Rivers Council of Minnesota

1269 Second Street North, Suite 200, Sauk Rapids, MN 56379
PHONE 320-259-6800 • **FAX** 320-259-6678 • **E-MAIL** rivers@riversmn.org • **URL** www.riversmn.org

March 21, 2005

Jim McLaughlin
32870 St. NW
Princeton, MN 55371

Dear Jim and Dave,

Your request for $3000 to help implement your monitoring plan for the Green Lake Improvement District's citizen monitoring program has been approved. Congratulations, and again, great job on the monitoring plan!

Enclosed is the check for $3,000. All monies must be accounted for with receipts and those receipts are due back to us by September 30, 2005. A brief final report is required no later than December 1, 2005.

It has been a pleasure working with you! You both have been fantastic partners and we will all miss Wayne as this new season begins. We will be in touch about other specific workshops that may be of interest and doing periodic check-ins to see how your monitoring plan is working out.

Great Work!

Angie

Angie Becker Kudelka, River Watch Director
Rivers Council of Minnesota

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Green Lake Improvement District
Jim McLaughlin
32870 Xenon St. NW
Princeton, MN 55571

October 14, 2005

Dear Jim,

We have received your final report and attachments for the RCM/MLA Citizen Volunteer Monitoring Plan program, as funded through LCMR*.

Your document satisfies the reporting requirements and completes the monitoring plan training, implementation, and contract components for the program.

It has been a pleasure to work with you and Dave throughout this project. Please keep in touch with monitoring activities and updates on your program. Also let us know of future monitoring/training needs that may be of interest to you or your citizen volunteer monitoring group.

Sincerely,

Angie Becker Kudelka
River Watch Director
Rivers Council of Minnesota

* Funding for this project was recommended by the Legislative Commission on Minnesota Resources (LCMR) from the Minnesota Environment and Natural Resources Trust Fund.

Green Lake Improvement District
32870 Xenon St NW
Princeton, MN 55371

September 30, 2005

Angie Becker Kudelka
Rivers Council of Minnesota
817 So Minnesota St
New Ulm, MN 56073

Hello Angie,

This letter will serve as a recap of our Water Quality Monitoring Plan for the first year.

This year was the first year since 1995 that our lake's waters have been monitored. A quick comparison off the results between 1995 and 2005 for phosphorous, chlorophyll, fecal coliform, and Secchi dish readings do not show any significant variations in ten years. There are no stream monitoring data or wetlands data prior to 2005. We are now establishing base line data in those areas.

Green Lake trophic state index is in the eutrophic range which is similar to the 1995 data. We are also in the proper range for our central hardwood forest ecoregion.

We plan on continuing the monitoring plan for the foreseeable future. We plan on expanding the wetlands testing portion of the plan to additional locations as one of our long range goals is to improve the wetlands through which the streams flow before entering our lake.

We believe that the equipment and supplies which were purchased with the funds available should be adequate for the near future. A few comments on the purchases:

Flow meter – we can determine which stream flows are most detrimental in bringing nutrients into the lake and can we do anything in the future to effect stream flows.

GPS unit and software – enabled us to accurately map the weed beds on the lake. The past several years have brought significant increases in milfoil and pondweed and we can now compare the weed coverage from year to year and then enable us to determine what kind of weed is expanding or contracting.

Microcscope – allows us to accurately identify macro invertebrates which help us to establish the overall health of our wetlands and their ability to filter the stream waters entering our lake.

If you need any additional information, please let us know. We thank you once again for the opportunity your organization has given us. We believe we are making some progress in obtaining understanding on what is happening to our wetlands, streams and lake.

On behalf of our Board and our lake residents,

James McLaughlin
Chairman

Green Lake Improvement District
Expenses for LCMR through Sept 30, 2005

Water sampling

RMB Laboratories

5-31	$38.00
6-13	$144.00
7-7	$38.00
8-8	$38.00
8-22	$98.00
9-9	$38.00
9-26	$38.00
9-26	$98.00

Midwest Analytical

9-21	$90.00

Spee-Dee

5-31	$14.40
6-13	$14.44
7-7	$14.40
8-8	$14.79
8-22	$14.44
9-9	$14.47
9-14	$14.47
9-26	$14.47

Flow meter

Forestry Suppliers

9-12	$714.35

Wetland supplies

Don Wik Prot Fab

6-24	$171.85

Miscellaneous supplies

Forestry Suppliers

8-21	$191.61

Microscope

Microscope store

7-27	$154.00
7-12	$244.00

Dip net — Wildco

6-7	$127.60

GPS and Sofware

	Amazon	$275.49
	4X4 books	$94.50
Wetlands assessment		
	Chris Kline	$280.00
Misc expenses		
	6 plan copies	$16.20
	Postage	~~$10.60~~ 9.60
	mileage Jim M.	$38.48
	mileage Dave D.	$87.08
Grand Total		$3,141.64

~~$3,140.64~~

$3,140.64

Green Lake Improvement District

Water Quality Monitoring Plan

Table of Contents

(continued on following page)

Title Page

Date Plan Completed:	March 1, 2005
Organization Name:	Green Lake Improvement District
Name of Program:	Green Lake Water Monitor Plan
Monitoring Plan Author(s):	Jim McLaughlin, David Dancik, Wayne Mosman
Primary Contact:	Jim McLaughlin
Address:	32870 Xenon St NW, Princeton, MN 55371
Contact Phone:	763-633-0109
Contact email:	mac9999@ecenet.com

Funding for this project was recommended by the Legislative Commission on Minnesota Resources (LCMR) from the Minnesota Environment and Natural Resources Trust Fund.

The goal of this grant is to enhance and expand the ability of citizen volunteers to collect water quality data that will be useful for lake and stream assessments and management. Minnesota Lakes Association and Rivers Council of Minnesota, with assistance from River Network, will work collaboratively to provide training, technical support, education and communications for individuals and organizations statewide interested in citizen volunteer lake and stream monitoring.

Group Description

Mission Statement:

The Green Lake Improvement District was initially formed to take over the ownership and operation of a water control structure at the confluence of Green Lake Brook and the Rum River. The District has subsequently expanded its mission to include the protection of the waters of Green Lake and its watershed. The Green Lake Improvement District will endeavor to maintain and, hopefully, improve our waters.

Geographical area covered:

Green Lake watershed is located in Isanti County, MN. The watershed includes the waters of Green Lake and the watersheds of 2 major streams, Wyanett Creek and North Brook, and 3 minor streams.

Type of organization:

Green Lake Improvement District is a local government body, organized as a sub-part of Isanti County, State of Minnesota.

The organization started on July 1, 2001.

All of the 177 Green Lake property owners are voting members of the Lake Improvement District.

The Lake Improvement District does not have any paid staff.

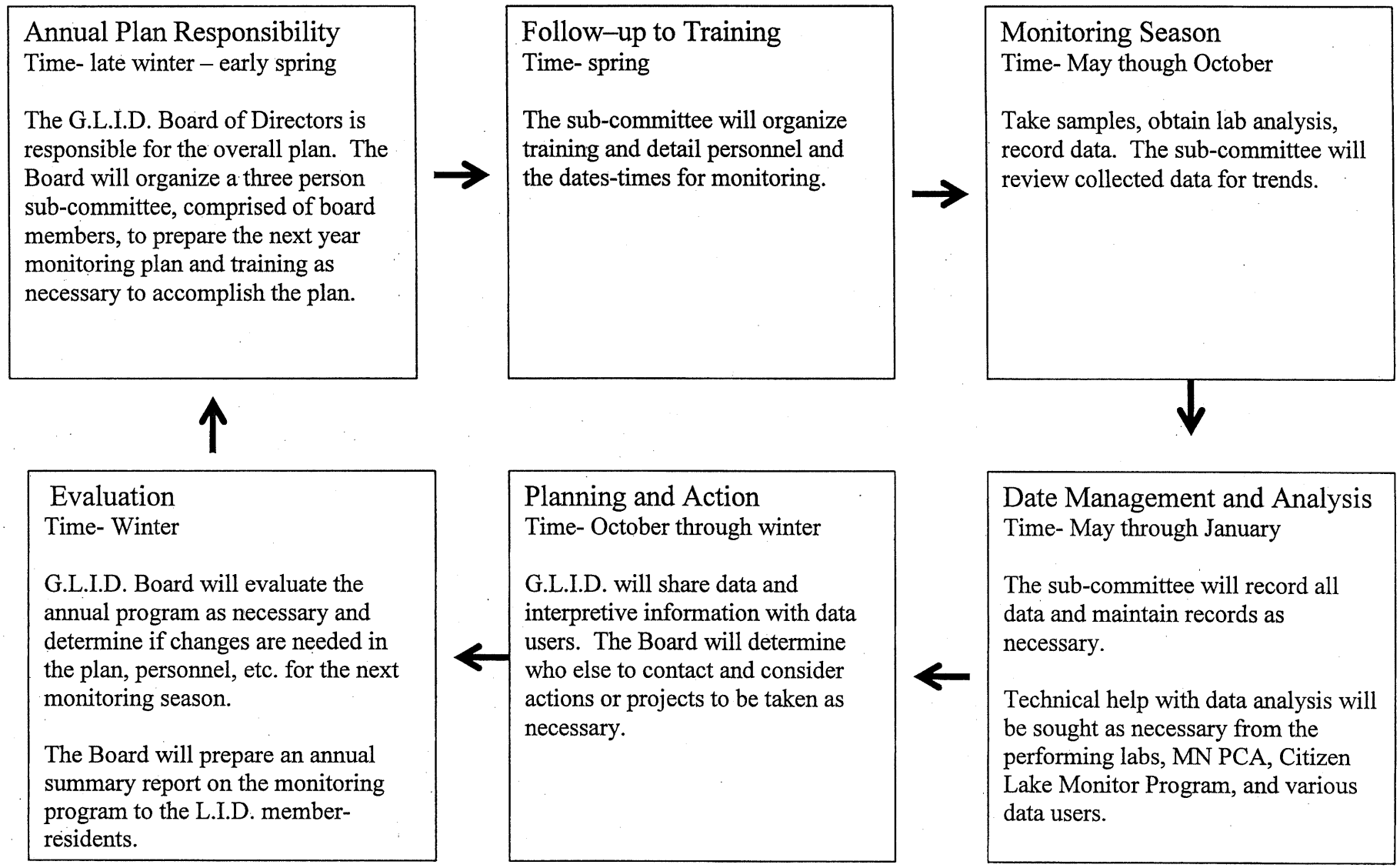
The District is governed by an elected nine member board.

