DAM/LONG LAKE CITIZEN MONITORING PLAN

Long - Lily - Dam Lake Watershed		
Watershed Area	Square Miles	Acres
Long	9.20	5,895
Dam	4.90	3,120
Total watershed area to Dam Lake outlet	14.10	9,015
Lake Area		
Lake	Square Miles	Acres
Spring	0.06	37
Long	0.68	437
Lily	0.09	54
Dam	0.92	587

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Date Plan Completed:	February 2, 2005
Organization Name:	Dam and Long Lake Watershed Management Plan Committee
Monitoring Plan Author(s):	Don Glimsdal, Bruce Reimann, Sid Brotherton, Dolores Wickham
Primary Contact:	Bruce Reimann
Address:	34206 – Nature Ave Aitkin MN 56431
Contact Phone:	218-549-3203
Contact email:	breimann@frontiernet.net
Website (if any):	

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

The Lake Association of Dam Lake was formed in 1991 and the Lake Association of Long Lake was formed in 1996. Both associations were formed with their primary purpose being to provide educational opportunities for the members to learn how to be better stewards of lakes, to provide a forum to discuss and resolve common issues and also to create and host social events to get to know one another better.

In the spring of 2002, a joint committee was formed to address the current issues facing lake property owners on Dam and Long Lake. It was concurrently decided that a total watershed approach should be taken toward addressing both current and emerging future issues in our watershed.

Our primary purpose is to provide educational opportunities for the property owners to learn how to be better stewards of the watershed. We also want to gain baseline data, specifically water quality for our lakes in order to be able to benchmark how we compare to other lakes with similar characteristics.

Geographical area covered Watershed:

Dam and Long Lake is located in Minnesota, Aitkin County, Townships of Kimberly & Glen. This is over 9000 acres as part of the upper Mississippi watershed located in Aitkin County.

What type of organization are you?

Cooperative of Dam and Long Lake Associations.

