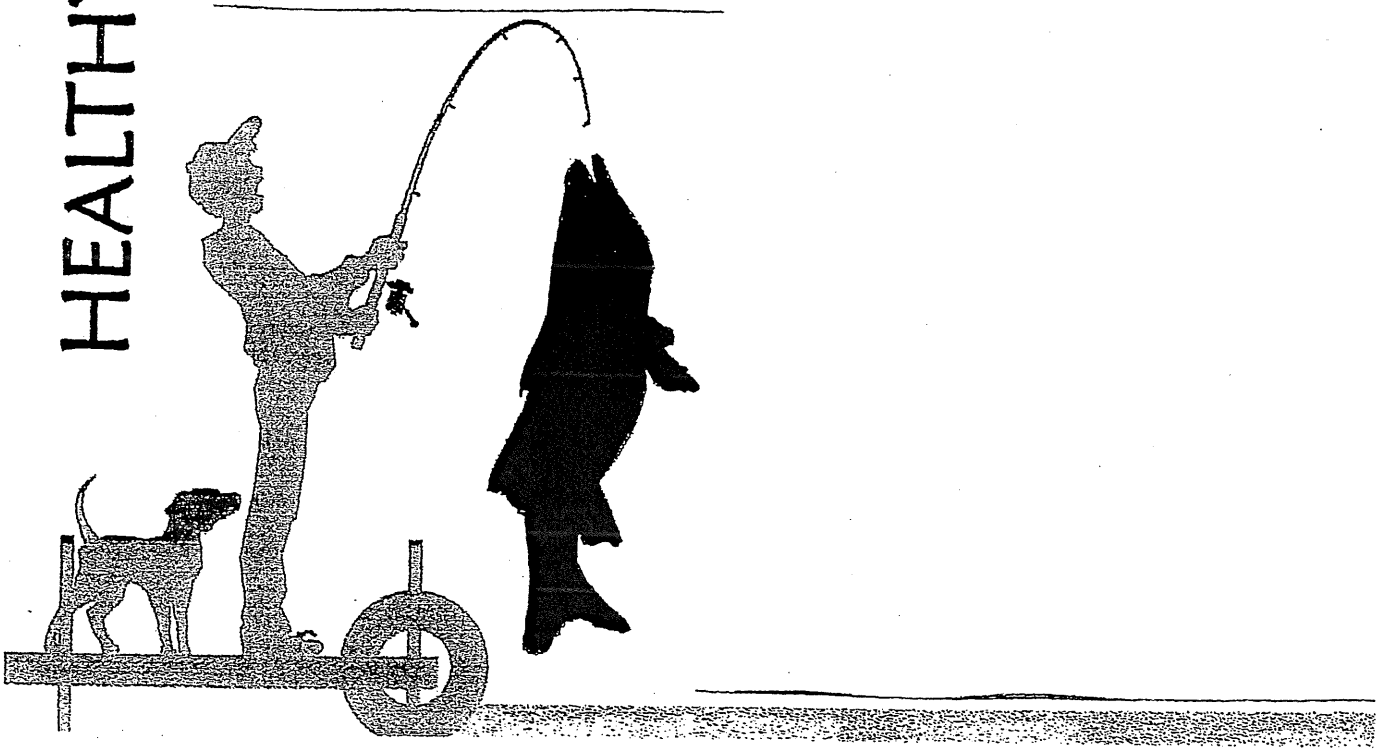
HEALTHY LAKES PARTNERSHIP

BRIGGS LAKE CHAIN ASSOCIATION

BRIGGS LAKE CHAIN MONITORING PROGRAM

2004



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Date Plan Completed:	January 31, 2005
Organization Name:	Briggs Lake Chain Association
Name of Program:	BRIGGS LAKE CHAIN ASSOCIATION MONITORING PLAN
Monitoring Plan Author(s):	Barb Tucker, Curt Hutchens, George Kydd, Walt Munsterman
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The Legislative Commission on Minnesota Resources (LCMR) recommended funding for this project 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

What is your group's mission?

The Briggs Lake Chain Association's (BLCA) mission is to promote the care, improvement and general welfare of the Briggs Lake Chain of lakes (Briggs, Big Elk, Julia, and Rush) and adjoining and connecting waters, and any other matter affected by or related to this mission.

We will be collecting data and studying what the changes are occurring (such as increase in algae), in the water in our lakes and attempting to discover what is causing the changes and using data that we collect to help decrease the problem.

Geographical area covered (e.g. watershed, state, county, specific lakes or rivers if appropriate):

The Briggs Lake Chain watershed is located in the Upper Mississippi River Basin, in the North Central Hardwood Forest Ecoregion, in Benton and Sherburne Counties in Minnesota. The Elk River is the main source of water for the lakes and empties into the Mississippi river.

What type of organization are you?

Non-profit

When was your organization founded/started? 1951

Of members: 350

Of paid staff: 4 officers receive small stipends

(President, Vice President, Secretary and Treasurer)

Introduction Narrative

Briggs Lake Chain of Lakes has had a citizen volunteer Secchi-disk monitoring program since 1975 on Briggs, Julia and Rush Lakes, and since 1982 on Big Elk Lake. There are presently four citizen lake monitors, one on each lake.

The Elk River and streams that provide inlet and outlet water for the chain of lakes has been monitored since 2000. There are presently two citizen monitors conducting turbidity measurements. All monitored data is reported to the Minnesota Pollution Control Agency (MPCA).

The goal of the Water Quality Committee is to improve the overall water quality of our lakes. There are large quantities of data that has been collected from the monitoring by our lake citizen monitors, the MPCA, St. Cloud State University) in conjunction with Sherburne County), the Minnesota Department of Natural Resources (DNR), and Palmer Township. This data is scattered in several different formats and places, and one of the committees goals will be to gather this data, compile the data, and develop means to correlate and analyze the data. This approach will enable a cohesive history to be established

It is hopeful that this committee's work will enable us to develop a plan that will enable us to determine the type of equipment, training, and other tools necessary to carry out future monitoring to enable timely analysis of the data. This analysis will allow more prompt remedial action to be taken.

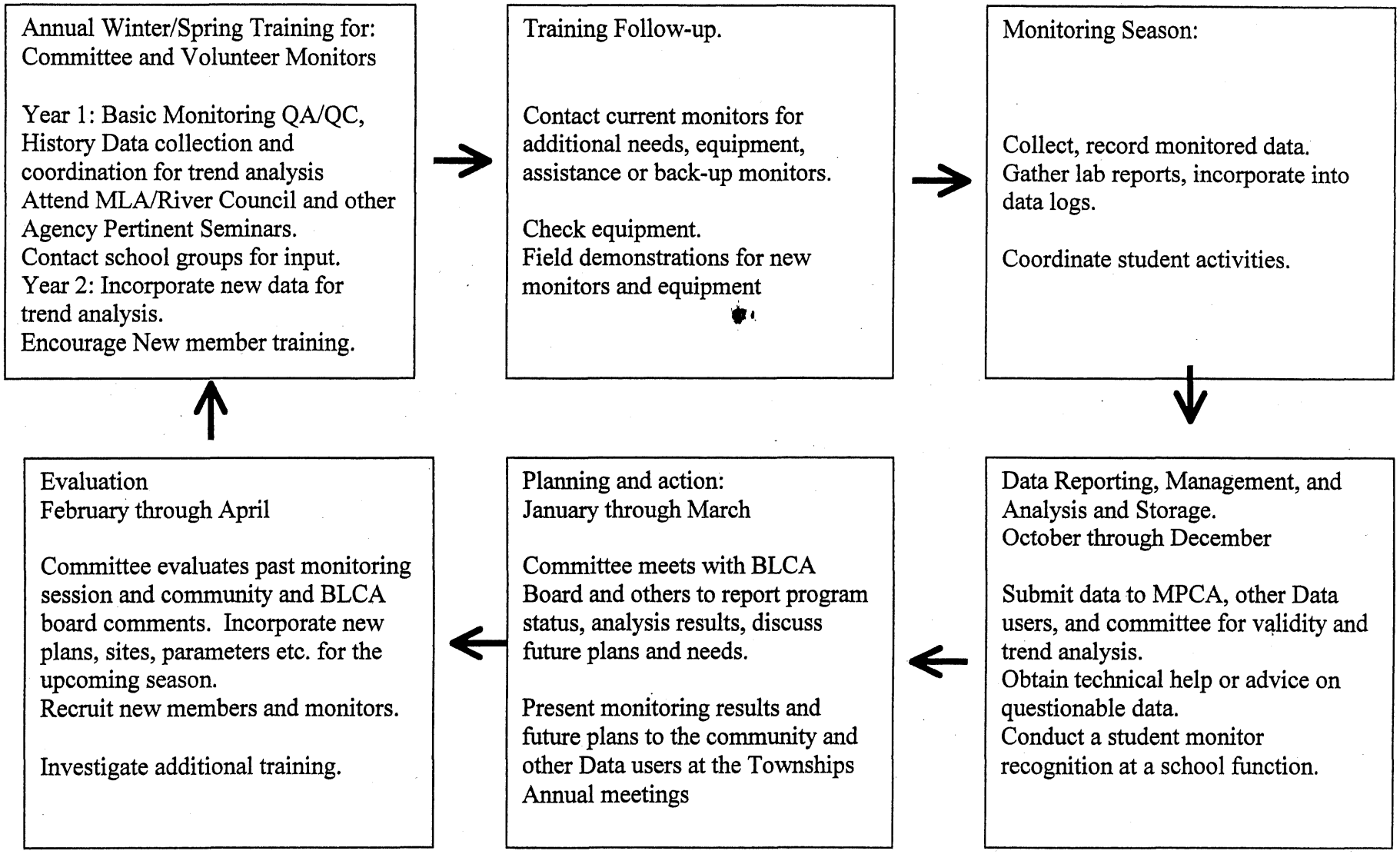
In addition to the MPCA Citizen Monitoring mentioned in the first paragraph, we participate annually in the National Secchi Dip-in Program, the DNR Zebra Mussel Watch, and lake-gauge monitoring.