Introduction Narrative

This document contains a lake, stream and wetlands monitoring plan for the Green Lake Improvement District (G.L.I.D.). The plan encompasses the waters of Green Lake and the streams and wetlands of its related watershed. The plan contains the rationale, guidance, and description of our volunteer citizen monitoring efforts designed to assess, maintain and improve the quality of our waters.

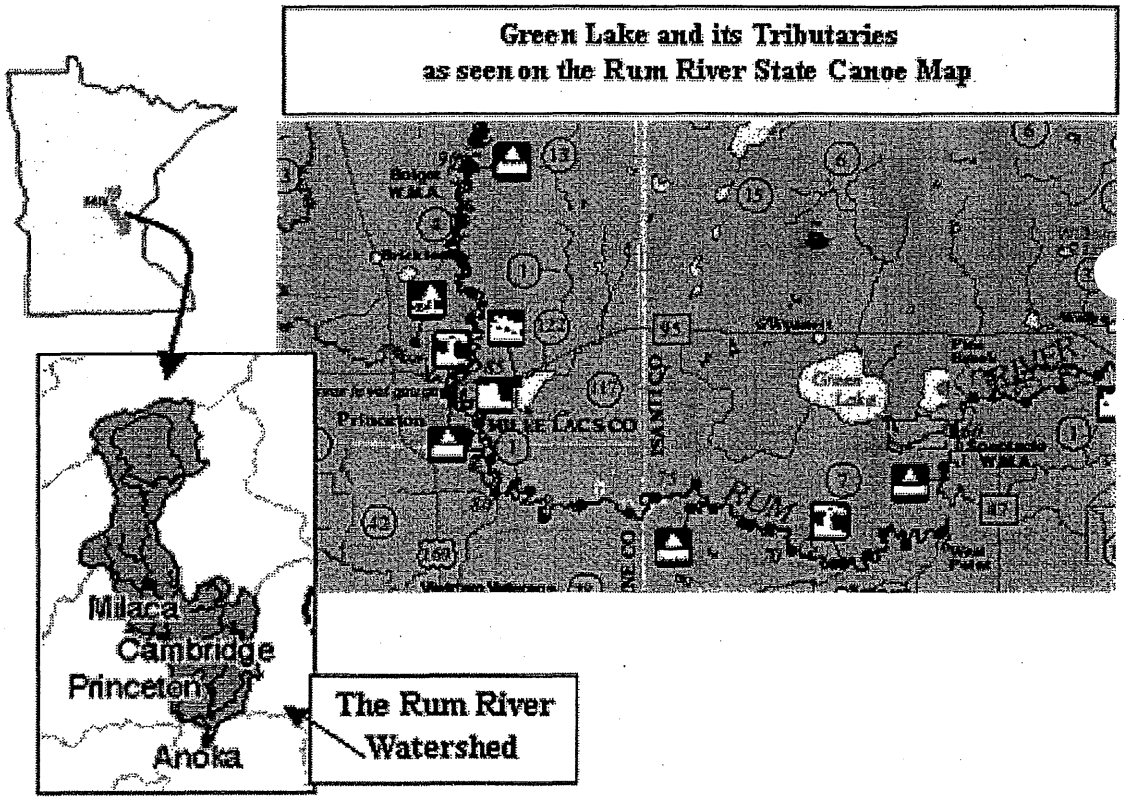
The plan will be implemented and updated as necessary by the Board of Directors of the G.L.I.D.

Flow Chart of G.L.I.D. Citizen Water Monitoring Plan



1.1 – Watershed Maps

Attached is a watershed map with the waters of interest highlighted.
The maps below show the entire Rum Watershed. The Green Lake Watershed is a small portion of this area. Our water flows into the Rum River, which eventually ends up in the Mississippi. On the right, is a portion of the Rum River State Canoe Route Map that shows Green Lake and the streams that drain into it. The town of Princeton is located to the west (left) of Green Lake. Please see section 6.2 for our sampling sites map in the Green Lake watershed."



1.2 - Watershed and Surface Water Information

Watershed / Waterbody of Interest: Green Lake Watershed

INFORMATION ITEMS	ANSWER
Major Basin Name	Upper Mississippi River Basin
Watershed	Rum River
Ecoregion	North Central Hardwoods Forest (NCHF)
Location of Water	Isanti County
HUC MN Lake ID	07010207 30-0136
Watershed size	Total 12,160 acres, of which lake surface is 802 acres = 15 to 1 ratio, watershed to lake
Dominant soils	Anoka sand plain
Lake information	Maximum depth = 28 feet Littoral area = 43% Mean depth = 16 feet Fetch = 1.6 miles, W to E Volume = 14,563 acre/feet Surface area = 802 acres
Other information	Water residence time = 1.05 years 2 major inlets are Wyanett Creek and North Brook, 3 minor inlets, 1 outlet at Green Lake Brook
Land use types	Forest 9%, Cultivated 27%, Wetlands 53% Residential 11% (1995)

1.3 - Inventory of Watershed and Surface Water Uses

Watershed / Waterbody of Interest: Green Lake

USES	ANSWER
Primary water uses	Recreation – Boating, Fishing, Swimming
Public access	MN DNR maintained, NE end of lake
General public perceptions of the water	Lake and area residents find the lake waters to be of average quality for similar area lakes.
Fish tested for PCB's and mercury	The lake is on the MPCA impaired waters list for mercury and PCB's.

1.4 - Understanding State Standards that Define Your Water's Health

This worksheet uses information from: Chapter 7050 of the State Water Quality Standards, 305(b) Assessed Waters Report, and 303(d) Impaired Waters List to define the health of our water's health.

1) **Water of Interest** (name, location, and/ or segment/ lake number)	2) **Use Classifications** WQS-7050	3) **Assessed?**	4) **Are there Uses that are Fully Supported?** 305(b) (List)	5) **Are there Uses that are NOT Fully Supported?** 305(b) (List)	6)**Impaired? If Impaired, what is the Affected Use?** 303(d)	7) **If Impaired, what is the Pollutant or Stressor?** 303(d)	8) **Streams: Does Ecoregion Data Indicate any Threats?** 305(b) (List)	9) **Lakes: What is the Carlson Trophic Status?** 305(b)	10) **Suspected Sources** 305(b) Your own experience
Green Lake 30-0136	2B-3B, warm water, recreation	Y	No	Swimming Partial sup.	Aquatic consumption	PCB's Mercury	N/A	57 Eutrophic	Unknown
Wyanett Creek and North Brook	2B-3B Unlisted waters under 7050.0430. No known information	N							
3 minor inlets	Unlisted wetlands under 7050.0425. No known information	N							

11) Values:

Green Lake is a very popular Isanti County lake for all recreational activities to include fishing, swimming, boating.

2.1 - Issues, Efforts to Address Those Issues, Evaluation, & Outcomes

Issue, Monitoring Question or Hypothesis	Known Effort to Address the Issue	Evaluating Known Efforts	Identifying Niches for Citizen Monitoring	Desired Future Outcomes
What is the general condition of the following: 1-Green Lake water	Secchi disk readings as part of MPCA CLMP	8 years of good data. Years prior to 1996 are spotty (at best)	Continue in the CLMP program and add total phosphorous and Chlor A testing	Continued monitoring to determine if overall lake quality is maintaining, declining, or improving. We anticipate that the District will take necessary action to maintain quality as testing indicates might be necessary.
2-Major inlet streams of Wyanett and North Brook	Test total phosphorous and total suspended solids, fecal coliform to see how area land use (farms, animals, wetlands) are affecting stream water quality.	Just beginning in 2004.	Citizen volunteers will conduct the testing	Same

3-Watershed wetlands	Develop program to establish the health of the numerous wetlands, particularly on Wyanett and North Brook streams. Determine if increased ponding (water retention) In the wetlands is viable.	Develop program spring of 2005 and implementation June '05	Hopefully, citizen volunteers can conduct the program with the assistance of outside experts. Citizen monitors will be trained in Wetland Health Evaluation Project (WHEP) in '05 and begin efforts.	Same
4-Septic tanks	Determine if there is a viable program to implement which will aid in identifying sub-standard systems	A future project	After identifying sub-standard systems, work with residents on programs/low interest loans, etc to upgrade systems.	