Organization was founded Spring, 2002

Of members (if any): 135

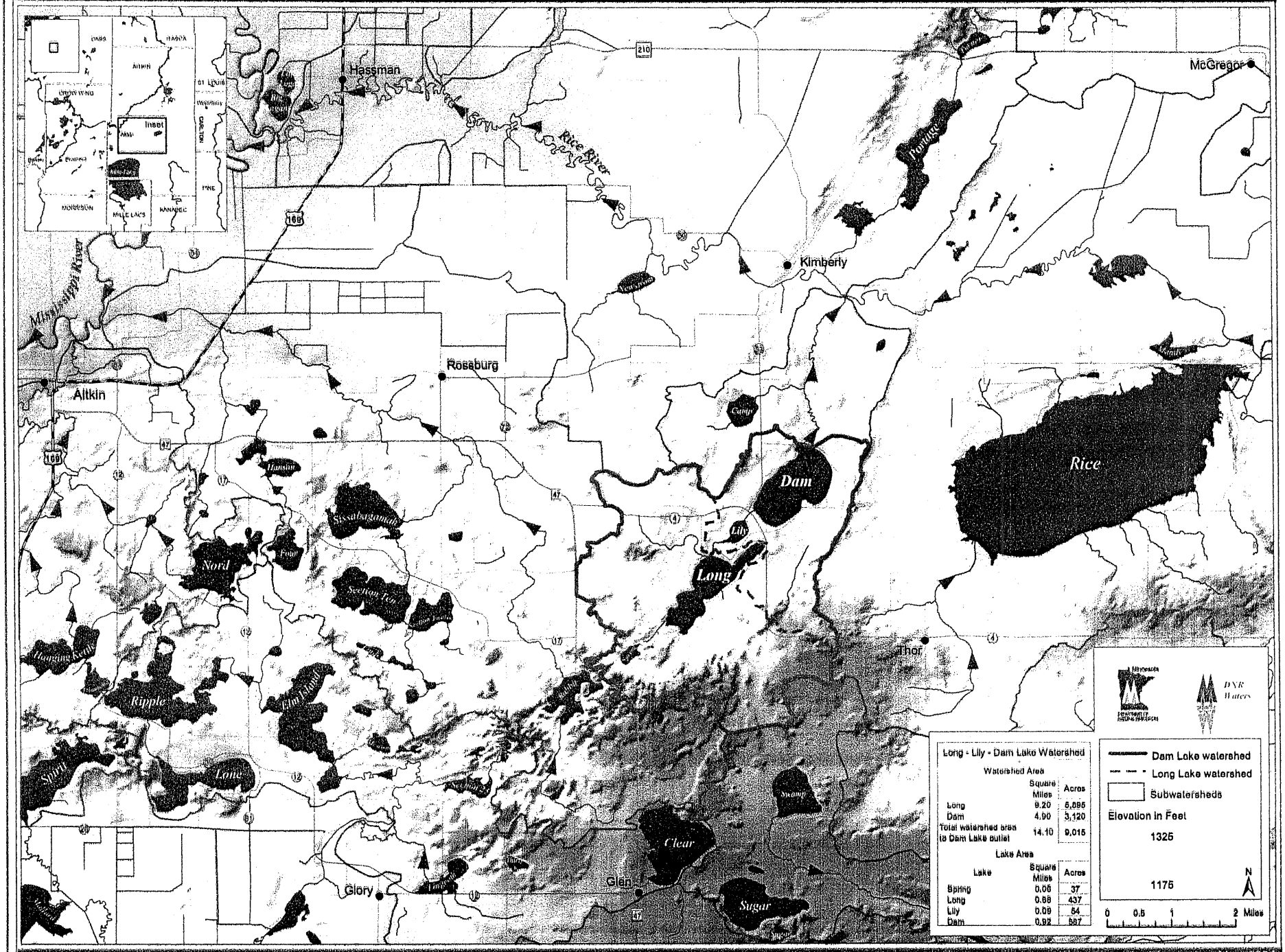
Of paid staff (if any): 0

Introduction Narrative

"Water...Lakes...Fishing...Swimming...Canoeing...Cabins... these words bring to mind the fundamental Minnesota experience. We take the abundance and diversity of our lakes, rivers and wetlands for granted and with good reason, Minnesota has more than 15,000 lakes that are ten acres or larger. More than 5,000 covering more than three million acres are actively managed for their fisheries. Many other are used for boating, water-skiing, hunting, swimming and just plain appreciated for their beauty. In order to maintain these beneficial uses, lakes need help. With ever-increasing recreations use and growing populations residing near and along waterways, lakes can suffer from small and large cumulative impacts and cannot manage themselves. We affect our lake by the actions within the lake, along its shorelines and well up into the lake's watershed or drainage basin. Even distant areas can be connected to the lake by the downstream flow of water, which, in turn carry pollutants, sediments and nutrients into the lake over time. We all are part of the problem, but we can all do something, no matter how apparently insignificant...to help our lakes. Lakes need to be systematically and purposefully managed over time, if we are to sustain their long-term health and viability". (Prepared by the interagency Lakes Coordinating committee, *Developing a Lake Management Plan)*

We are not including Spring and Lily Lakes in our monitoring plan. First, Spring flows directly into Long Lake and there are no residents on this lake. Lily Lake flows directly into Dam Lake and although there are four owners on the lake, all declined to join in the project.

LONG - LILY - DAM LAKE WATERSHED



Minnesota Department of Natural Resources

May 2004

1.2 - Watershed and Surface Water Information

Watershed / Waterbodies of Interest:

INFORMATION ITEMS	ANSWER
Major basin	Mississippi River Basin
Watersheds	Mississippi River (Brainerd), Dam, Long subwatershed
Ecoregion	Northern Lakes & Forests (NLF)
Watershed location	Aitkin County, Kimberly & Glen Townships
HUC	7010104
Classification numbers	Dam – 01-0096 Long 01-0089
Watershed size (acres)	9015 acres, 14.1 square miles
Known/dominant soils	Clay, sand, gravel, rock
Land use types (1995-96)	Principally forested (57%) lakes (16%) wetlands (13%) grassland (11%) rural residential & farmsteads (3%)
Lake depth Lake Surface Area	Dam – 48 feet Long – 116 feet Dam - 642 acres Long - 415 acres
Littoral acres	Dam – 256 Long – 120

1.3 - Inventory of Watershed and Surface Water Uses

Watershed / Waterbodies of Interest:

USES	ANSWER
Primary water uses	Recreation – boating, fishing, swimming
Public access and location	DNR public access – west side Dam Lake DNR public access – north side Long Lake
General public perceptions of the water	People find the lakes very desirable for recreation and lakeshore ownership
Fishing	DNR fish surveys – even years on Dam Lake Slot limit on Northern– Long Lake
Predominant wastewater systems	Mound systems
Data Collectors	MPCA*, DNR*, Volunteers