The Lake Association has participated in the Initiative Foundations Healthy Lake Program beginning in 2002, which enabled the updating of our Lake Management Plan.

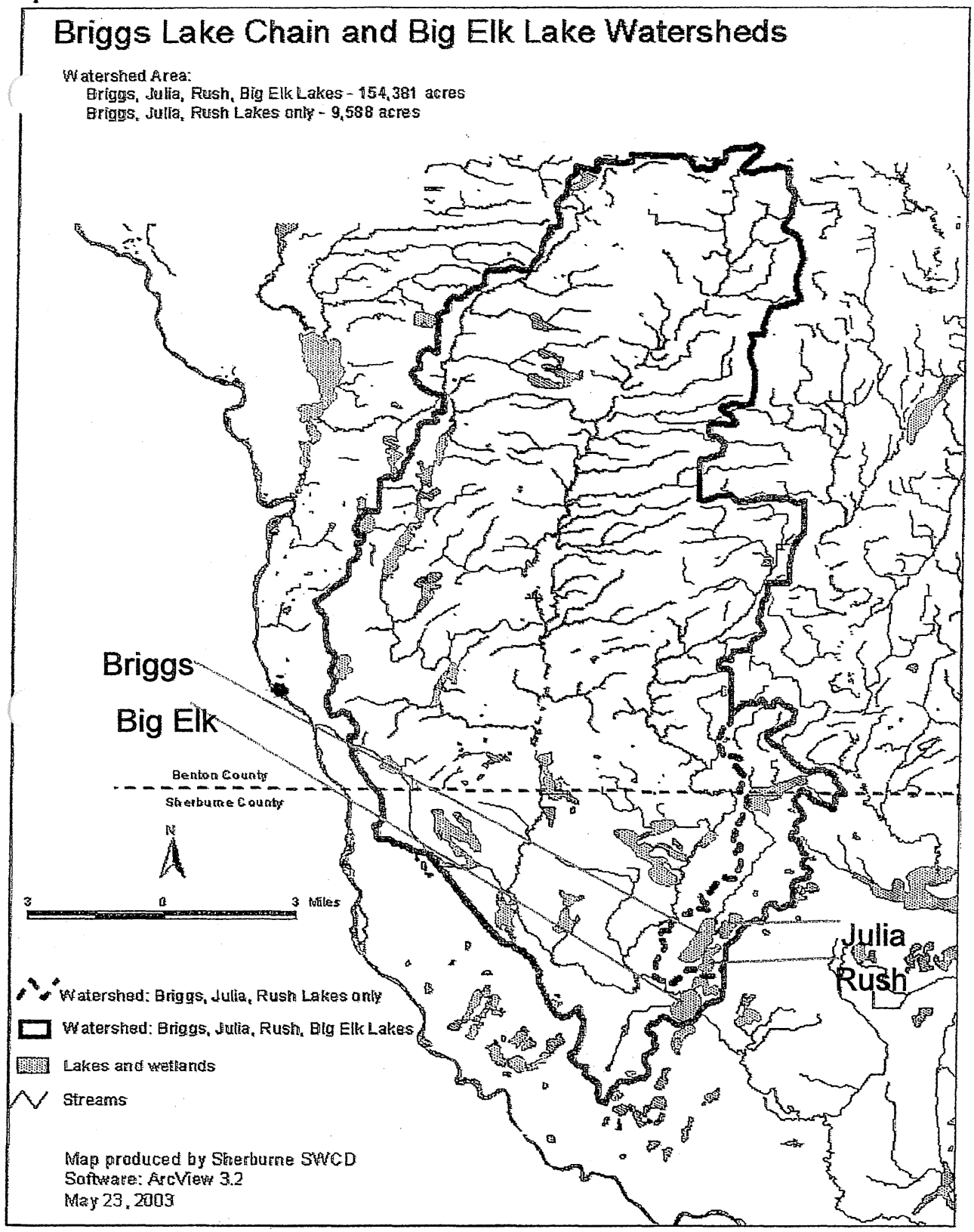
Members of the Association have participated in the Sherburne County Lakeshore Preservation Native-plant Restoration Plantings.

University of MN Extension Division Shore land Volunteers have participated in DNR access native-plant planting projects, boat and trailer exotic weed monitoring at the public access of the lakes. They have also participated in the Alternative Septic System survey of the lakeshore property on the four lakes.

Flow Chart


Annual Winter/Spring Training for:
Committee and Volunteer Monitors
Year 1: Basic Monitoring QA/QC,
History Data collection and
coordination for trend analysis
Attend MLA/River Council and other
Agency Pertinent Seminars.
Contact school groups for input.
Year 2: Incorporate new data for
trend analysis.
Encourage New member training.
Training Follow-up.
Contact current monitors for
additional needs, equipment,
assistance or back-up monitors.
Check equipment.
Field demonstrations for new
monitors and equipment
Monitoring Season:
Collect, record monitored data.
Gather lab reports, incorporate into
data logs.
Coordinate student activities.
Data Reporting, Management, and
Analysis and Storage.
October through December
Submit data to MPCA, other Data
users, and committee for validity and
trend analysis.
Obtain technical help or advice on
questionable data.
Conduct a student monitor
recognition at a school function.
Planning and action:
January through March
Committee meets with BLCA
Board and others to report program
status, analysis results, discuss
future plans and needs.
Present monitoring results and
future plans to the community and
other Data users at the Townships
Annual meetings
Evaluation
February through April
Committee evaluates past monitoring
session and community and BLCA
board comments. Incorporate new
plans, sites, parameters etc. for the
upcoming season.
Recruit new members and monitors.
Investigate additional training.