3.1 - Data Users and Data Uses

Question or Hypothesis	User/Decision Maker	Uses/Decisions	Potential Parameters
Condition of overall lake water quality	County SWCD (primary)	Aid us in developing strategies to restore the watershed if possible.	Secchi disk Total phosphorus Chlor A
	G.L.I.D. (our own use) (primary) MPCA (secondary)	Our governmental organization will work with the County SWCD to restore the watershed if possible. We will work with landowners to educate about water quality and best management practices for landowners. Does lake support swimming.	Secchi disk Total phosphorus Chlor A Same parameters
Major inlet streams of Wyanett and North Brook streams	G.L.I.D. (primary)	We will use data trends to develop a program with the SWCD and local landowners.	Total phosphorus Total suspended solids Fecal coliform
	County SWCD (primary)	Same uses and decisions	Same parameters

Question or Hypothesis	User/Decision Maker	Uses/Decisions	Potential Parameters
Watershed wetlands	G.L.I.D. (primary)	Use data trends to develop a program to maintain the health of the wetlands and the potential for water retention	To be determined
	County SWCD and Mn DNR (primary)	Same	Same
Septic Tanks	G.L.I.D. County SWCD (primary)	Aid in assisting the upgrades of septic systems	To be determined

4.1 - Monitoring Assessment

What is Your Monitoring Assessment(s)? This worksheet includes the following information:

* *Kind of Assessment: Condition/Trend or Impact Assessment:*
    - *Primary data users and waters of interest*
    - *To 305(B) or Not to 305(b)*
    - *Screen or direct use*
    - *Scale discussion*

Our program will have three major assessments:

1- Non-305b overall lake condition and trend assessment. We will determine if our lake waters are maintaining, improving or declining. Information will be used by the primary data users.

2- Non-305b overall stream condition and trend assessment of the two major inlet streams. Information will be used by the primary data users.

3- Non-305b stream impact assessment on the two major streams to determine if fecal coliform is a problem as there are 8 turkey barns, and a number of small cattle and buffalo herds in the watershed. Information will be used by the primary data users.

Our program will have two, future minor assessments:

1- Overall watershed wetlands will be assessed for general condition and trend assessment.

2- Overall septic system efficiencies of the lake shore properties will be examined.

5.1 - Parameters

Parameters	Waterbody Type
Total phosphorus	Lake
Chlorophyll A	Lake
Secchi disk	Lake
Total suspended solids	Stream
Total phosphorus	Stream
Fecal coliform	Stream
Transparency tube	Stream
Macroinvertebrates	Wetlands assessment
Aquatic plants	Wetlands assessment
Flow measurements	Stream

5.2 - Sample Collection Methods and Sampling Quality Objectives

Parameter	Sampling Method & Source	Collection Equipment	Where is the Water Column?	Where Across the Transect?	Sample Storage Container & Preservation	Quantity of Sample Collected	Number of Samples Collected Per Site	
Total phosphorus Lake	Integrated depth sample CLMP manual	Integrated Sampler	Epilimnion (upper well mixed layer)	Middle of lake	500 mL bottle and H2SO4 vial, at 4 degree Cent	1 L	One	
Chlorophyll A Lake	Integrated depth Sample CLMP manual	Integrated Sampler	Epilimnion	Middle of lake	Keep in dark, 1 Liter bottle at 4 degree Cent	1L	One	
Secchi disk	Visual observation	Secchi disk	Epilimnion	Middle of lake	NA	NA	Mean of two readings	
Total phosphorus Stream	Standard Grab Sample – EPA manual	Pitcher	Mid depth of water	Midstream	500 mL bottle H2SO4 vial, at 4 Degree Cent	1 L	One	
Fecal Coli Stream	Standard Grab Sample – EPA manual	Sterilized jars obtained from lab	Mid depth of water	Midstream	sterile jar	6 OZ	One	
Total suspended solids Stream	Standard Grab Sample – EPA manual	Pitcher	Mid depth of water	Midstream	250 mL bottle	1 L	One	
Transparency Tube Stream	Standard Grab Sample – EPA manual	Pitcher	Mid depth of water	Midstream – well mixed	NA	NA	Mean of two readings	
Macroin-vertebrates	WHEP – will attach after spring '05 training							
Aquatic plants	WHEP – will attach after spring '05 training							

Flow measurements	Operating instructions book Swoffer Model 2100		Mid depth of water	Midstream	NA			

Representativeness:

The columns of Sampling Methods, Collection Equipment, Where in the Water Column and Where Across the Transect describe the DQOs for each parameter, which in turn demonstrate how representative the samples are of the water body being monitored.

Comparability: To ensure comparability based on sampling we will use standardized sampling procedures and documentation, provide volunteer training and use only those trained.

(Specific methods are attached following this worksheet.)

General Water Sampling Methods

Taken from the Minnesota Pollution Control Agency's
Volunteer Surface Water Monitoring Guide, 2003
Appendix D

1. Sampling for conventional pollutants and nutrients

Two main methods for sampling water quality are: in-field measurements using field meters; and collecting samples for laboratory analyses. The following paragraphs detail methods for each sampling type.

a. Field meters

When completing an analysis in the field using a field meter (such as a dissolved oxygen, pH or turbidity meter), it is important to follow the manufacturer's instructions for calibrating the instrument. Proper calibration is essential to make sure the meter is reading accurately. Be sure to note

the calibration data on the field sheet, including the instrument reading before and after calibration, to check for measurement drift (note that calibration frequency depends on the meter/parameter being measured). This will serve as a check that the calibration was done, and that the meter was functioning properly. You will also need calibration information to complete a quality assurance assessment report prior to submitting the data to the MPCA (see section E). The box below provides general information on the use of a field dissolved oxygen meter, which is the most common type of field meter used.

b. Grab sampling (for laboratory analysis)
While a few parameters can be measured using field meters (e.g., dissolved oxygen, pH, temperature), many require that you collect a sample and transport it to a laboratory for analysis. Sample collection breaks down into three general steps: bottle and equipment preparation, sampling and sample preservation and transport. Following are MPCA requirements for each of these steps.

Bottle and equipment preparation
Most labs will provide bottles for sample collection. If sample bottles have been precleaned by a laboratory or a manufacturer, you do not need to rinse with the sample water before collection. Always follow bottle preparation directions from the lab. If the bottles are not cleaned ahead of time by a lab, then clean them with a detergent (phosphorus-free if sampling for phosphorus) and tap water and rinse several times with distilled or deionized (DI) water. (Note: Do this only for non-metal, inorganic and nutrient parameters.)
Just prior to sampling (i.e., while at the sampling site), clearly label each bottle with the site name, date, time, sample depth and collector's initials. Also record this information on the field data sheet.
Clean sampling equipment that contacts sample water (including the sampling device(s) and any container used

to subdivide samples) with phosphorus-free detergent and rinse with DI water before each day's sampling if there is any visible dirt or foreign material. If the sampling equipment is visibly clean and free from dirt, then simply rinse with DI water at the beginning of the day's sampling for non-metal inorganic and nutrient parameters. Rinse the sampling equipment thoroughly three times with stream/lake water at each site before water is collected to transfer to sample bottles. Use special cleaning procedures when sampling for metals or organic parameters; contact the MPCA for more information.

Specific Sampling Methods - Lakes

Taken from the Minnesota Pollution Control Agency's Volunteer Surface Water Monitoring Guide, 2003
Appendix D

ii. Sampling lakes

Typically, you collect surface water samples from the upper, well-mixed layer of water using an "integrated" sampler. This is a PVC tube with an inside diameter of 3.5 cm (1.4 inches), 2 meters long (6.5 feet), with a stopper at one end.

It will fill a 2-liter bottle, and is used to collect water samples for the majority of the chemical analyses.
To collect a sample, rinse the tube three times with lake water, and then lower it vertically into the water until it submerges, and fills. Stopper the top end (think of putting your finger over the end of a straw in a glass of soda).

Then pull the tube out of the lake. The pressure caused by capping the end holds the water in the sampler until it can be released into a rinsed, 2-liter sample bottle by loosening the stopper. (Note: The pressure often doesn't hold for

long, so be quick in transferring the lower end of the sampler from the lake to the sample bottle.) With this procedure, you obtain an "integrated" 2-liter sample of the upper two meters of the lake, which provides a representative sample of lake water quality in the summer.

Shake the sample in the 2-liter bottle and subset into individual bottles and preserve as per lab requirements for nutrient and chlorophyll-*a* analyses.

If you are going to take a bottom sample to measure phosphorus, use a discrete depth sampler (such as a Van Dorn or Kemmerer sampler). A dissolved oxygen/temperature profile and a Secchi disk reading are also recommended for lake sampling.

5.3 - Analytical Methods

Parameter	Location of Sample Analysis	Maximum Holding Time	Analytical Method and Source	Reporting Units
Total phosphorus Lake and stream	RMB Labs Detroit Lakes	28 days if preserved	RMB has certified method on file	Ug/L
Chlorophyll A stream	RMB Labs Detroit Lakes	48 hours	RMB has certified method on file	Ug/L
Secchi disk	Field	NA	CLMP handbook	feet
Fecal coli	Midwest Analytical Svcs Cambridge	6 hours	SM -18th-9222	# of colonies/ 100 ml
Total suspended solids	RMB Labs Detroit Lakes	7 days	SM 2450 D	Mg/L
Transparency tube	Field	NA	CSMP handbook	cm

5.4 - Data Quality Objectives for Own Analysis

Parameter	Brief Description of Method	Accuracy	Precision	Detection Limit/ Measurement Range
Secchi disk	In field analysis, visual observation	NA	Plus/minus 6" for duplicate readings by the same person as well as different monitors	DL = 6" Range = 6" to 31 ft
T-Tube	In field analysis, visual observation	NA	Plus/minus 3 cm for duplicate readings by the same monitor as well as different monitors	Range <1cm-60cm

*Note: The only parameters listed are those that are not done by a certified lab. If you would like to include your certified lab's accuracy and precision DQOs, feel free to do so.