*Minnesota Department of Natural Resources (DNR)

*Minnesota Pollution Control Agency (MPCA)

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)	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
Long 01-0089	Class 2B, 3B, 4A, 4B, 5, 6 Warm Water Aquatic life & all types of recreation	M	Aquatic Recreation	No	NA	NA	N/A	Secchi 3.5 m TSI 42 Mesotrophic	Unknown
Dam 01-0096	Class 2B, 3B, 4A, 4B, 5, 6 Warm Water Aquatic life & all types of recreation	M	Aquatic Recreation	No	NA	NA	N/A	Secchi 3.3 m TSI 45 Mesotrophic	Unknown

11) Values:

Recreational uses such as boating, fishing, 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
What is the condition of our lakes' water quality?	Dam & Long Lakes have been collecting Secchi disk data as part of MPCA's CLMP. (Secchi disk reading for Dam is 3.3 meters) (Secchi disk reading for Long is 3.5 meters)	There has been a small decline in readings the last few years. It is unknown if the cause is environmental or manmade. Not enough data to statistically establish a trend	Continue with CLMP and watch the continuing trend. Begin to monitor phosphorus and chlorophyll "a" to establish their relationship to Secchi disk.	Enough data will be collected to determine if a trend exists. After the relationship between the sample parameters is found, we will only need to collect them every three years.

3.1 - Data Users and Data Uses

Question or Hypothesis	User/Decision Maker	Uses/Decisions	Potential Parameters
What is the condition of our lakes water quality	Steve Hughes @ Aitkin County SWCD (Primary)	If the lake is impaired or trends indicated that water quality is deteriorating – the SWCD agrees to write and implement a remediation plan that includes finding the specific sources and developing strategies, such as best management practice, to restore the lake's watershed.	Secchi disk Total phosphorus Chlorophyll 'a' Dissolved Oxygen Temperature
	Lake Associations and all landowners (Primary)	We will use the data to help pursue more investigation, if necessary, and to maintain or improve water quality. Will use data for educational purposes with all landowners.	Secchi disk Total phosphorus Chlorophyll 'a' Dissolved Oxygen Temperature
	MPCA Secondary	Data will be used to determine whether lakes fully support their swimming use for their 305(b) reports.	Secchi disk Total phosphorus Chlorophyll 'a'

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*

We will use Condition and Trend Assessment. Secchi Disk, total phosphorus and chlorophyll "a" will be measured and monitored. Non-305b assessment will be used. Dam and Long Lake will be sampled at representative site for each lake.

The primary data users are the Lake Associations and all landowners, SWCD
The secondary data user is MPCA.

5.1 - Parameters

Parameters	Waterbody Type
Total phosphorus	Lake
Chlorophyll "a"	Lake
Secchi Disk (water clarity)	Lake
Dissolved oxygen	Lake
Temperature	Lake

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	Integrated Depth sample CLMP plus Manual	Integrated sampler	Epilimnion (upper well mixed layer)	Maximum lake depth	1 L acid rinsed HDPE bottle, add H_2SO_4 to pH 2 at 4^0C	1L	(1)
Chlorophyll "a"	Same as above	Same as above	Same as above	Same as above	Keep in dark at 4^0C.	1L	(1)
Secchi Disk for water clarity	Visual observation CLMP Manual	Secchi Disk	Same as above	Same as above	NA	NA	Mean of two readings
Dissolved oxygen temperature	Direct measure probe – mfgs. Manual	DO/Temp probe	One meter intervals	Maximum lake depth	NA	NA	One per interval

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 volunteers.

Sampling methods will be available from Lab upon start of water monitoring program and will be attached at that time.

5.3 - Analytical Methods

Parameter	Location of Sample Analysis	Maximum Holding Time	Analytical Method and Source	Reporting Units
Total Phosphorus	RMB Environment Laboratories, Inc. in Detroit Lakes	28 days if preserved	RMB Environment Lab will analyze with certified methods	ug/LP
Chlorophyll "a"	As above	Unfiltered 48 hours/filtered & frozen 30 days	RMB Environment Lab will analyze with certified methods	ug/LP
Secchi Disk	Field	NA	CLMP Handbook	Meters / feet
Dissolved Oxygen	Field	NA	Manufacturer's instruction	mg/L
Temperature	Field	NA	Manufacturer's instruction	^{0}C