Map 1 Watersheds



1.2 - Watershed and Surface Water Information (BRIGGS, BIG ELK LAKE, JULIA AND RUSH LAKES)

Watershed / Water bodies of Interest:

INFORMATION ITEMS	ANSWER
Major Basin	Upper Mississippi Basin
Watershed	Mississippi St. Cloud (Elk River Watershed)
Ecoregion	North Central Hardwood Forest
Location	Benton and Sherburne Counties
Classification Number Hydrological Unit Number	DNR Maintenance Watershed Number 17 07010203
Soil Type	Sand, Loamy, Fertile
Land use	Mostly agricultural
Lake Classification	Recreational
Lake Surface Area,	Briggs-406, BigElk-352, Julia-137, Rush-161, Watershed-154, 381 (acres)
Lake Average Depth Lake Maximum Depth	Briggs-14, Big Elk-6, Julia-7, Rush-5, (feet) Briggs-28, Big Elk-12, Julia-16, Rush-1, (feet)
Curlyleaf pondweed a problem	Briggs, Julia, Rush

Land Use

The approximate land use for the watersheds is:

	Forest	Water and Marsh	Pasture and Open	Cultivated	Urban Residential
Briggs Chain	23%	12%	25%	27%	13%
Big Elk Lake	13%	9%	34%	42%	2%
North Central Hardwoods Forest	6 – 25%	14 – 30%	11 – 25%	22 – 50%	2 – 9%

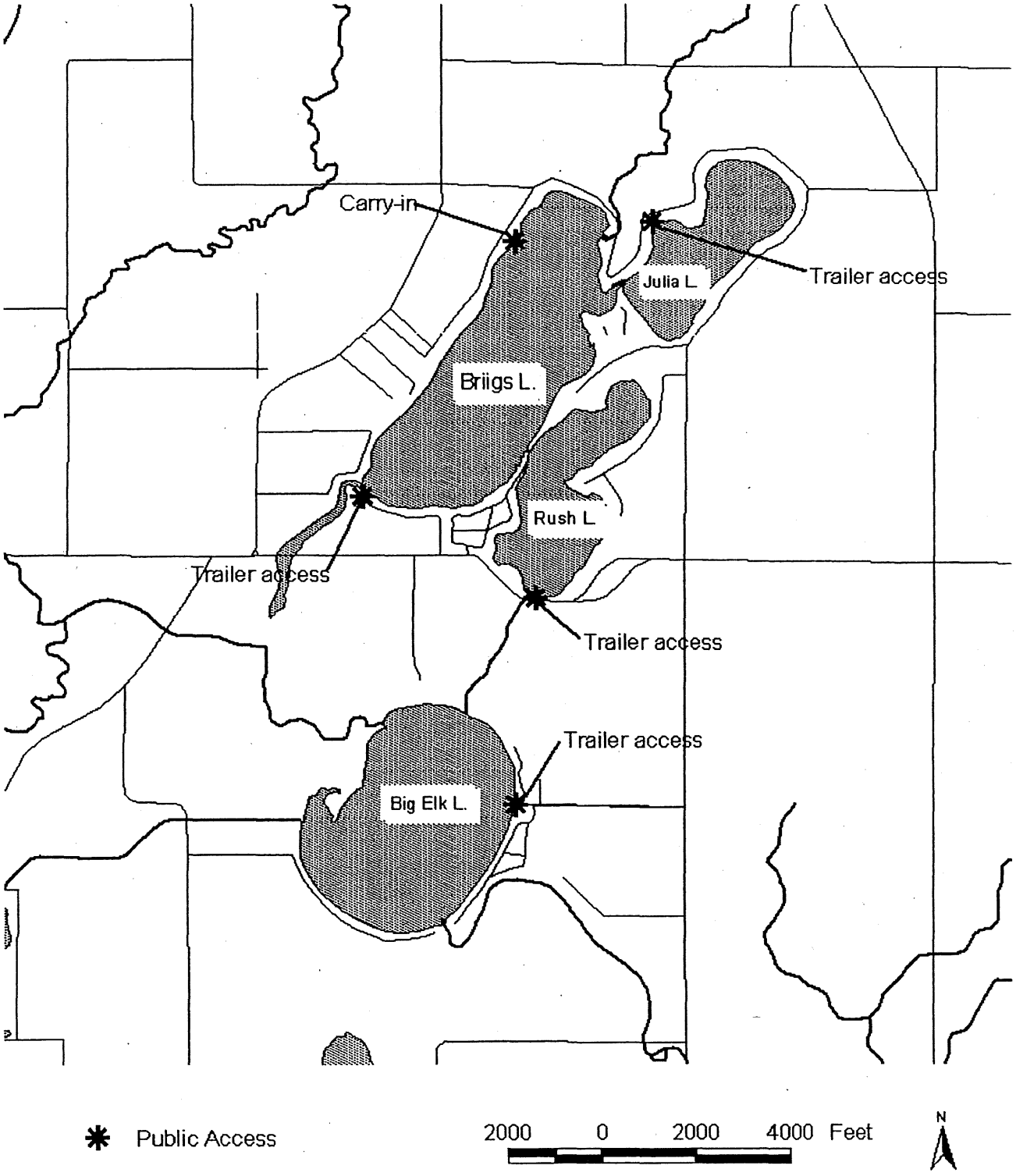
*Information was compiled by the Sherburne County Soil and water Conservation District in 2000.

1.3 - Inventory of Watershed and Surface Water Uses

Watershed / Waterbodies of Interest:

USES	ANSWER
Primary Uses, Watershed Lakes	Irrigation of farmland All Lakes-Recreational
Public Access and Locations	Public Access on all lakes (See map on following page)
General Public perception of lakes	Mixed; desirable shore land ownership, recreation usage high.
Predominate wastewater systems	On-site-Individual septic systems and holding tanks (all lakes)
Important Native Species	See following pages for fish and plant species
Data collectors	MPCA, DNR, St, Cloud University, Palmer Township
Noteworthy History	Location of lakes from Cities makes for many users of the lakes.
Supplemental Information	Briggs Lake Chain Association - Healthy Lakes Partnership (Lake Management Plan 2003-2004)

PUBLIC ACCESS MAP



1993 AQUATIC PLANT LIST

A list of aquatic plant species found growing along transects at Briggs, Rush and Julia Lakes during August 1993. Number is frequency of occurrence. Data for Big Elk Lake was collected in 1999.

Species	Briggs	Julia	Rush	Big Elk
Muskgrass	45	100	20	
Sedge			30	10
Coontail	15	40	10	
Canada Waterweed	100	70	80	10
Blue flag		10		
Lesser duckweed			20	
No. Watermilfoil	5			
Bushy pondweed	50	10		20
White waterlily	5		60	
L. White waterlily			50	
Yellow waterlily	5			
L. Yellow waterlily	5			
Curled pondweed	30	90	70	20
Reed Canary grass			20	60
Sago pondweed	5		20	60
Narrowleaf pondweed	80	10		10
Flatstem pondweed	15	60	30	
Hardstem bulrush	10			
River bulrush			20	10
Softstem bulrush			10	10
Great water dock			10	
Arrowhead	20		10	
Common cattail			10	

Source: Minnesota Department of Natural Resources, Montrose Fisheries.

1999 net catches of fish species from the Briggs Chain of Lakes.

Numbers in bold print represent values that are below or above the expected range of values (for lake class 43). Net catches for northern pike, redhorse, white sucker, walleye, yellow perch are based on gill nets. All others are trap nets. Numbers are number of fish per 24 hr net set.

Species	Briggs	Julia	Rush	Big Elk	Expected Values
Black Bullhead	**0.1**	**0.2**	-	**0.5**	11.2-107.9
Black Crappie	3.3	6.2	1.8	**0.3**	1.9-24.7
Bluegill	**70.4**	**36.8**	**15.7**	**0.8**	1.3-20.0
Bowfin	-	**0.2**	**0.2**	1.0	0.3-1.7
Brown Bullhead	-	-	**0.3**	-	0.3-5.7
Common Carp	0.6	**0.2**	**0.7**	1.5	0.8-5.8
Golden Redhorse	-	-	-	-	
Golden Shiner	-	-	-	-	0.2-1.3
Largemouth Bass	-	0.3	0.5	-	0.2-1.3
Northern pike	3.5	**10.0**	7.0	5.0	1.4-8.5
Pumpkinseed Sunfish	**6.9**	1.0	3.0	**0.2**	0.3-5.2
Shorthead Redhorse	-	1.8	-	0.5	
Walleye	**1.7**	4.3	3.0	4.3	2.0-15.8
White Crappie	-	-	-	-	0.3-4.2
White Sucker	**5.5**	2.8	2.0	**18.8**	1.0-5.5
Yellow Bullhead	1.2	**3.3**	2.5	0.7	0.6-2.8
Yellow Perch	16.5	13.5	3.7	**2.3**	4.0-24.5

During 1999 the catch of bluegill was above the expected level on the lakes while the catch of black crappie was within the range of expected values. The population of walleye was consistent with net catches in 1993 but electrofishing results suggested that the population was higher. Northern pike catches increased somewhat from 1993 and the catch is highest in Julia Lake.