6.1 – Sample site list - See Appendix A

See spreadsheet attached

6.2 - Site Map

To be inserted

6.3 - Sampling Schedule

Parameter(s)	Frequency	Completeness	Time of Day	Time of Year	# of Years	Special Weather Conditions
Secchi disk (lakes)	Bi-Weekly	Minimum of 1 per month May to Oct	Mid-day	Growing season May to Oct	On going	On bright calm days
Total Phosphorus Chlor A (lakes)	Monthly	Minimum needed 100% of the following: 1 sample/month/site 5 months – May - Sept	Mid-day	Growing Season May to Sept	On going	Same time as Secchi disk
Total Phosphorus (streams- Wyanett and North Brook)	Monthly plus rain events	Minimum needed 100% of the following: 1 sample/month/site 5 months – May- Sept Plus 2 storm events	Mid-day desired, will be consistent	Ice Out to Ice In (At least May-Sept)	Min 3 yrs – then on-going as needed	Include storm events
Total Sus Solids (streams)	Rain events only as solids are not a problem at normal flows	Minimum needed 100% of the following: 1 sample/month/site 5 months – May- Sept Plus 2 storm events	Mid-day desired, will be consistent	Ice Out to Ice In (At least May-Sept)	Min 3 yrs – then on-going as needed	Include storm events
Transparency Tube (streams)	Rain events only as solids are not a problem at normal flows	Minimum needed 100% of the following: 1 sample/month/site 5 months Plus at least 2 storm events	NA	Ice Out to Ice In (At least May-Sept)	On going	Take at average flows and high flows (rain events)
Fecal Coli (streams)	Monthly plus rain events	Minimum needed 100% of the following: 1 sample/month/site 5 months – May- Sept Plus 2 storm events	Mid-day	Growing Season May to Sept	On going	Include storm events

Macroinvertebrates and aquatic plants (wetlands)	At least once a year	100% needed	NA	June/July as recommended by trainers	Minimum of 5 years	Avoid high flows
Total Phosphorus (minor streams)	All other streams will be tested only 2 times annually during storm events. Due to wetland conditions there is no constant flow.					

General comments regarding Site Sampling Schedule: See also Section 6.1 spreadsheet

Wyanett Creek and North Brook will be tested monthly for phosphorous, 5 times from May to Sept.
They will also be tested for phosphorous, 2 times for storm events.

All other streams will be tested only 2 times for phosphorous, during storm events.

Suspended solids and transparency tube will only be tested on the selected sites during storm events, as at other times there is not enough flow to cause suspended solids to be a problem.

Fecal coliforms will be tested at the designated spots. 5 times represent monthly, May to Sept, and 7 times represent an additional 2 times for storm events.

7.1 - Quality Control Measures

Parameters	% Quality Control Samples							Evaluation
		Field Dups.	Lab Dups.					
Total Phosphorus (determine with RMB labs)		10% of all samples	Lab will determine					Certified lab
Chlor A (determine with RMB labs)		Once a year	Lab will determine					Certified lab
Fecal Coli (determine with MW Analytical Labs)		10% of all samples	Lab will determine					Certified lab
Total suspended solids (RMB labs)		10% of all samples	Lab will determine					Certified lab
Secchi Disk		Each sample						**Done by trained personnel**
T-Tube		Each sample						**Done by trained personnel**

Response Action: If a response action is needed, we will define the problem and troubleshooting to determine the problem source. Once identified the problem will be resolved according to established guidelines.

7.2 - Instrument and Equipment Requirements

1) Equipment Type: Integrated Sampler for TP and chlor A
2) Documentation: Purchased from RMB Labs, June 2004
3) Inspection, Calibration, and Maintenance:
Calibration not necessary, store and clean as below

Maintenance
Clean at the beginning of each sampling season
In a clean container dissolve ½ box of baking soda in 1 gallon water
Plug one end and fill half way with cleaning solution
Plug other end and rotate and tilt sampler to clean all surfaces (not ends)
Discard cleaning solution and repeat until all the cleaning solution is used
Rinse thoroughly 3 times with tap water
Storage
Store dry and corked on both ends
Store away from kids, pets and other animals such as mice
For added protection, cover each end with a new plastic bag and fasten them

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1) Equipment Type: Flow meter - Swoffer model 2100
2) Documentation: See manual
3) Inspection, Calibration, and Maintenance: See manual

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1) Equipment Type: Pitcher (plastic) – 2 quart – used for sampling only -
2) Documentation: rinse out 3 times before taking a sample at each site – see Grab Samples Taken by Hand Just Below the Surface – Appendix
3) Inspection, Calibration, and Maintenance: Make sure pitcher is not used for anything other than water sampling

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1) Equipment Type: Secchi disk
2) Documentation:
3) Inspection, Calibration, and Maintenance: check rope as necessary – remark if shrinkage occurs

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8.1 - Field and Laboratory Sheets See Appendix B

The Following are attached in Appendix B

Type of Sheet: RMB Laboratories, Inc.

Chain of Custody Record

Lab analysis report

Web site report

Type of Sheet: Midwest Analytical Services

Chain of Custody Record

Lab analysis report

Type of Sheet: G.L.I.D.

Water sample data sheet

8.2 - Data Transfer, Entry, and Validation

This is the pathway each field and laboratory sheet follows from beginning, through data entry and validation to its final resting place and who has responsibility for each step.

Name of Sheet Or Database	Data Transfer	Data Entry	Validation	Final Resting Place
All sheets	Lab field sheets accompany samples to lab. Lab results are mailed to Jim McLaughlin	Jim McLaughlin enter field and data into an Excel spreadsheet	Dave Dancik will check spread sheet printouts to field and lab sheets	Hardcopies of field and lab sheets will be maintained at Jim M. house Backup copy is kept at Dave D. house.

8.3 - Miscellaneous and Problem Data

Explains how problem data, such as missing values, detection limit, nonsensical data, ranges, narrative, etc., will be handled (e.g. not entered, special characters, etc.).

Parameter	*Data Entry Protocol for "Problem" Data
As necessary	

*We will continue to fill in this worksheet as problem data occur.

8.4 - Meta-data

(Modified from MPCA Volunteer Surface Water Monitoring Guide Appendix F) Checks in the columns indicate where the meta-data can be found. Blank rows indicate that meta-data element is not used.

PROJECT INFORMATION

Meta-data element	In the Moni. Plan	On Field or Lab Sheet	In Data Entry Program	Other:
Project ID	x	x	x	
Project name	x	x	x	
Project purpose	x			
Start date	x	x	x	
Planned duration	x			
Lead organization name	x			
Project manager (with contact Info				
Other Contact (like MPCA rep, SWCD rep)				
Sampling personnel		x		
Sample medium	x			
Sample collection methods	x			
Equipment Used	x			
Field measurement methods	x			
Comments about data transfer, Submission	x			
Project Study Area				
Design & sampling frequency	x			
Programs associated				
Cooperating Org.'	x			
QA plan summary/reference				

LABORATORY

Meta-data element	In the Moni. Plan	On Field or Lab Sheet	In Data Entry Program	Other:
Lab ID	x	x		
Laboratory name (w/ address and contact info	x	x	x	
Citation for lab (Manual or Handbook).				
Parameter	x	x	x	
Sample fraction	x	x	x	
Reporting units	x	x	x	
Comparable standard method		x	x	
Field preservation method	x			
Detection limit				

Lab certified for parameter?	x	x		
Length of Analysis	x	x		
Temperature basis	x	x		

STATION INFORMATION

Meta-data element	In the Moni. Plan	On Field or Lab Sheet	In Data Entry Program	Other:
Project station ID	x	x	x	
Related station	x	x	x	
Station name	x	x	x	
Station type	x	x	x	
Waterbody type (stream, lake, wetland)	x	x	x	
Station description				
Site ID	x	x	x	
Ecoregion name				
Travel directions				
Station latitude-longitude or UTM				
Geo-positioning method				
Datum				
Map scale				
Site lat-long				
State/county				
HUC code				
River Reach				
DNR Lake ID				
Habitat Type				

MONITORING RESULTS

Meta-data element	In the Moni. Plan	On Field or Lab Sheet	In Data Entry Program	Other:
Station and site ID	x	x	x	
Date	x	x	x	
Time	x	x	x	
Station ID	x	x	x	
Site ID	x	x	x	
Activity ID, type and category	x			
Medium				
Sample depth				
Sampling personnel	x	x	x	
Activity comments		x	x	
Sample collection method and equipment				

Sample preservation		x	x	
Lab ID				
Lab sample ID				
Lab certified?		x	x	
Results		x	x	
Field/lab ID		x	x	
Lab Sample Temperature		x	X	
Remark codes				

OTHER

Meta-data element	**In the Moni. Plan**	**On Field or Lab Sheet**	**In Data Entry Program**	**Other:**

9.1 - Compare Your Data with Benchmarks

1) Parameter	2) Analytical Benchmark and Methodology You Will Use	3) Who Will Analyze the Data?	4) Do the Data Users Require this Protocol?
Fecal coliform	**Benchmarks** Water Quality Standards (WQS) <Geometric mean of 200 (Class 2) **Methodology** WQS Step 1 -% exceedence of 200 orgs/100m. If > 10% exceed, then move to next step Step 2- #of months w/geomean>200 orgs/100ml	MN PCA - our area rep. (this will be a new person as of 12-04- our old rep. recently retired) SWCD will also use this data G.L.I.D. will also use this data	Yes
Total Phosphorus	**Benchmarks** North Central Hardwood Forests ecoregion 23-50 ug/L **Methodology** Calculate the summer mean and compare with the percentiles of the reference lakes in our ecoregion	G.L.I.D.	
Chlor A	**Benchmarks** North Central Hardwood Forests ecoregion 5-22 ug/L **Methodology** Calculate the summer mean and compare with the percentiles of the reference lakes in our ecoregion	G.L.I.D.	