5.4 - Data Quality Objectives for Own Analysis

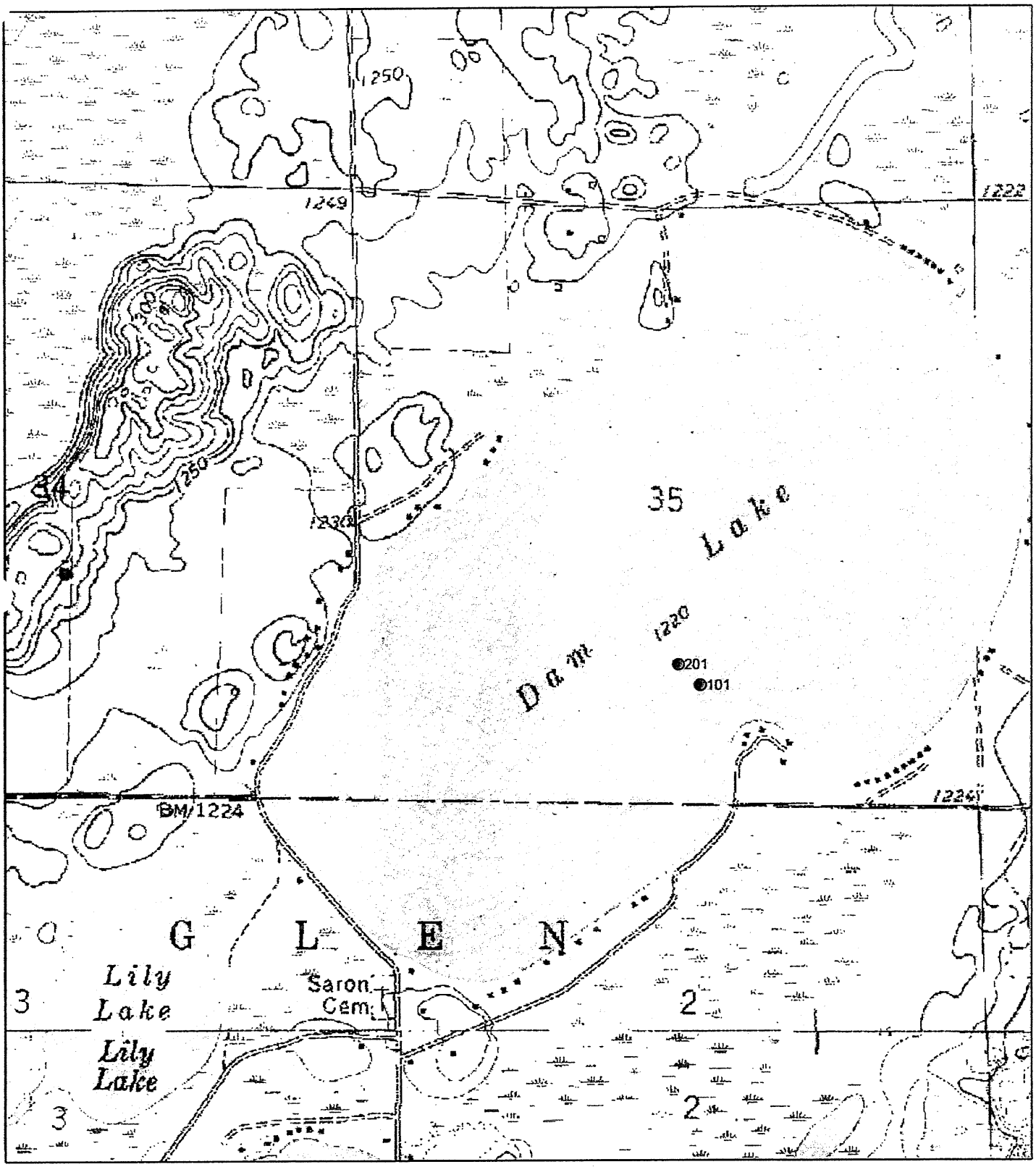
Parameter	Brief Description of Method	Accuracy	Precision	Detection Limit/ Measurement Range
Secchi Disk for water clarity (lake)	In-field analysis, visual observation	N/A	± 0.2 for duplicate reading by the same monitor or different monitors	DL = 0.2 m / 0.6 ft Range = 0.2 – 10.0 m 0.6 – 30 ft
Dissolved Oxygen	Electrometric	DO equals + 0.5 for zero standard	Less than 0.5 difference between duplicates	DL = 0.0 mg/L Range = 0.0 – 15.0 mg/L
Temperature	Electrometric	Plus or minus .5 degrees C in comparison to NIST traceable thermometer	Plus/minus 0.5 degree C	DL=0 degree C Range = 0.0 – 30.0 °C

