35	$350
Organize volunteer workshop to launch the 2016 monitoring season	40	$35	$1,400
Conduct end of season survey to gage volunteer satisfaction	8	$35	$280
Coordinate collection of monitoring equipment -- end of season	20	$35	$700
Organize fall 2016 volunteer conference for all RRC volunteers (apportioned to YRW volunteers)	20	$35	$700.00
Subtotal	**227**		**$7,945**
Data Analysis and Management	**Hours**	**Rate**	**Total Costs**
Create new sites on WDNR SWIMS database in coordination with WDNR	9	$35	$315
Upload data from thermistors to WDNR SWIMS at close of monitoring season	8	$35	$280
Create site reports for all stream sites included in this project	92	$35	$3,220
Train volunteers in use of WDNR database; mediate communications between DNR and volunteers to help troubleshot problems with data entry; Conduct periodic reviews of data entered by volunteers	24	$35	$840
Subtotal	**133**		**$4,655**
Equipment/Materials Purchases and Mileage/Travel Expenses	**#Items**	**Unit Costs**	**Total Costs**
Coolers	6	$3	$18
Transparency Tubes	4	$57	$228
D-Nets	6	$80	$480
Thermistors	6	$133	$798
YSI Meters	5	$820	$4,100
HACH KIT	1	$84	$84
Sodium Thiosulfate	1	$22	$22
Rebars	7	$3	$21
Distilled water	11	$3	$33
Zipties	1	$6	$6
Est. Shipping			$120
Mileage (reimbursement rate of 0.575mi) and other transportation costs			$800
Food and beverages for one workshop			$400
Subtotal			**$7,110**
	Hours		**Total Costs**
Grand Total	**462**		**$23,280**

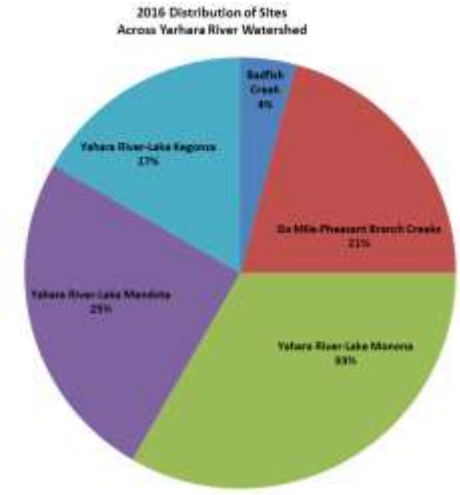
Rate includes RRC coordinator wages, fringe, administration, office supplies and overhead

2.3 Site Selection Criteria

Several criteria have guided site selection in 2016. These criteria include:

- Sites with historical data;
- Volunteer willingness to continue monitoring;
- Safety and site accessibility considerations (parking, bank steepness, stream depth, bottom composition);
- Recommendations by WDNR and data needs of partners;
- Location of USGS gage stations and other monitoring stations including newly installed Dane County flow gages;
- Results from nutrient samples; and,
- Geographical distribution of sites across sub-watersheds, natural communities and stream order.

In 2016, while the majority of monitoring sites will still be located in the Six Mile/Pheasant Branch Creek and Lake Mendota subwatersheds, there will be 2 sites in Badfish Creek watershed, 16 sites in the Lake Monona watershed and 9 sites in the Lake Kegonsa watershed. See Figures 1 and 2.



2016 Distribution of Sites Across Subbasins	
Badfish Creek	2
Six Mile-Pheasant Branch Creeks	10
Yahara River-Lake Monona	16
Yahara River-Lake Mendota	12
Yahara River-Lake Kegonsa	9
TBD--4 additonal entry level sites	

Figure 1: 2016 Geographic Distributions

Figure 2: 2016 Map of sites

Recognizing the integral role headwater streams play to the health of a river network, an effort was made to establish several sites along stream segments of differing sizes (stream order) and temperature regimes (natural communities designation). As Figures 3 and 4 depict, monitoring sites are distributed across the different natural communities and stream sizes in the Yahara River watershed. It should be noted that the warm headwater/warm mainstem segments of streams tend to be difficult to wade across and thus tend to be inappropriate for including in this volunteer stream monitoring program.