Secchi Disk	**Benchmarks** North Central Hardwood Forests ecoregion 1.5-3.2 meters **Methodology** Calculate the summer mean and compare with the percentiles of the reference lakes in our ecoregion	G.L.I.D.	
Macroinvertibrates and aquatic plants	**Methodology and Benchmarks** To be determined spring of '05 after discussion with our consultant		
Total Suspended Solids	**Benchmarks** 2-6 mg/L **Methodology** Calculate the summer mean and compare with the percentiles of the reference lakes in our ecoregion		

9.2 Data Interpretation and Assessment

Decide how you will develop findings and conclusions

1) Questions Used to Develop Findings and Conclusions	2) Potential Statistical Summaries	3) Potential Data Displays
Single Parameters		
1. How do the results of each parameters mean compare to ecoregion guidelines?	Calculate seasonal means for all parameters and see if they fall within the ranges for our ecoregion.	Column graph for each site. (note ecoregion guidelines as horizontal lines for visual comparison)
2. Which sites had the greatest range of results?	Calculate the range of results for each site for each parameter.	Plot maximum and minimum and connect to show range.
3. Did the parameters analyzed exceed the maximum or minimum levels in the water quality criteria? If so, when, where and how often?	Calculate maximum for parameters that are "not to exceed" and minimum for parameters that are "not less than"	Column graph for each parameter. (note water quality criteria)
4. What do results for each parameter look like over space? (Comparing sites)	Calculate seasonal medians, averages, or geometric means (depending on the parameter)	Column graph, arranged upstream to downstream.
5. What % of the time does each parameter exceed the water quality criteria?	Calculate the % of exceedences by dividing the number of exceedences by the total number of samples at each site.	Plot % exceedence for each parameter for each site on a column graph, arranged upstream to downstream.
Comparing Parameters		
6. Does temperature change correlate with water levels?	Use all temp and water level data per site (not just summaries)	Plot both parameters as a combination graph, with each represented by a column. Visually compare.
7. What is the relationship between TP and Chlor A?	Use all TP and Chlor A data	Plot both parameters as a combination graph, with each represented by a column. Visually compare.
8. Does TP correlate with	Use all TP and precipitation	Plot rainfall values as an

precipitation patterns?	data (not just summaries)	araea graph and TP results as column on a combination graph.
9. What is the relationship between bacteria and flow?	Use all bacteria and flow data (not just summaries)	Plot flow values as an area graph and bacteria results as column. Put both on a comvination graph.
10. What is the TSI for Secchi, TP and Chlor A and how do they compare with ecoregion values	Calculate TSI for each individual parameter	Plot TSI for individual parameters on a graph with horizontal lines to represent ecoregion values.

4) Describe how you will develop conclusions.
We will develop our conclusions by comparing our findings over both time (each site over time) and space (various sites to each other). We expect to do this on an annual basis and will include our conclusions in the technical report.

Upon producing our findings and conclusions, our technical committee, including our local SWCD and MN PCA as agreed to look at the date, findings, and conclusions and check for accuracy. As appropriate, we want to share information as outlined in worksheet 10.1, reporting, presenting and planning for change.

5) List Quality Control Questions you will ask about your data to determine if it can support your findings and conclusions.
How many samples were taken at each site? Did it meet our data quality requirement we set?
Were samples collected at the right time of day? Were samples collected within the time period specified by the lab? Were samples collected through the whole sampling season?
What were the results of the duplicates we collected during the sampling season? Did they meet the date quality objectives?
Was the data checked against the field notes?
Did our date checker find any transcription errors?

10.1 - Reporting, Presenting, and Planning for change

1) Who will be responsible for preparing the reports and presentations?
The water quality committee, headed by David Dancik.

2) – 4):

2) What formats will be used to tell your story?	3) Target Audiences	4)	Raw data	summarized data		inter-preted data	photos	maps	illustra-tions	stories	Other:
				tables	graphs						
Detailed report	G.L.I.D. Board, PCA SWCD		x	x	x	x	x	x	x	x	Conclusions, recommendations
Non formal report	G.L.I.D. Board			x	x	x		?	?	?.	
Annual lake newsletter	G.L.I.D. and lake residents				x	x	x	?	?	?	

5) Where/When will message be delivered?
Detailed reports- Once a year to G.L.I.D. board with bi-monthly non-formal progress reports to same.
Annual lake newsletter- once a year minimum and presentation to the district annual meeting.

6) What would you expect to happen as a result of your report or presentation?
In the ideal situation, all lake property owners will work together to continue the improvement of our lake waters.

11.1 - Task Identification and Timeline

Monitoring Goal or Assessment (optional): **Dates Covered by Timeline:**

Target Start Date	Target End Date	Main Category (Planning, Training Monitoring, etc.)	Task / Activity Description	Person(s) Responsible to Organize/ Evaluate	Notes of Resources Needed to Carry-Out Task	Fill in Date When done
11-01-04	3-31-05	Planning	Review and revise the plan as necessary	GLID sub-committee		
3-1-05	3-31-05	Planning	Check existing equipment to insure serviceability	GLID sub-committee		
3-1-05	3-31-05	Planning	Check labs on costs and pick-up, delivery arrangements	GLID sub-committee		
3-1-05	3-31-05	Planning	Prepare field and lab sheets, database files	GLID sub-committee		
4-15-05	4-30-05	Management	Plan training session with volunteers	GLID sub-committee		
6-01-05	6-15-05	Management	Prepare newsletter, annual meeting presentation To include prior year water sample results and year to date results – Review BMP's, septics, etc	GLID sub-committee		
5-01-05	7-01-05	Training	WHEP training sessions	McLaughlin & Dancik		
May	Oct	Monitoring Season				

Target Start Date	Target End Date	Main Category (Planning, Training Monitoring, etc.)	Task / Activity Description	Person(s) Responsible to Organize/ Evaluate	Notes of Resources Needed to Carry-Out Task	Fill in Date When done

11.2 - Volunteer Monitors Contact Information

Current GLID sub-committee for water monitoring
(other citizen volunteers and their duties will be added as determined)
David Dancik 389-1999
Jim McLaughlin 389-0109
Wayne Mosman 763-633-7777
Bob Duncan 389-0304

(to be completed when all monitors are determined)
Name
Address
Phone
Email
Sites Monitored/ Other Notes

11.3- Committees and Data Users Contact Information

Committee:___sub-committee of GLID board is responsible - members subject to renewal and changes
(to be completed)
Name/ Organization
Address
Phone
Email
Area of Expertise for committee

Data Users:

Name/Organization	**Title, if applicable**	Address	Phone	Email
Isanti County SWCD	Earle Stoeckel, Chair	5050 261st Ave NW Isanti MN 55040	763-444-8307	
Mn PCA	Roger Ranthum, our area coordinator		651-296-9262	

MN Dept of Natural Resources	Michael Mueller, Cambridge office	800 Oak Savanna Lane Cambridge, MN 55008		

11.4 - Over-all Budget

1) Revenues:

Item	Description	Budget
MLA/RCM Monitoring Plan	One time only	3000
GLID budget funds		823
	TOTAL REVENUE	3823

2) Expenses:

Type of Expense	(unit price)	(number of units)	Total Budget
Site sampling – see next worksheet Sec 11.5			2932
Mileage	.36	350	126
Sample shipping	15	10	150
Reports preparation, photocopying, printing			110
Supplies and equip. for wetlands sampling – see attached list			505
Totals			3,823

3) Balance: ---(expected revenue minus expected expense) $ -0-

4) In-Kind Contributions:
Item- volunteer hours
Description 4 volunteers @ 30 hours each = 120 hrs @ 17.20
Total In-Kind Contributions = $2,064.

11.5 - Expenses per Site – See Appendix C

See Appendix C Attached

12.1 - Follow-up

Group/Audience	How Follow-up will happen:	Schedule
Citizen Volunteer Monitors	Send annual monitoring report Recognize at district annual meeting Training	1 time a year – late fall at annual meeting 1 a year (Spring) and as necessary
Data users	Send annual monitoring report and more frequently as necessary Follow up	1 time a year – late fall 1 time a year (spring) to talk about current year plan and follow up concerns from prior year. Check in to see how they have been using report.

12.2 - Evaluation

Annual Evaluation Components	*Questions to Ask:*	*Tools used for evaluation*
Data use	Did the data collected answer data user's questions?	Written survey with follow up correspondence/call to data processors
Monitoring Plan	Re-evaluate monitoring plan at end of sampling season and during sampling season as required.	Review plan to determine areas needing revision, clarification, etc.
Volunteer Management	Were the volunteers comfortable with the training and feedback process? Are we satisfied with their participation?	Personal evaluations discussed after monitor season. Follow up in February prior to start of new plan season.
QA/QC	Is the quality of our monitoring data still meeting our data users'needs?	Annual conversation with our analytical laboratory.

3 to 5 Year Evaluation Components	*Questions to Ask:*	*Tools used for evaluation*
Monitoring Plan	What is working? What needs updating?	Establish group to review plan.
Watershed Vision	Has our vision for the lake and watershed changed?	Surveys, group input, conversations with residents and data users.