Source: Minnesota Department of Natural Resources, Montrose Fisheries

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
Big Elk Lake 71-0141 2 MI NE of Clear lake	2B, 3B, 4A, 4B, 5&6 warm water aquatic life and all types of recreation	M	No	Swimming	Not listed			TSI 79 Hypereutrophic Secchi-1.6'	Unknown Run off
Briggs Lake 71-0146 3 MI NE OF Clear Lake	2B, 3B, 4A, 4B, 5&6 warm water aquatic life and all types of recreation	M	No	Swimming (partial)	Not listed	.		TSI 63 Eutrophic Secchi-3.6'	Unknown Run off
Julia Lake 71-0145 5Mi NE of Clear Lake	2B, 3B, 4A, 4B, 5&6 warm water aquatic life and all types of recreation	M	No	Swimming	Not listed	.		Secchi-2.6 TSI 67 Eutrophic	Unknown Run off

Rush Lake 71-0147 3Mi NE of Clear Lake	2B, 3B, 4A, 4B, 5&6 warm water aquatic life and all types of recreation	M	No	Swimming	Not listed			Secchi-2.3 TSI 76 Hypereutrophic	Unknown Run off

11) Values: All lakes used for fishing and boating swimming.

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
Is water clarity declining in our lakes?	Secchi Disk testing- 1975-2003-MPCA- CLMP 2003-St.Cloud University	Data collected and received by the association for study shows declining clarity Much of the water quality data is scattered in several different formats.	Continue CLMP and other testing programs. Gather, compile and develop means to correlate and analyze data.	Maintaining or improving water clarity so water is more useful for recreation uses. To have a cohesive water quality history.
Is Phosphorus getting into the lakes causing excessive algae bloom?	Some testing done by St. Cloud State University on a three-year cycle.	Previous testing shows increase in phosphorus content. More data is needed on a regular testing cycle yearly to establish if there is a relationship between the phosphorous and algae.	Develop a more complete and consistent monitoring program. Develop a river and stream-monitoring program in the future to determine where the phosphorous is getting into the water.	Determining how much phosphorus is in the water and how and where it is getting into the water and eliminate the sources. Use monitoring data to educate landowners and lake users on proper uses of materials containing phosphorus.

3.1 - Data Users and Data Uses

Question or Hypothesis	User/Decision Maker	Uses/Decisions	Potential Parameters
Is water clarity declining in our lakes?	Briggs Lake Chain Association	Our lake association will work with other groups such as SWCD, MPCA, DNR, ST. Cloud University and other groups to help in maintaining and improving our water quality by educating the public and lake users.	Secchi disk Total phosphorus Chlorophyll "a"
	Lake Association, SWCD	Will help develop educational material for distribution to lake users and local media articles.	Secchi disk Total phosphorus Chlorophyll "a"
	Sherburne County, DNR, MPCA	Will help in enforcement of rules and regulations when not being followed by citizens.	
	Lake Association, Township Boards,	Educate through media to show what types of things cause pollution and how to use or not use them.	
Is phosphorus getting into the lakes causing excessive algae bloom?	Briggs Lake Chain Association	Use data above to develop a stream monitoring program to find phosphorous sources	Secchi disk Total phosphorus Chlorophyll "a"
	Sherburne County, DNR, MPCA	Work with agencies to develop a way to decrease phosphorus input in addition regulation enforcement	
	Lake Association Townships Boards	Educate on phosphorous sources and how to decrease them	

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

Condition/Trend Assessment

No-305B

Direct Data

This year we will be collecting more data and attempt to find out how much phosphorus and chlorophyll "a" is in the water. We will work with the other groups listed in our data user groups list to do our study.

Next year our next step will be to do some lake, river, and stream monitoring to determine sources and control them.

5.1 - Parameters

Parameters	**Waterbody Type**
Secchi Disk (Water clarity)	Lakes
Phosphorus	Lakes
Chlorophyll "a"	Lakes

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
Secchi Disk for water clarity (lake)	Sample-CLMP Visual observation	Secchi Disk	Epilimnion (upper well mixed layer)	Maximum lake depth	Not applicable (NA)	NA	Mean of two readings
Total Phosphorous Lake	Integrated Depth Sample- CLMP+ Manual	Integrated Sampler	Epilimnion (upper well mixed layer)	Maximum lake depth	1 L Acid-rinsed HDPE bottle, add H2SO4 to pH 2 at 4 Degrees C	1L	One
Chlorophyll "a"	Integrated Depth Sample CLMP+Manual	Integrated sampler	Epilimnion (upper well mixed layer)	Maximum lake depth	Keep in dark at 4 degrees C	1L	One

Representativeness: The sampling methods, collection equipment, sites where samples are taken for each parameter will demonstrate how representative the samples are of the waters 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 volunteers.

Secchi Disk-Basic Method (Full Method in CLMP + Manual)

1. Lower Secchi disk into water until it disappears from sight.
2. Bring disk up until it appears again.(repeat a second time)
3. Record data as the average of these two depths as the Secchi depth transparency.

Total Phosphorus—Basic Method (Full Method in CLMP + Manual)

1. Samples will be collected in the field by trained monitor and recorded.
2. Samples will be placed in containers supplied by the testing company.
3. Samples will be delivered to the testing company by Lake Monitoring Committee.

Chlorophyll "a" –Basic Methods (Full Method in CLMP + Manual)

1. Samples will be collected in the field by trained monitor and recorded.
2. Samples will be place d in containers supplied by the testing company.
3. Samples will be delivered to the testing company by Lake Monitoring Committee.

5.3 - Analytical Methods

Parameter	Location of Sample Analysis	Maximum Holding Time	Analytical Method and Source	Reporting Units
Total Phosphorous All Lakes	Traut Wells St. Cloud (only every three years for student training)	28 days if preserved	Laboratory will analyze with certified methods.	µg/LP
Secchi disk for water clarity All lakes.	Field	NA	CLMP Handbook	feet
Chlorophyll "a"	Traut Wells	Unfiltered 48 hours/ Filtered & frozen 30 days	Laboratory will analyze with certified methods.	µg /L