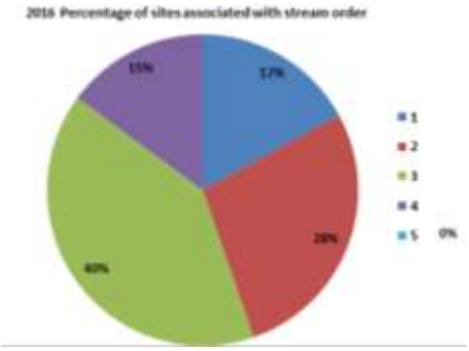


Figure 3: Percentage of sites associated with each stream order

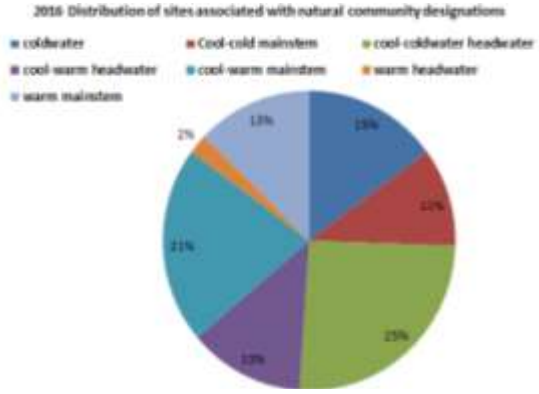


Figure 4: Percentage of sites associated with each natural community designation

2.4 Monitoring Design

Since 2013, the objectives of the volunteer stream monitoring program have been:

- To provide consistent and reliable in-stream water quality data to augment monitoring programs conducted by the US Geological Survey (USGS), Wisconsin Department of Natural Resources (WDNR), and Madison Metropolitan Sewerage District (MMSD).
- To ensure that a greater number of smaller streams and tributaries are monitored more frequently than otherwise might be possible with more expensive monitoring methods.
- To build greater awareness of the threats to water quality in the Yahara River Watershed.

The RRC has employed a nested monitoring design developed by the Water Action Volunteers Program (WAV) to measure baseline water quality in the Yahara River watershed. (Figure 5) During the first two years of this project, sites were selected within a specific geographic area that coincided with the Yahara WINs pilot project area. Hence, in 2013 and 2014, the majority of volunteer monitoring sites were located in the Six Mile and Pheasant Branch Creek subwatershed.

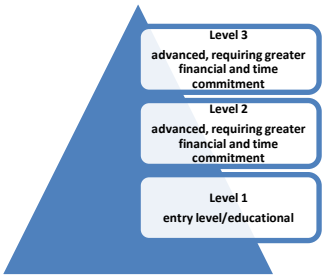


Figure 5: Nested Monitoring Program

Since 2013, partner agencies and groups developed confidence in the volunteer-collected water quality data. Likewise, by following the WAV nested monitoring design, the RRC coordinator was able to nurture a cadre of volunteers willing and able to take on more stream monitoring responsibilities. Both of these factors have enabled the gradual expansion of the volunteer monitoring program beyond the Yahara WINs pilot project area. Committed volunteers, some of whom started monitoring three years ago, have agreed to measure more parameters at their sites. Because of these committed volunteers, the RRC coordinator has been able to focus recruitment and training activities to establish new volunteer stream monitoring sites while simultaneously increasing the water quality data collected at a core number of stream monitoring sites. In 2013, there were 23 volunteer stream monitoring sites. In 2015, volunteers monitored stream health at 49 stream sites. (Figure 6) In 2013, volunteers collected baseline water quality parameters at only 5 sites where they also collected nutrient samples. In 2015, volunteers measured baseline water quality data and collected nutrient samples at 29 sites. (Figure 7)

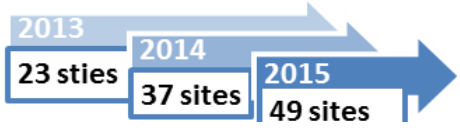


Figure 6

After three years of maintaining consistent monitoring methods at well-established sites, the RRC now has the critical ingredients in place to facilitate long-term trend analysis of stream water quality changes as the adaptive management program is implemented across the Yahara River watershed.