Where will the results of the evaluation be stored/accessed?

Initially, David Dancik and Jim McLaughlin will keep originals and full duplicate back up of both digital and hard copies at their respective residences.

APPENDICES

APPENDIX E ITEMS

RMB Environmental Laboratories, Inc.

22796 County Highway 6 • Detroit Lakes, MN 56501-7002 • 218-846-1465 Phone and Fax • rmbel@lakesnet.net • www.rmbel.info
Minnesota Department of Health Certification # 027-005-336

September 1, 2004
Original Report
Page 1 of 9

Report To: Jim McLaughlin
Green Lake Improvement Dist
32870 Xenon Street NW
Princeton, MN 55371

Bill To: Barb of Accounts Payable
Green Lake Improvement Dist
33193 Peridat Street NW
Princeton, MN 55371

Project: Storm Event
Lab Code: 36564
Matrix: Surface Water
Collection: Grab
Date/Time Sampled: 08/26/04 1800
Date/Time Received: 08/31/04 0950

Laboratory: RMB Environmental Laboratories, Inc.
Contact/Phone: Robert Borash, 218-846-1465

Samplers: Jim McLaughlin

Sample Description: B-1

Compound	Analysis Method	Analysis Date	Dilution Factor	MDL	RL	Sample Result	
Nutrients							
Phosphorus, Total	EPA 365.3	08/31/04	1	0.005	0.005	0.040	mg/L

Comments:

RL = Reporting limit of the analysis method.
MDL = Minimum detection limit of the analysis method.

If you have any questions or need assistance, please feel free to contact RMBEL, Inc. at your convenience at 218-846-1465.

Report approved by:

Robert Borash - Lab Director

Your Local Partner in Water Quality Concerns

RMB Environmental Laboratories, Inc. is certified by the Minnesota Department of Health, certification # 027-005-336

RMB Environmental Laboratories, Inc.
22796 County Highway 6, Detroit Lakes, MN 56501
218-846-1465

Lakes Monitoring Program
Sample Data / Chain of Custody Sheet

General Information

Lake Name: _____ **MN Lake ID #:** ____-_____

Site ID # (primary): _____

Sampled By: _____

Weather Conditions

Sky Condition: Clear Partly Cloudy Overcast

Wind Direction: N NE E SE S SW W NW

Wind Velocity (mph): (0-10) (10-20) (20-30) (30+)

Air Temperature: _____degrees F. **Water Temperature:** _____degrees F.

Recent Storms?? **Date:** _____ **Precipitation Amount:** _____

Additional Weather Comments:

Sampling Details

Date: _____ **Sample Site ID #:** _____

Time 2 Liter Sample Collected: _____ AM / PM by _____

Time Secchi Disk Reading Taken: _____ AM / PM by _____

Secchi Disk Reading: _____ feet

Field Sampling Comments, Suggestions, Observations (please share your thoughts)

Chain of Custody

Relinquished by (signature in ink): _____ _____
Date / Time (AM/PM)

Received by Lab (signature in ink): _____ _____
Date / Time

Laboratory use only

Lab Code #: _____ **Condition of samples upon receipt:** ☐ Good ☐ Other: _____

☐ Rcvd on ice **Temperature Blank** _____°C ☐ Rcvd same day of collection **Initial:** _____

RMB Environmental Laboratories, Inc.

22796 County Highway 6, Detroit Lakes, MN 56501 • *phone & fax:* 218-846-1465 • rmbel@eot.com

CHAIN OF CUSTODY RECORD

Client:

Project Name: P.O. #:

Samplers: (print) Phone #:

Samplers: (signature) Fax #:

Analyses Requested

Lab Code	Sample Description	Date	Time	# of Bottles	Collection: Composite Grab Integrated	Matrix: See Below	Sample Comments: (Collection, Filtration, Preservation)

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Date/Time	Comments:
Relinquished By: (Signature)	Date/Time	Received by Lab: (Signature)	Date/Time	Comments:

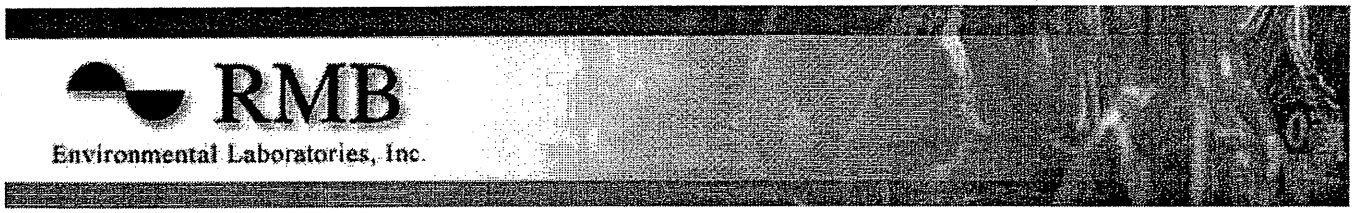
Report To:

Bill To:

- ❑ Rvcd in Good Condition
- ❑ Rvcd in Poor Condition:
  Explain_____
- ❑ Rcvd at Room Temp
- ❑ Rcvd on Ice
- ❑ Temp Blank NA
- ❑ Temp Blank _____ °C
- ❑ Samples Rcvd Same Day as Collection
- ❑ Evidence Tape:
  ❑ Intact ❑ Not Intact ❑ NA

Sample Matrix Options: DW—Drinking Water GW—Ground Water SW—Surface Water WW—Waste Water FB—Field Blank SL—Sludge S—Solid

Distribution: White—Accompanies Shipment & Analytical Results Yellow—RMBEL Project File Pink—Client Copy



Monthly Individual Lake Report

Printer Friendly Return to

Lake: Green

Lake MN ID#: 30-013600
Site ID#: GL 1
County: Isanti

Lab Code #: 36776
Date/Time Sampled: 9/8/2004 - 0800
Date/Time Received: 9/9/2004 - 0900
Sampler: Jim Mclaughlin

Sample Results

Total Phosphorus: 96 ug/l
Chlorophyll A: 69 ug/l
Secchi Disk: 3.5 Feet

Trophic State Index (TSI) *Calculated*

TSI Phosphorus: 70
TSI Chlorophyll A: 72
TSI Secchi: 59
TSI Month Average: 67
Trophic State: Eutrophic

Weather Conditions

Sky Condition: clear
Wind Direction: NA
Wind Velocity: 0-10 mph.
Water Temperature: 65 °F
Air Temperature: 48 °F
Recent Precipitation: 2.5 in. on 9/3/2004

Recreational Suitability

Color of Water: Green
Wave Height (inches): NA in.
Physical Condition: Definate Algae Present
Recreation Suitability: Swimming Slightly Impaired
Lake Uses Observed: Fishing
Boating
Erosion Problems: N/A

MIDWEST ANALYTICAL SERVICES
330 Cleveland Street S.
Cambridge, MN 55008

LAB: (763) 689-2175
FAX: (763) 689-1092

info@midwestanalytical.com
MINNESOTA CERTIFIED LABORATORY
No. 027-059-403

Green Lake Improvement District	**Project:** G.L.I.D.		
32870 Xenon	**Project Number:** [none]		
Princeton MN, 55371	**COC No.:** 51919	**Sample Temp. at Login:**	°C
	Project Manager: Jim McLaughlin	**Reported:**	09/09/04 16:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GL-1	0402899-01	Water	09/08/04 08:00	09/08/04 09:58
W-1	0402899-02	Water	09/08/04 09:00	09/08/04 09:58
W-2	0402899-03	Water	09/08/04 09:00	09/08/04 09:58
W-3	0402899-04	Water	09/08/04 09:00	09/08/04 09:58
W-4	0402899-05	Water	09/08/04 09:00	09/08/04 09:58
W-5	0402899-06	Water	09/08/04 09:00	09/08/04 09:58

Microbiological Parameters by APHA Std Methods

te	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
GL-1 (0402899-01) Water Sampled: 09/08/04 08:00 Received: 09/08/04 09:58									
Fecal Coliform Bacteria	**100**	100	CFU/100 ml	100	MI40923	09/08/04	09/09/04	SM(18th)9222 D	FC-6
W-1 (0402899-02) Water Sampled: 09/08/04 09:00 Received: 09/08/04 09:58									
Fecal Coliform Bacteria	**200**	100	CFU/100 ml	100	MI40923	09/08/04	09/09/04	SM(18th)9222 D	FC-6
W-2 (0402899-03) Water Sampled: 09/08/04 09:00 Received: 09/08/04 09:58									
Fecal Coliform Bacteria	**600**	100	CFU/100 ml	100	MI40923	09/08/04	09/09/04	SM(18th)9222 D	FC-6
W-3 (0402899-04) Water Sampled: 09/08/04 09:00 Received: 09/08/04 09:58									
Fecal Coliform Bacteria	**500**	100	CFU/100 ml	100	MI40923	09/08/04	09/09/04	SM(18th)9222 D	FC-6
W-4 (0402899-05) Water Sampled: 09/08/04 09:00 Received: 09/08/04 09:58									
Fecal Coliform Bacteria	**400**	100	CFU/100 ml	100	MI40923	09/08/04	09/09/04	SM(18th)9222 D	FC-6
W-5 (0402899-06) Water Sampled: 09/08/04 09:00 Received: 09/08/04 09:58									
Fecal Coliform Bacteria	**100**	100	CFU/100 ml	100	MI40923	09/08/04	09/09/04	SM(18th)9222 D	FC-6