5.4 - Data Quality Objectives for Own Analysis

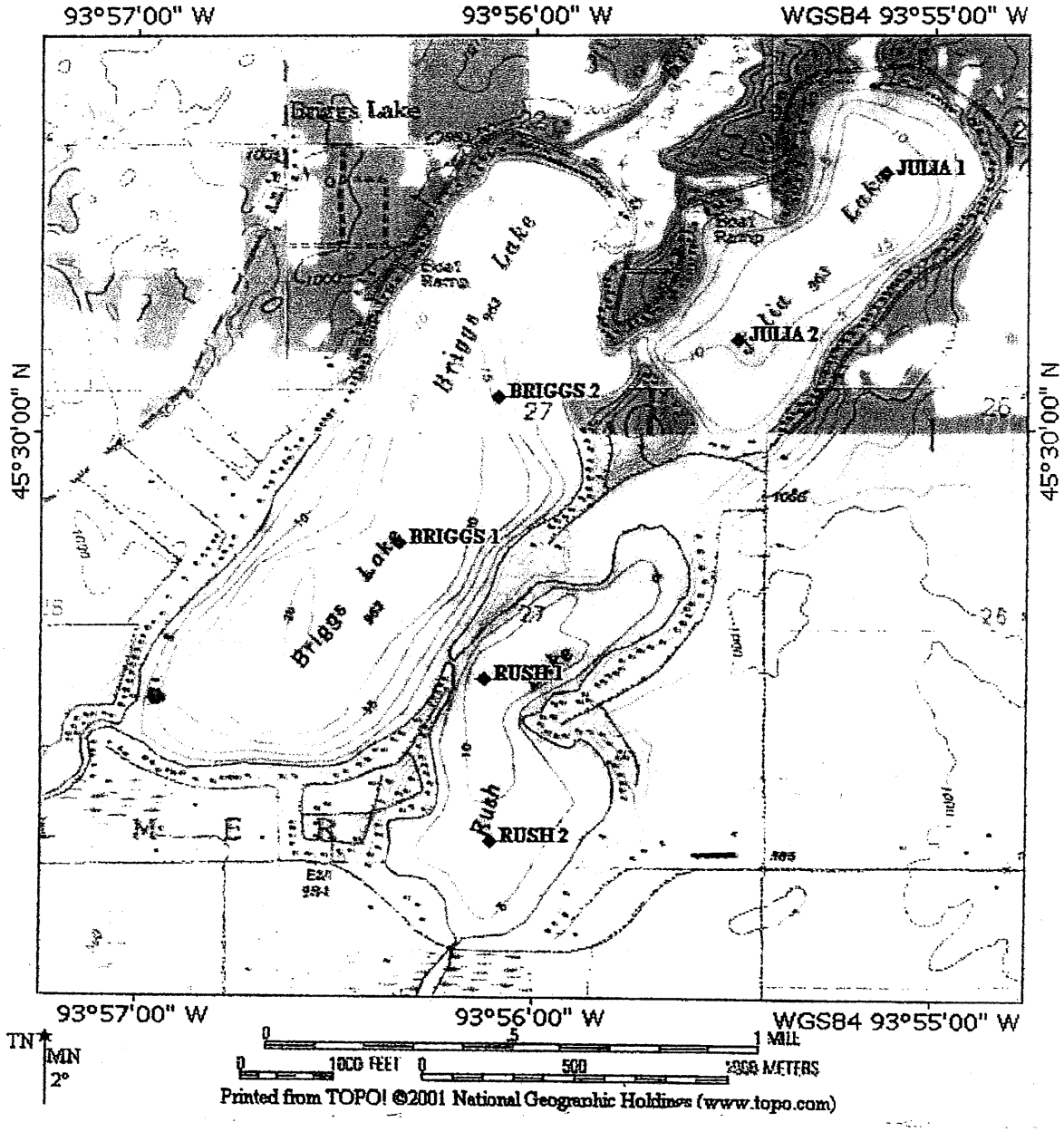
Parameter	Brief Description of Method	Accuracy	Precision	Detection Limit/ Measurement Range
Secchi disk for water clarity	Field analysis and visual observation (Results sent to MPCA)	NA	0.5 feet for accurate readings by the same monitor as well as different monitors	DL = 0.5 ft. Range = 0-33ft.

6.1 - Sampling Site List

Site #	Brief Description of Location (Code for Segment, if any)	Type of Site	Parameters
Briggs	(BR 1)*	Lake Condition/Trend Deepest points	Secchi Disk Phosphorus Chlorophyll "a"
Lake Julia	(LJ 1)*	Lake Condition/Trend Deepest points	Secchi Disk Phosphorus Chlorophyll "a"
Rush Lake	(RL 1)*	Lake Condition/Trend Deepest points	Secchi Disk Phosphorus Chlorophyll "a"
Big Elk Lake	(BEL 1)*	Lake Condition/Trend Deepest points	Secchi Disk Phosphorus Chlorophyll "a"

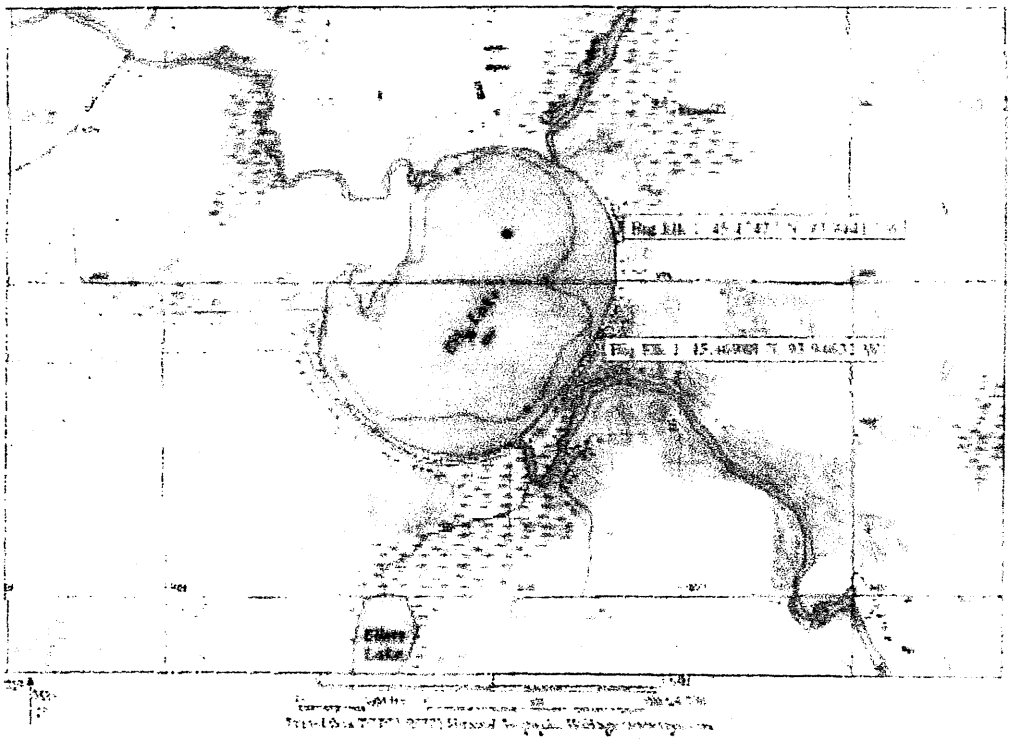
*Actual sites will be determined as a part of the training program.

6.2 - Site Map



* Actual sites will be determined during the training program for monitors.

6.2 A Site Map



* Actual sites will be determined during the training program for monitors.

6.3 - Sampling Schedule

Parameter(s)	Frequency	Completeness	Time of Day	Time of Year	# of Years	Special Weather Conditions
Secchi Disk	Two times per month	2 readings per month minimum (100%)	Between 10AM and 3PM	May through September	On going	On calm bright days
Total phosphorus	Two times per month	2 samples per month minimum (100%)	Between 10AM and 3PM	May through September	On going	On calm bright days
Chlorophyll "a"	Two times per month	2 samples per month minimum (100%)	Between 10AM and 3PM	May through September	On going	On calm bright days

7.1 - Quality Control Measures

Parameters	Evaluation					
	Field Blanks	**Field Dups.**	**Lab Dups.**	**Calibration Standards**	**Spikes**	
Secchi disk	NA	Each sample	NA	NA	NA	Performed by trained monitor in the field
Total phosphorus	10% of all sites	10% of all sites	10%	Each run	1/run	Samples collected by trained monitors Performed by certified lab
Chlorophyll "a"	10% of all sites	10% of all sites	10%	NA	NA	Samples collected by trained monitors Performed by certified lab

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: Secchi disks
2) Documentation: 5 purchased in previous years
3) Inspection, Calibration, and Maintenance: Keep disks cleaned. Recalibrate rope markings at the beginning of each season to make sure ropes are properly marked so measurements are accurate.

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1) Equipment Type: Integrated Sampler
2) Documentation: Will need to purchase 4
3) Inspection, Calibration, and Maintenance:

a. **Clean at the beginning of each sampling season:**
   In a clean container dissolve ½ box of baking soda in 1 gallon of water
   Plug one end and fill half way with cleaning solution
   Plug other end and rotate and tilt sampler to clean all surfaces, making sure not to touch internal portion of sampler ends.

   Discard cleaning solution and repeat until all cleaning solution is used
   Rinse thoroughly 3 times with tap water

b. **Storage when not in use:**
   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

8.1 - Field and Laboratory Sheets

Type of Sheet: MPCA Secchi disk record sheet

Copies Attached (Y/N): Attached on the following pages

Type of Sheet: Chain of Custody Record-Traut Water Analysis Laboratory

Copies Attached (Y/N): Attached on the following pages

Type of Sheet: Example Sample Water Label

Copies Attached (Y/N): Attached on the following pages

Type of Sheet: Liability Waiver

Copies attached (Y/N): Attached on the following pages

MPCA Citizen Lake-Monitoring Program 2004 Secchi Data Sheet

Lake # _____

Site # _____

Your Name: _____

Address: _____

_____

_____

- **Use a separate data sheet for EACH site.**
- **If disk is on lake bottom, mark "B" next to Secchi.**
- **PC = Physical Condition; RC = Recreational Suitability**
- **Record carefully: 6 ft & 9 in is 6.75 ft - NOT 6.9 ft.**
- **For NEW sites, send in your marked lake map.**

Lake Name: _____ **County:** _____

Location of Lake: _____ **miles** _____ **of** _____.