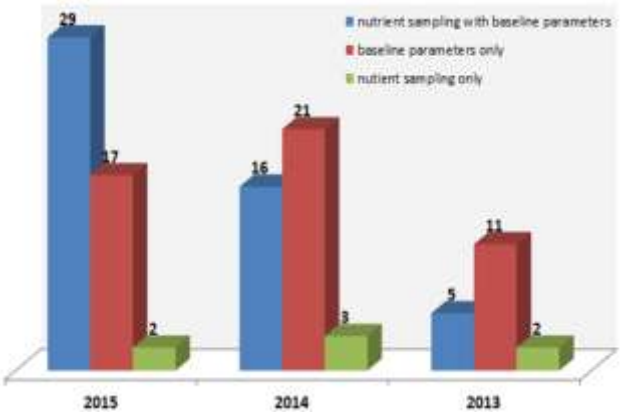


Figure 7

2.5 Monitoring Methods

Volunteers have submitted water quality data using consistent monitoring methods established by the WAV program thereby complying with Wisconsin 2016 Consolidated Assessment and Listing Methodology (WisCALM) to the WDNR's Surface Water Integrated Monitoring System (SWIMS) database. In 2016, volunteers will continue to use WAV protocols.

2.6 Data Assessment and Interpretation

Volunteers will also continue to enter their monthly baseline water quality results into the WDNR SWIMS database thus ensuring that data collected on behalf of this project are available to all Yahara WINs partners and the general public. After the close of the 2016 monitoring season (November 2017), the RRC coordinator will develop site reports for selected parameters for monitoring sites included in this project.

Appendix 1

Table 5: 2016 List of Volunteer Stream Monitoring Sites and Parameters

WDNR StationID	Continuous Temp	Baseline WQ Monitoring	Nutrient Sampling	Watershed	StreamName	Location Information
10012601		monthly DO, clarity, BI, temp		Badfish Creek (LR07)	Badfish Creek	North Casey Road
10016544		monthly DO, clarity, BI, temp		Badfish Creek (LR07)	Badfish Creek	Old Stage Road
133064		monthly DO, clarity, BI, temp	nutrient sampling	Six Mile and Pheasant Branch Creeks (LR10)	Six Mile Creek	South Woodland Drive
133314		monthly DO, clarity, BI, temp	nutrient sampling	Six Mile and Pheasant Branch Creeks (LR10)	Pheasant Branch Creek	Cth M-West of Bridge
10010966		monthly DO, clarity, BI, temp	nutrient sampling	Six Mile and Pheasant Branch Creeks (LR10)	Six Mile Creek	Mill Road, Waunakee
10010967	continuous temp	monthly DO, clarity, BI	nutrient sampling (including winter sampling)	Six Mile and Pheasant Branch Creeks (LR10)	Six Mile Creek	Sth 113
133313	continuous temp	monthly DO, clarity, BI	nutrient sampling (including winter sampling)	Six Mile and Pheasant Branch Creeks (LR10)	Pheasant Branch	Cty M East of Bridg
133316	continuous temp	monthly DO, clarity, BI	nutrient sampling	Six Mile and Pheasant Branch Creeks (LR10)	Pheasant Branch Creek	Airport Road, Middleton
133553	continuous temp	monthly DO, clarity, BI	nutrient sampling (including winter sampling)	Six Mile and Pheasant Branch Creeks (LR10)	Pheasant Branch Creek (west branch)	Schneider Road, Middleton
10040382		monthly DO, clarity, BI, temp		Six Mile and Pheasant Branch Creeks (LR10)	Six Mile Creek	Division St and Knightsbridge Rd
10029790		monthly DO, clarity, BI, temp		Six Mile and Pheasant Branch Creeks (LR10)	Pheasant Branch	Clark Street
10029790		monthly DO, clarity, BI, temp		Six Mile and Pheasant Branch Creeks (LR10)	Pheasant Branch Creek	Middleton High School
10042185		monthly DO, clarity, BI, temp	nutrient sampling	Yahara River and Lake Kegonsa (LR06)	Keenan's Creek	Keenan Road, Dunn Township
16631	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Kegonsa (LR06)	Unnamed Trib, Lake Kegonsa	Hwy B and Pleasant Road
10032561	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Kegonsa (LR06)	Unnamed Trib, Lake Kegonsa	Greene Road
10040742	continuous temp	monthly DO, clarity, BI	nutrient sampling (including winter sampling)	Yahara River and Lake Kegonsa (LR06)	Yahara River	Prospect St
10043100	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Kegonsa (LR06)	Leutens Creek	Spring Road