Midwest Analytical Services

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

LJK

SEP 10 2004

Larry Kidder, Microbiology Manager

MIDWEST ANALYTICAL SERVICES

330 SO. CLEVELAND ST.
CAMBRIDGE, MN 55008
LAB (763) 689-2175
FAX (763) 689-1092

CHAIN OF CUSTODY RECORD
AND
REQUEST FOR ANALYSIS
(Instructions on Back of Form)

51520

CLIENT: GREEN LAKE JT DIST
SAMPLER NAME: JIM
PROJECT I.D.: G.L.I.D.
SAMPLER SIGNATURE:
REPORTS TO BE SENT TO: JIM McLAUGHLIN
REMARKS: 763-389-0109

SHADED AREAS FOR LABORATORY USE ONLY

NO. OF CONTAINERS	COMP.	GRAB	DATE	TIME	MATRIX: WATER	MATRIX: SOIL	MATRIX: OTHER	SAMPLE	SAMPLE NO.	LABORATORY I.D. NO.	GRO (Includes BTEX)	DRO	BTEX	VOC (MN465)	pH	Pb (Diss. or Total)	Total Kjeldahl: N	BOD or CBOD	TSS	FCOL or TCOL	Ammonia	Total Phosphorus	PRESERVATIVE: HCl	PRESERVATIVE: HNO_3	PRESERVATIVE: H_2SO_4	PRESERVATIVE: ICE	PRESERVATIVE: OTHER
1		X	2/4	327				W-1												X							
1		X	2/4	327				W-2												X							
1		X	2/4	327				W-3												X							

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	CHECK HERE FOR DRINKING WATER DETECTION LIMITS ☐
	2/4 1:30	Wayne Hoffman				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	TURNAROUND TIME REQUIRED:
						☐ NORMAL ☐ RUSH
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Contents Temperature:	Comments:	DATE REQUIRED:

SAMPLE DATA COLLECTION

Green Lake Stream Monitor data			MN Lake ID	30-0136							
Water Sampling Data Collection Sheet											
Site	Green Lake	Un-named	Wyanett at	Wyanett at	Wyanett at	Braitlin at	Braitlin at	No Brook at	No Brook at	No Brook at	No Brook at
	middle of lake	Stream Cty 11	Cty 11 East	Cty 11 West	333rd Ave	landing	Hwy 95	Hwy 95	349th Ave	357th West	357th East
Site ID	GL-1	US - 1	W-1	W-2	W-3	B-1	B-2	No B- 1	No B- 2	No B- 3	No B- 4
Date of sample	6-2-04	6-2	6-2	6-2	6-2	6-2	6-2	6-2	6-2	6-2	6-2
Cty 7 bridge gage	5.70										
Secchi dish	16										
Chlor A											
Total Phos											
Total Sus Solid	na										
Air Temp	64	55	55	55	55	65	64	64	65	65	65
Water Temp	59	54	55	55	55	58	59	58	58	58	59
Culvert Diam	na	4 ft	4 ft	4 ft	?	3 ft	4 ft across	4 ft across	4 ft	4 ft	4 ft
Water depth	na	20 in	26 in	18 in	18 in	30 in	36 in	36 in	30 in	19 in	21 in
Feet / Sec. flow	na	0.34	1.8	1.55	1.65	0.9	1.98	1.4	1.45	2.55	0.45
Odors	na	na	na	na	na						
Other											

APPENDIX C

11.5 - Expenses per Site																	
Site			GL-1	US-1	W-1	W-2	W-3	B-1	B-2	NoB-1	NoB-2	NoB-3	NoB-4	GLB	W-4	W-5	Wet-1	Wet-2
Parameter and other costs																		
		Cost																
Total phosphorous		$14	5X=70	2X=28	7X=98	7X=98	7X=98	2X=28	2X=28	7X=98	7X=98	7X=98	7X=98	2X=28				
Chlor A		$24	5X=120															
Total suspended solids		$10		2X=20	2X=70			2X=20		2X=20								
Fecal coliform		$28			7X=196	7X=196	7X=196			2X=56					2X=56	2X=56		
Macroinvertibrates																		
& aquatic plants																		
professional identifi-																		
cation- 10 hours @$50																	500	500
Total		$2,674	190	48	364	194	194	48	28	174	98	98	98	28	56	56	500	500

III. Budget Request Form

A. Group Name: Green Lake Improvement District

B. Fiscal Agent: (Name/Address/Phone of Person responsible to receive/handle funds: Jerry Tvedt, County Coordinator
Isanti County Govt Center
555 18th Ave SW
Cambridge, MN 55008
763-689-3859

C. Name that should appear on the check: Isanti County

D. Amount requested: $ 3000.00

E. Budget from Step 11:

- Please copy your budget from worksheet 11.4 and paste into this form. Attach worksheet 11.5, if used. Then, finish filling out the columns to the right and email back to RCM/MLA as your budget request.
- The expense table below also asks you to identify those items of the budget that will be paid for with these funds (which part of your plan will be implemented) and specific estimates of what specific items will cost.
- The expense table also asks the time frame that funds will be used in – which will determine when you will receive them. We will distribute funds up to three times different times, depending on when you expect to spend them. Before we can distribute additional funds, we must receive all receipts back from the current spending period. This is because RCM/MLA are not reimbursed until we have all receipts. (All funds must be used by December 1, 2005.)

Revenues:

Item	*Description*	*Budget*
MLA/RCM Monitoring Plan		$3,000
G.L.I.D. budget funds		823
	TOTAL REVENUE	**$3,823**

In-Kind Contributions:

Item	*Description*	*Value*
Volunteer hours	4 volunteers @30 hours each=	$2,064
	120 hrs @ $17.20	
	TOTAL IN-KIND VALUE	**$2,064**

Expenses:

Type of Expense	*(unit price)*	*(number of units)*	*Total Budget*	*Budget for LCMR Funds Only Through RCM/MLA*	*Receive Money for these items: **Jan 1, '05.** Turn in all these receipts: **Mar 30, '05***	*Receive Money for these items **Apr 1, '05.** Turn in all these receipts **Sept 30, '05***	*Receive Money for these items **Oct 1, '05.** Turn in all these receipts **Dec 1, '05***
Site sampling – see			2932	**2932**		**2932**	
Worksheet Sec 11.5							
Mileage	.36	350	126				
Sample shipping	15	10	150	**68**		**68**	
Reports preparation,							
Photocopying, printing			110				
Supplies & Equip. for							
Wetlands sampling – see attached list			505				
TOTAL EXPENSES 2005			**3823**	**3000**		**3000**	

11.5 - Expenses per Site																	
Site		GL-1	US-1	W-1	W-2	W-3	B-1	B-2	NoB-1	NoB-2	NoB-3	NoB-4	GLB	W-4	W-5	Wet-1	Wet-2
Parameter and other costs																	
	Cost																
Total phosphorous	$14	5X=70	2X=28	7X=98	7X=98	7X=98	2X=28	2X=28	7X=98	7X=98	7X=98	7X=98	2X=28				
Chlor A	$24	5X=120															
Total suspended solids	$10		2X=20	2X=20			2X=20		2X=20								
Fecal coliform	$28	2X=56		7X=196	7X=196	7X=196			2X=56					2X=56	2X=56		
Macroinvertibrates & aquatic plants professional identification- 10 hours @$50																500	500
Total of above	$2,730	246	48	314	194	194	48	28	174	98	98	98	28	56	56	500	500
10% field duplicates	$202																
Total site testing budget	**2,932**																
Comments:																	
GL-1 will be tested 1 time a month for Total Phosphorous and Chlor A from May to Sept = 5 tests																	
GL-1 will be tested 2 times during storm events for fecal coliform																	
All sites listed with 2 tests represent tests during storm events only as they normally do not have stream flow due to wetland conditions																	
All sites listed with 7 tests represent 5 monthly tests, May to Sept, plus 2 tests during storm events																	

Equipment for 1 team.

WETLANDS SAMPLING

Dakota County Wetland Health Evaluation Project

2002 equipment information

Equipment, Vendors

item description	catalog #	company name	phone number	address/eddress	unit price	number	
D frame dip net	425-D12	Wildlife Supply Co.	800 799-8301	wildco.com	$ 106.00	1	$ 106.00
med. size tray	62686-283	Van Waters & Rogers	800 932-5000		$ 6.49	1	$ 6.49
Large, shallow tray	62686-363	Van Waters & Rogers			$ 9.36	1	$ 9.36
500ml wash bottle	16651-493	Van Waters & Rogers			$ 34.32	12	$ 5.72
rite-in-rain, copy paper	49247	Forestry Suppliers, Inc.	800 647-0368	forestry-suppliers.com	$ 18.95	200	
rite-in-rain, notebook	49298	Forestry Suppliers, Inc.		forestry-suppliers.com	$ 5.75	1	
suunto P-II compass	37177	Forestry Suppliers, Inc.		forestry-suppliers.com	$ 7.15	1	$ 7.15
forceps	53781	Forestry Suppliers, Inc.		forestry-suppliers.com	$ 2.00		
flagging	58043	Forestry Suppliers, Inc.		forestry-suppliers.com	$ 1.95	1	$ 1.95
6"metric ruler		Forestry Suppliers, Inc.		forestry-suppliers.com	$ 0.95	2	$ 1.90
magnifying glass	K3-60-2204	Carolina Biological	800 334-5551	carosci.com	$ 15.95	1	$ 15.95
16 oz white jars	MONHDS7308W	Twin City Bottle	612-331-8880	1227 E. Hennepin, Mpls, MN	$ 131.34	288	$ 11.40
89mm white lids	ARPH89WTRISEAL	Twin City Bottle				288	
Tote Trays	51201-0100	Dick Blick		dickblick.com	$ 11.00	1	$ 11.00
cooler trays	5270-1171	Coleman		coleman.com	$ 5.50	2	$ 11.00
30m tape measure		Menards			$ 15.00	1	$ 15.00
hardware cloth		Menards			$ 15.00	1	
other hardware		Menards			$ 35.84	1	
gas cans		Target			$ 2.09	1	$ 2.09
sturdi-stakes					$ 3.00	2	$ 6.00
waders					$ 90.00	3	$ 270.00
bottle traps	activity bottles	Proto-Fab	715 664-8699	Menomonie, Wisconsin	$ 4.79	20	$ 95.80
	bottle holder	Proto-Fab			$ 2.15	20	$ 43.00
	slide clamp	Proto-Fab			$ 1.99	20	$ 39.80
	stake	Proto-Fab			$ 1.29	20	$ 25.80
	sieve	Proto-Fab			$ 3.95	20	$ 79.00
	sieve cap	Proto-Fab			$ 0.50	20	$ 10.00