Phone: (____)-_____-_____ = summer; (____)-_____-_____ = winter.

Is this the same sampling site YOU monitored last year? ____ **Lake depth at sampling site:** _____ **ft.**

Line #	2004 Date	Time	Secchi (nearest 1/2 ft)	*B	PC	RC	Color of Water	Data Entered Online?	Other Notes
Ex.	**5-20**	**2:00 a.m. (p.m.)**	**7.5 ft**		**2**	**2**	**clear**	**yes**	**Sunny, slight breeze**
1		a.m. p.m.	ft						
2		a.m. p.m.	ft						
3		a.m. p.m.	ft						
4		a.m. p.m.	ft						
5		a.m. p.m.	ft						
6		a.m. p.m.	ft						
7		a.m. p.m.	ft						
8		a.m. p.m.	ft						
9		a.m. p.m.	ft						
10		a.m. p.m.	ft						
11		a.m. p.m.	ft						
12		a.m. p.m.	ft						
13		a.m. p.m.	ft						
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19		a.m. p.m.	ft						
20		a.m. p.m.	ft						
21		a.m. p.m.	ft						
22		a.m. p.m.	ft						
23		a.m. p.m.	ft						
24		a.m. p.m.	ft						
25		a.m. p.m.	ft						

At the end of your sampling season, please return the top page of this form by November 15, 2004

CHAIN OF CUS.ODY RECORD

SHADED AREAS ARE FOR LABORATORY USE ONLY, THANK YOU.

2286

RAUT WATER ANALYSIS LABORATORY
41 28TH AVE. SOUTH
/AITE PARK, MN 56387
H: (320) 251-5090 FAX: (320) 259-0594

CLIENT NAME AND ADDRESS ______________________

BILLING ADDRESS (IF DIFFERENT) ______________________

PROJECT NAME: ______________________ PHONE #: ______________________

SAMPLER: ______________________ FAX # ______________________

CONTACT PERSON:

	COLLECTED DATE	COLLECTED TIME	SAMPLE DESCRIPTION	# OF CONTAINERS	COMPOSITE	GRAB	WATER	WASTEWATER	AMMONIA NITROGEN	BOD OR CBOD	T. COLI. MF OR P/A	FECAL COLIFORM	pH	T. PHOS.	TSS					PRESERVATION	HNO_3	H_2SO_4	HCl	ICE	OTHER

This is a photocopy of the form

TRANSFERRED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME	SAMPLE TEMP. °C	COMMENTS:

Customers please keep pink copy and return t[...] ther two copies with samples to laboratory.

EXAMPLE SAMPLE WATER LABEL

SITE NUMBER: DATE:

ANALYSIS: TIME:

PRESERVATION: SAMPLERS:

SAMPLING METHOD: SAMPLE TYPE:

COMMENTS:

WAIVER EXAMPLE

Before you and your volunteers get your feet wet, there are some basic requirements to think about. These relate to liability, permits and / or licenses required and a suggested "code of ethics" to assure the integrity of your program and good relations with landowners.

Liability Considerations

a. **The responsibility of the sponsoring organization for the conduct of its volunteers.** Require that your volunteers sign a liability waiver giving up their right to seek compensation for injuries. The following is a sample form.

Waiver of liability

I, _____, have volunteered to be a lake monitor for the Briggs Lake Chain Association. (BLCA) I understand that participation in this activity can be hazardous, that my participation in this activity is entirely voluntary, and that the BLCA assumes no additional liability as a result of my activity. As a precondition to my participation in monitoring, I therefore hereby waive and release all claim of liability against BLCA for any injuries foreseen or unforeseen occurring or sustained as a result of my participation.

Signature: _____ Date: _____

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
Chain of Custody Record- Total Phosphorous, Chlorophyll "a"	Field sheets will accompany samples to lab where they are to be check-in and verified. Copies of lab results will be mailed to the Lake monitor committee chairperson.	The Lake Monitor Committee Chairperson will enter field and laboratory data into a computer program.	After the data is entered, a member of the Lake Monitoring Committee will review it.	Hardcopies of all field and lab sheets will be stored at the chairpersons home and copies will also be given to Briggs Lake Chain Association President for back-up storage. Copies of all data will stored be at the Palmer Town Hall.
Secchi Disk MPCA	Individual monitors will keep track of the information on the sheet provided by the MPCA and mailed in at the end of the season, usually, November 1. Copies will also be given to the Lake Monitoring Chairperson.	The Lake Monitoring Committee chairperson will keep copies of all monitored sites.	The Lake Monitoring committee will do the validation.	The Lake Monitoring Committee Chairperson will keep copies and also give copies to the Briggs Lake Chain Association President for a back-up system. Copies will be stored at the Palmer Town Hall.

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**
Secchi Disks	Any problems that are reported by the monitors will be recorded and review by the Lake Monitoring Committee and follow-up information will be given back to the field monitor.
Chemical testing lab work	Any problems reported by the field sampler or by the Lab will be recorded and evaluated by the Lake Monitoring Committee. Follow-up information will be given back to the field sampler and the Lab.

*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				
Project name	XX		XX	
Project purpose	XX		XX	
Start date	XX			
Planned duration	XX			
Lead organization name	XX		XX	
Project manager (with contact Info	XX		XX	
Other Contact (like MPCA rep, SWCD rep)	XX			
Sampling personnel		XX		
Sample medium	XX	XX	XX	
Sample collection methods	XX	XX		
Equipment Used	XX	XX		
Field measurement methods	XX	XX	XX	
Comments about data transfer, Submission	XX		XX	
Project Study Area	XX		XX	
Design & sampling frequency	XX		XX	
Programs associated	XX			
Cooperating Org.'	XX			
QA plan summary/reference	XX			

LABORATORY

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

STATION INFORMATION

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

MONITORING RESULTS

Meta-data element	In the Moni. Plan	On Field or Lab Sheet	In Data Entry Program	Other:
Station and site ID	XX	XX	XX	
Date	XX	XX	XX	
Time	XX	XX	XX	
Station ID			XX	
Site ID	XX	XX	XX	
Activity ID, type and category	XX	XX	XX	
Medium	XX	XX	XX	
Sample depth	XX	XX	XX	
Sampling personnel	XX	XX	XX	
Activity comments	XX	XX	XX	
Sample collection method and equipment	XX	XX	XX	
Sample preservation	XX	XX	XX	
Lab ID	XX	XX	XX	
Lab sample ID	XX	XX	XX	
Lab certified?	XX	XX	XX	
Results	XX		XX	
Field/lab ID			XX	
Lab Sample Temperature			XX	
Remark codes	XX	XX	XX	

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?
Secchi disk	Benchmarks: The interquartile range (25^{th}-75^{th} percentile) of all assessed lakes in the NCHF database. 4.9- 10.5 (feet) Methodology Calculate the summer mean and compare it with the percentiles above. Also use data to determine changes and keep records over time to help determine if changes are occurring.	Briggs Lake Association Monitor Team	MPCA County SWCD Association
Total phosphorus	Benchmarks: The interquartile range (25^{th}-75^{th} percentile) of all reference lakes in the NCHF database. 23-50 (ugl) Methodology: Calculate the summer mean and compare it with the percentiles above. Also use data to determine changes and keep records over time to help determine if changes are occurring.	Traut	County SWCD Lake Association
Chlorophyll "a"	Benchmarks: The interquartile range (25^{th}-75^{th} percentile) of all reference lakes in the NCHF database. 5-22 (ugl) Methodology: Calculate the summer mean and compare it with the percentiles above. Also use data to determine changes and keep records over time to help determine if changes are occurring.	Traut	County SWCD Lake Association

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
Comparing Parameters		
What is the relationship between Secchi disk, total phosphorous and chlorophyll "a"	Use all data not summaries	Plot Secchi disk against total phosphorous and chlorophyll "a". Plot total phosphorous against chlorophyll "a"
Single Parameters		
What changes if any occur after a heavy rainfall?	Use all data not summaries	Plot rainfall values against other measured parameters (total phosphorous, Secchi disk)
What is the TSI for Secchi, phosphorous and how does it 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
Which sites on each lake had the greatest range of results	Calculate range for each lake	Plot changes to show range

4) Describe how you will develop conclusions.