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10040890		monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Kegonsa (LR06)	Yahara River	County Hwy AB
10042186	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Kegonsa (LR06)	Door Creek	County Hwy MN
10043017	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Kegonsa (LR06)	Unnamed Trib	Hammond Road
10043360	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Kegonsa (LR06)	Little Door Creek	Natvig Road
10029221	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Kegonsa (LR06)	Door Creek	Hope Rode
133083	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Mendota (LR09)	Willow Creek	Linden Dr foot bridge
10016580		monthly DO, clarity, BI, temp	nutrient sampling	Yahara River and Lake Mendota (LR09)	Unnamed Trib, Token Creek	Mill Road
10042256		monthly DO, clarity, BI, temp	nutrient sampling	Yahara River and Lake Mendota (LR09)	Unnamed Trib, Token Creek	Token Creek Conservancy Path at Culvert
10032128		monthly DO, clarity, BI, temp	nutrient sampling	Yahara River and Lake Mendota (LR09)	Cherokee Marsh	Unnamed road off of Wheeler and School Road, Madison
10033686		monthly DO, clarity, BI, temp	nutrient sampling	Yahara River and Lake Mendota (LR09)	Primary Upper Yahara Rv	Linden Drive, Village of DeForest
133040		monthly DO, clarity, BI, temp	nutrient sampling	Yahara River and Lake Mendota (LR09)	Yahara River	Hwy 113, Madison
133470	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Mendota (LR09)	Token Creek	Hwy C
10010940	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Mendota (LR09)	Token Creek	Daentl Road, Token Creek
133427	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Mendota (LR09)	Token Creek	Portage Road
10016566	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Mendota (LR09)	Token Creek	Egre Road
133471	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Mendota (LR09)	West Branch Yahara River	North Yahara River Road
133472	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Mendota (LR09)	Pine Spring Creek, trib of Yahara River	River Road, Village of DeForest
133546	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Monona (LR08)	Nine Springs Creek	Sth 14/Anderberg Drive, Fitchburg
10010972	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Monona (LR08)	Swan Creek	Lalor Rd
10030148	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Monona (LR08)	Swan Creek	Haight Farm Road and Cty Hwy MM
10042379	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Monona (LR08)	Unnamed Trib, Upper Mud Lake	Femrite Drive
10010964	continuous	monthly DO, clarity,	nutrient sampling	Yahara River and Lake	Murphy Creek	Lalor Rd

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	temp	BI		Monona (LR08)		
10030055	continuous temp	monthly DO, clarity, BI	nutrient sampling	Yahara River and Lake Monona (LR08)	Murphy's Creek	S. Syene Road
133481		monthly DO, clarity, BI, temp		Yahara River and Lake Monona (LR08)	Starkweather Creek - East Branch-Dredging	Hargrove Street
10039474		monthly DO, clarity, BI, temp		Yahara River and Lake Monona (LR08)	Starkweather Creek	Melvin Ct 200 ft upstream of bike path
133070		monthly DO, clarity, BI, temp		Yahara River and Lake Monona (LR08)	Starkweather Creek	Hwy 30, Madison
133076		monthly DO, clarity, BI, temp		Yahara River and Lake Monona (LR08)	Starkweather Creek **E** Branch	Milwaukee St
10040743	continuous temp	monthly DO, clarity, BI		Yahara River and Lake Monona (LR08)	Nine Springs Creek	Jenni and Kyle Preserve
10040875		monthly DO, clarity, BI, temp		Yahara River and Lake Monona (LR08)	Unnamed Stream	Longford Ter
10043361		monthly DO, clarity, BI, temp		Yahara River and Lake Monona (LR08)	Murphy's Creek	Byrne Rd above wetlands complex
10044285		monthly DO, clarity, BI, temp		Yahara River and Lake Monona (LR08)	Murphy's Creek	500meters downstream of Byrne Rd Brdg
10040743	continuous temp	monthly DO, clarity, BI		Yahara River and Lake Monona (LR08)	Nine Springs Creek	Jenni and Kyle Preserve