have waders will subtract

total $ 774.41

- 270

$505

Rivers Council of Minnesota

1269 Second Street North, Suite 200, Sauk Rapids, MN 56379
PHONE 320-259-6800 • **FAX** 320-259-6678 • **E-MAIL** rivers@riversmn.org • **URL** www.riversmn.org

Kari Tomperi
Wadena County Water Resource Mgt.
Wadena SWCD
4 Alfred St. NW
Wadena, MN 56482

October 14, 2005

Dear Kari,

We have received your final report and attachments for the RCM/MLA Citizen Volunteer Monitoring Plan program, as funded through LCMR*.

Your document satisfies the reporting requirements and completes the monitoring plan training, implementation, and contract components for the program.

It has been a pleasure to work with you, Lori, Hugo, and Jerry throughout this project. Please keep in touch with monitoring activities and updates on your program. Also let us know of future monitoring/training needs that may be of interest to you or your citizen volunteer monitoring group.

Sincerely,

Angie

Angie Becker Kudelka
River Watch Director
Rivers Council of Minnesota

* Funding for this project was recommended by the Legislative Commission on Minnesota Resources (LCMR) from the Minnesota Environment and Natural Resources Trust Fund.

Kari Tomperi 10/4/05
Wadena Water Resource Management

Monitor Plan Report

a. Most expenses follow the estimated budget from the monitoring plan. One exception is the additional administration expense for development of the first citizen volunteer mussel survey in the State of Minnesota. The survey was listed as an action item in the plan but it was not clear up front how much actual time was needed to coordinate the citizen survey through planning, training and finally the implementation of the mussel survey. Much assistance was given by Angie Becker-Kudelka from the Rivers Council and Mike Davis of the DNR to get the first survey up and running.

Another exception to the budget is instead of buying multiple Fishhawk Temperature profilers for each lake, one machine that does both temperature and dissolved oxygen was purchased for the lakes to share. One volunteer is in charge of maintaining the machine.

Wadena County was fortunate in that they were able to enroll several but not all lakes into the MPCA Citizen Lake Monitoring Program Plus where the Dept of Health assisted in the cost for testing for Chlorophyll "a" and for Total Phosphorus. The only CLMP+ expense for the grant was mileage for the first sample pickup on June 13th for mailing into the MPCA. All other mileage for test samples to MPCA or RMB Labs were covered by individual volunteers, lake associations or the City of Menahga. The grant covered the RMB Lab expenses for those lakes and areas not in the CLMP+ program.

b. A computer printout is attached listing purchases with receipts attached.

c. As the monitoring season is still winding down, it is hard to evaluate how all the results fit together. Especially as the summaries from the MPCA CLMP+ program are not available. Some interesting findings that were noted during the season are results from the Blueberry inlet phosphorus study, the storm water retention pond study on Spirit Lake and the study of one of the inlets to Stocking Lake. It is worth noting that without a citizen volunteer doing stream monitoring on the Stocking Lake inlet an opportunity to evaluate a suspicious algae bloom might have been missed. When tested, it was found that the phosphorus level was three to four times higher than what is noted in the lake. Further testing and evaluation is needed to determine the cause.

d. Follow up with all the volunteers will be an important next step. Review and comparison of the data from all the water bodies will be important to help target key areas next monitoring season, especially the noted inlet to Stocking Lake. Additional sites on tributaries are also being developed.

It was a little overwhelming at first but I think this approach is an excellent way to prioritize and develop an effective monitoring plan. Thank You, Kari S. Tomperi

WADENA SOIL AND WATER CONSERVATION DISTRICT
Transaction Detail By Account
May through September 2005

Type	Date	Num	Name	Memo	Amount	Balance
Intergovernmental Revenue						
Grants and Projects						
Citizens Volunteer Monitoring						
Deposit	5/13/2005		Rivers Council of MN	Grant	3,000.00	3,000.00
Total Citizens Volunteer Monitoring					3,000.00	3,000.00
Total Grants and Projects					3,000.00	3,000.00
Total Intergovernmental Revenue					3,000.00	3,000.00
Personal Services						
Payroll Expenses						
Employees Wages						
General...	9/30/2005	94	Tomperi, Kari	Administrative Services	(450.00)	(450.00)
Total Employees Wages					(450.00)	(450.00)
Total Payroll Expenses					(450.00)	(450.00)
Total Personal Services					(450.00)	(450.00)
Other Services and Charge						
Vehicle Expenses						
Gas						
General...	9/30/2005	94		Mileage collecting samples	(24.30)	(24.30)
Total Gas					(24.30)	(24.30)
Total Vehicle Expenses					(24.30)	(24.30)
Total Other Services and Charge					(24.30)	(24.30)
District Project Expenses						
Water Plan Projects						
Citizens Volunteer Water Qualit						
Check	9/30/2005	10723	MN Pollution Contro...	Citizen Stream Monitoring Kits	(205.00)	(205.00)
Check	9/30/2005	10727	Science Fair Center	Thermometers for volunteer m...	(207.65)	(412.65)
Check	9/30/2005	10729	Toolmark	Fiberglass Tapes for volunteer ...	(375.77)	(788.42)
Check	9/30/2005	10734	Spirit Lake Assoc.	Equipment - temperature probe...	(480.45)	(1,268.87)
Check	9/30/2005	10738	Menahga Conserva...	Mussel Survey Equipment	(260.76)	(1,529.63)
Check	9/30/2005	10739	Spirit Lake Assoc.	Equipment - temperature probe...	(205.57)	(1,735.20)
Total Citizens Volunteer Water Qualit					(1,735.20)	(1,735.20)
Lake Monitoring						
Check	6/27/2005	10611	RMB Laboratories	Blueberry Lake Nutrient Monito...	(48.00)	(48.00)
Check	8/5/2005	10665	RMB Laboratories	Blueberry Lake Samples	(48.00)	(96.00)
Check	8/16/2005	10668	RMB Laboratories	Blueberry Lake Samples	(48.00)	(144.00)
Check	8/16/2005	10668	RMB Laboratories	Stocking Lake Inlet Stream Sa...	(14.00)	(158.00)
Check	9/15/2005	10703	RMB Laboratories	Blueberry Lake sampling	(48.00)	(206.00)
Check	9/30/2005	10724	RMB Laboratories	Spirit Lake sampling	(240.00)	(446.00)
Check	9/30/2005	10724	RMB Laboratories	Bluebery Lake sampling	(48.00)	(494.00)
Check	9/30/2005	10734	Spirit Lake Assoc.	Spirit Lake Storm Sewer Sampl...	(72.00)	(566.00)
Check	9/30/2005	10736	RMB Laboratories	Spirit Lake sampling overcharged	50.00	(516.00)
Check	9/30/2005	10736	RMB Laboratories	Stocking Lake sampling	(190.00)	(706.00)
Total Lake Monitoring					(706.00)	(706.00)
Stream Monitoring						
Check	6/13/2005	10586	Petty Cash	Postcards for CSMP	(12.50)	(12.50)
Check	6/27/2005	10611	RMB Laboratories	Shell River samples	(24.00)	(36.50)
Check	7/14/2005	10638	RMB Laboratories	Shell River samples	(24.00)	(60.50)
Check	8/16/2005	10668	RMB Laboratories	Shell River sampling	(24.00)	(84.50)
Total Stream Monitoring					(84.50)	(84.50)
Total Water Plan Projects					(2,525.70)	(2,525.70)

$3050
+2000 ✓ ABK

Rivers Council of Minnesota

1269 Second Street North, Suite 200, Sauk Rapids, MN 56379
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May 7, 2005

Kari Tomperi
Wadena SWCD
4 Alfred Street NE
Wadena, MN 56482

Dear Kari,

Your request for $3000 to help implement your monitoring plan for the Wadena Soil and Water Conservation District's citizen monitoring program has been approved. Congratulations, and again, great job on the monitoring plan!

Enclosed is the check for $3,000. All monies must be accounted for with receipts and those receipts are due back to us by September 30, 2005. A brief final report is required no later than December 1, 2005.

It has been a pleasure working with you! You have been fantastic partners – thanks to Lori, Hugo, and Jerry for their input. We will be in touch about other specific workshops that may be of interest and doing periodic check-ins to see how your monitoring plan is working out.

Great Work!

Angie

Angie Becker Kudelka, River Watch Director
Rivers Council of Minnesota