We will compare our findings over time both with the same site and also with other sites. This will be done on at least an annual basis, but could be done on shorter period of time if so desired. (Heavy precipitation, over usage of the lakes or other unnatural happenings)

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 the day? Were samples collected within the time period 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 data quality objectives?
Was the data checked against the field notes?
Did our data 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 Briggs Lake Chain Association Lake Monitoring Committee—Chairperson (Tentative -Walt Munsterman)

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	Illustrations	Stories	Other:
				Tables	Graphs						
Technical Report	Association Members, Town Boards, County SWCD, MPCA, St. Cloud University		X	X	X	X	X	X	X	X	X Recommendations
Non- formal written report	Association members, Town Boards			X	X	X	X	X	X	X	
Association Newsletter, Local news papers	Association Members, Other land owners in the community				X	X	X	X	X	X	

5) Where/When will message be delivered? Monthly reports in Association Newsletter and oral/ written reports at all Association Board meetings and membership meetings.

6) What would you expect to happen as a result of your report or presentation? It would be the hopes that the current and new lake shore land property owners can receive enough information to realize that it will take the work and cooperation of all to maintain and improve our lakes for the future.

11.1 - Task Identification and Timeline

Monitoring Goal or Assessment (optional): **Dates Covered by Timeline:** 2-05 to 12-05

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
2-1-05	2-28-05	Planning	Prepare newsletter article explaining program and need for volunteers	Barb and Walt	Type of volunteers needed and tasks to be done	
2-1-05	3-30-05	Planning	Checking on equipment available and order new equipment needed	George and Curt	Cost determination of new equipment	
2-1-05	3-30-04	Planning	Confirm contract with testing lab	Barb and George	Cost of testing	
3-1-05	3-30-05	Planning	Prepare field and lab sheets	Barb, George, Curt, Walt		
3-15-05	4-30-05	Management	Meeting/training session with volunteers	Barb, George, Curt, Walt	Location for meeting	
5-30-05	9-30-05	Management and Monitoring Sites	Meeting/ training on site with volunteer monitors to aid them in their work.	Barb, George, Curt, Walt-- Individual monitors to be named in February		
5-30-05	9-30-05	Monitoring	Conduct established sample procedures Samples delivered to testing Lab	Trained Monitors Monitor Committee members		
When-ever needed		Management	Available to help when ever help is needed	Barb, George, Curt, Walt		
Ongoing		Management	Communicating with the Association and other data users	Barb, George, Curt, Walt		

11.2 - Volunteer Monitors Contact Information

Name	Address	Phone	Email	Sites Monitored/ Other Notes
Kenzie Phelps	4480 115th Ave Clear Lake, MN 55319	320-743-2663	kenzwp@frontiernet.net	Association President
Stan Herkenhoff	10898 55th ST Clear Lake, MN 55319	320-743-2439		Briggs Lake Monitor
Paul Fors	11539 42nd ST Clear Lake, MN 55319	320-743-2403		Lake Julia Monitor
Walt Munsterman	5453 114th Ave Clear Lake, MN 55319	320-7432416	munstrushlake@aol.com	Rush Lake Monitor
Leonard Packer	7285 100th Ave Clear Lake, MN 55319	320-743-3036		Big Elk Lake Monitor
Dave Jones	11271 42nd ST Clear Lake, MN 55319	320-743-4727		River and Streams Monitor
George Kydd	4810 112th Ave Clear Lake, MN 55319	320-743-2924	GKYDDSR@aol.com	River and Streams Monitor
Barb Tucker	6925 100th Ave Clear Lake, MN 55319	320-743-5878	bdtucker@frontiernet.net	Shoreline Restoration Chairperson
Curt Hutchens	10830 57th St	320-743-3154	onthelake2@msn.com	Committee Consultant
Harry Ernzer	4505 109th Ave Clear Lake, MN 55319	320-743-3386		

* More names may be added or some of the above may change, as these were the persons volunteering this past season.

11.3 - Committees and Data Users Contact Information

Committee:_Various

Name/ Organization	Address	Phone	Email	Area of Expertise for committee
Briggs Lake Chain Association Kenzie Phelps, President	4480 115th Ave Clear Lake, Mn 55319	320-743-2663	kenzwp@frontiernet.net	Association President
Briggs Lake Chain Lake Monitoring committee, (see names in 11.2 above) Walt Munsterman, Chairperson	5453 114th Ave, Clear Lake, MN 55319	320-743-2416	munstrushlake@aol.com	Committee Chairperson, Past President. Chairperson of Lake Management committee.

Data Users:

Name/Organization	Title, if applicable	Address	Phone	Email
Sherburne County Soil and Water District	Mark Basiletti	14855 Highway 10 Elk River, MN 55330	763-241-1170	mark.basiletti@mn.usda.gov
St. Cloud State University	Charles Rose	204 Headley Hall St. Cloud State University, St.Cloud, MN 56301		
MPCA	Jennifer Klang	520 Lafayette Road St. Paul, MN 55155	1-800-657-3864	www.pca.state.mn.us
Palmer and Clear Lake Town Boards	Mike Gantz	11654 37th St. Clear Lake, MN 55319	320-743-3479	

11.4 - Over-all Budget

1) Revenues:

Item	*Description*	*Budget*
LCMR Request Plan=*	One time only	$3000.00
	TOTAL REVENUE	**$ 3000.00**

2) Expenses:

Type of Expense	*(unit price)*	*(number of units)*	*Total Budget*
Integrated Samplers	$ 25.00	4	**$ 100.00**
Secchi disks (BLCA owns)		5 disks	**$ .00**
Training for sampling by consultant*			**$ 100.00**
Mileage (paid) 1 volunteer-samples to lab-40 miles x 10 times*	$ 00.36/mile	400 miles @$00.36	**$ 144.00**
Big Elk Lake* Lab	$ 72.00	10 samples	**$ 720.00**
Briggs Lake* Lab	$ 72.00	10 samples	**$ 720.00**
Julia Lake* Lab	$ 72.00	10 samples	**$ 720.00**
Rush Lake* Lab	$ 72.00	10 samples	**$ 720.00**
Printing Monitoring Plan*	$ 5.00	20 copies	**$ 100.00**
Printing sampling methods/training manuals and data sheets, marking pens, for volunteers*	$ 7.00	10 copies	**$ 70.00**
Postage (5 mailing to 20 persons)	$ .37	100 stamps	**$ 37.00**
		TOTAL EXPENSES 2005	**$3,431.00**

3) Balance: **($431.00)**

4) In-Kind Contributions:

Item	*Description*	*Value*
Volunteer Hours (value of $17.50/hour)	4 volunteers @50 hours and 5 volunteers@ 10 hrs =250 hours	$4300.00
Donated supplies	Computer inkjets, paper, phone calls, etc.	$ 160.00
Mileage (value of $0.36/mile)	Plan training sessions/local training/data users meetings etc. (750 miles)	$ 270.00
	TOTAL IN-KIND VALUE	**$4730.00**

11.5 - Expenses per Site

Site(s): All Lakes

Indicator or parameter and Other Costs	**Initial Equipment Costs**	**Lab or Processing Costs per visit**	**Number of Sampling Trips per monitoring season**	**Expected Costs First Year (if applicable)**		***Expected Costs following Years***
Secchi disks	Disks available	NA	10 per season	In Plan		*$ 50.00 (Training)*
Total Phosphorous	In over-all budget	$22.00	10 per season 4 sites	$880.00		*$880.00*
Chlorophyll "a"	In over-all budget	$50.00	10 per season 4 sites	$2000.00		*$2000.00*
			TOTAL COSTS	**$2880.00**		*$2930.00*

12.1 - Follow-up

Group/Audience	***How Follow-up will happen:***	***Schedule***
Citizen Volunteer Monitors	Send monitoring report Data report and recognition Training session Phone calls or letter	1 time per/year-usually December or January 1/year 1/year- spring As needed-especially during sampling season
Briggs Lake Chain Association membership	Report at membership meeting Written report in Association newsletter Association web site	Update report at each meeting of the Association
Data users	Send final report Phone or personal contact	1/year in December or January 1/year in February at least to talk about any changes and see if there are any questions and how they are using the data

12.2 - Evaluation

Annual Evaluation Components	***Questions to Ask:***	***Tools used for evaluation***
Volunteer management	Were volunteers comfortable with the training and overall process? Is the committee satisfied with their participation?	Personal evaluations mailed out in November. Follow up phone call in Spring
Monitor Plan	Re-evaluate Monitoring Plan at end of 2005 sampling season	Read through plan to determine areas needing revision or clarification.
Data use	Did data collected answer data user's questions?	Written survey with follow-up phone call or personal contact with data users and processors.
QA/QC	Is the quality of our monitoring data still meeting our data user's needs?	Annual conversation with our analytical laboratory.

3 to 5 Year Evaluation Components	***Questions to Ask:***	***Tools used for evaluation***
Monitoring Plan	What parts are working? What parts need updating?	Establish task force to review the plan.
Condition of our lakes	Has our vision of quality changed or stayed the same?	Surveys, group in-put, conversations.

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

The water quality committee chair will store both the digital and hard copies of the evaluations. Hard copies will also be given to the Briggs Lake Chain Association for storage.

Budget Request Form

A. Group Name: Briggs Lake Chain Association

B. Fiscal Agent: (Name/Address/Phone of Person responsible to receive/handle funds: Charlene Langowski
5060 114TH Avenue, Clear Lake, MN 55319
Phone 320-743-2226

C. Name that should appear on the check: Briggs Lake Chain Association

D. Amount requested: $3000.00

11.4 - Over-all Budget

1) Revenues:

Item	*Description*	*Budget*
LCMR Request Plan=*	One time only	$3000.00
	TOTAL REVENUE	**$ 3000.00**

2) Expenses:

Type of Expense	*(unit price)*	*(number of units)*	*Total Budget*
Integrated Samplers	$ 25.00	4	**$ 100.00**
Secchi disks (BLCA owns)		5 disks	**$ .00**
Training for sampling by consultant*			**$ 100.00**
Mileage (paid) 1 volunteer-samples to lab-40 miles x 10 times*	$ 00.36/mile	400 miles @$00.36	**$ 144.00**
Big Elk Lake* Lab	$ 72.00	10 samples	**$ 720.00**
Briggs Lake* Lab	$ 72.00	10 samples	**$ 720.00**
Julia Lake* Lab	$ 72.00	10 samples	**$ 720.00**
Rush Lake* Lab	$ 72.00	10 samples	**$ 720.00**
Printing Monitoring Plan*	$ 5.00	20 copies	**$ 100.00**
Printing sampling methods/training manuals and data sheets, marking pens, for volunteers*	$ 7.00	10 copies	**$ 70.00**
Postage (5 mailing to 20 persons)	$ .37	100 stamps	**$ 37.00**
		TOTAL EXPENSES 2005	**$3,431.00**

3) Balance: **($-431.00)**

4) In-Kind Contributions:

Item	*Description*	*Value*
Volunteer Hours (value of $17.50/hour)	4 volunteers @50 hours and 5 volunteers@ 10 hrs =250 hours	$4300.00
Donated supplies	Computer inkjets, paper, phone calls, etc.	$ 160.00
Mileage (value of $0.36/mile)	Plan training sessions/local training/data users meetings etc. (750 miles)	$ 270.00
	TOTAL IN-KIND VALUE	**$4730.00**

11.5 - Expenses per Site

Site(s): All Lakes

Indicator or parameter and Other Costs	**Initial Equipment Costs**	**Lab or Processing Costs per visit**	**Number of Sampling Trips per monitoring season**	**Expected Costs First Year (if applicable)**	***Expected Costs following Years***
Secchi disks	Disks available	NA	10 per season	In Plan	*$ 50.00 (Training)*
Total Phosphorous	In over-all budget	$22.00	10 per season 4 sites	$880.00	*$880.00*
Chlorophyll "a"	In over-all budget	$50.00	10 per season 4 sites	$2000.00	*$2000.00*
			TOTAL COSTS	**$2880.00**	*$2930.00*

Expenses:

Type of Expense	*(unit price)*	*(number of units)*	*Total Budget*	*Budget for LCMR Funds Only Through RCM/MLA*	*Receive Money for these items:* ***April 1, '05.*** *Turn in all these receipts:* ***June 30, '05***	*Receive Money for these items* ***July 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***
Integrated Samplers	$25.00	4	$100.00	**$100.00**		**$100.00**	
Printing Monitoring Plan	$5.00	20	$100.00				
Lab Costs	$72.00	40	$2880.00	**$2880.00**		**$1440.00**	**$1440.00**
Mileage	$00.36	400	$144.00				
Training for Monitors Sampling			$100.00				
Postage	$00.37	100 stamps	$37.00				
Printing manuals, data sheets, pens, etc.	$7.00	10 copies	$70.00	**$20.00**			**$20.00**
TOTAL EXPENSES 2005			**$3431.00**	**$3000.00**		**$1540.00**	**$1460.00**

BRIGGS LAKE CHAIN MONITORING PROGRAM
2005 REPORT
September 30, 2005

The Briggs Lake Chain Monitoring Program has just completed its final sampling for the season. It has been successful because we had good volunteers who were willing to spend the time and effort to make it happen. With this report is a copy of the data collected to this point. We are still waiting for the last results. The data will give us a baseline for us to use for future testing. We will prepare graphs and other information to share with targeted audiences and data users listed in our plan.

The tests for chlorophyll "a" and total phosphorous varies with the four lakes. More review of the numbers will be done with comparisons of a few test results that were done in the past.

Our Lake Association treasurer has sent in all receipts up to this point and will have one more request to come in. We were able to save some expenses as we bought materials and made our own integrated samplers. Our mileage expense will be a few dollars over as we made extra trips to meet with the test vendor and material needed for training and actual testing supplies. (bottles, labels,etc.) The biggest expense was for the testing process. We are presently looking at other sources of testing vendors for comparisons of costs.

We are planning to continue the testing program next year, but will probably only sample once a month during the season. We also plan on doing some river and stream testing at inlets to the lakes. We are in the process of looking for finance support for 2006.
Because we are working with four lakes it has taken a more time for the organizational process. More contacts and phone calls were needed. We hope to get more volunteers to help but this seems to be a task that is easier said than done!

Walter Munsterman
Briggs Lake Chain Association
Lake Monitor Coordinator

BRIGGS LAKE CHAIN TEST RESULTS
2005

Date	BRIGGS	JULIA	RUSH	BIG ELK
5-26	ph<0.05 cl"a"14.1	ph<0,05 cl"a"26.8	ph<0.05 cl"a"16.1	no samples
6-8	ph<0.05 cl"a" 9.8	ph<0.05 cl"a"24.3	ph<0.05 cl"a"14.1	no samples
6-22	ph<0.05 cl"a"34.0	ph<0.05 cl"a" 6.4	ph<0.05 cl"a"43.1	ph<0.05 cl"a"41.4
7-6	ph<0.05 cl"a"31.9	ph<0.05 cl"a"43.0	ph<0.05 cl"a"41.8	ph<0.05 cl"a"44.0
7-20	ph<0.05 cl"a"27.9	ph<0.05 cl"a"26.4	ph<0.05 cl"a"61.4	ph 0.16 cl"a"178
8-3	ph<0.05 cl"a"43.9	ph<0.05 cl"a"43.1	ph<0.05 cl"a"53.3	ph<0.05 cl"a"107
8-17	ph<0.05 cl"a"40.1	ph<0.05 cl"a"32.6	ph<0.05 cl"a"42.2	ph 0.07 cl"a"124
8-31	ph<0.05 cl"a"81.6	no samples	ph<0.05 cl"a"33.5	ph 0.07 cl"a"54.7

Test Sample on Rush- 8-17 cl"a"52.1