*Note: The only parameters listed are those that are not done by a certified lab

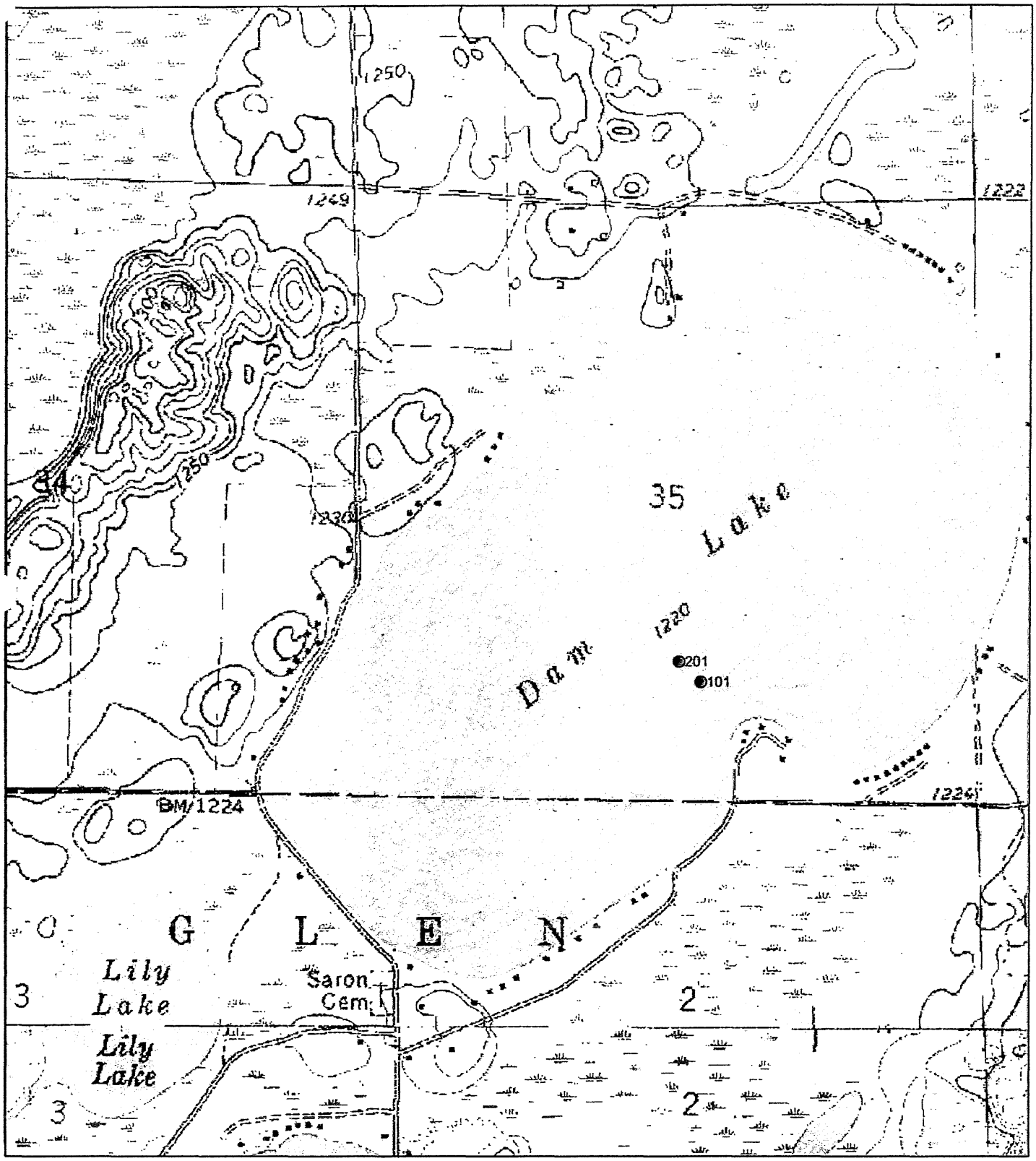
6.1 - Sampling Site List

Site #	Brief Description of Location (Code for Segment, if any)	Type of Site	Parameters
Long Lake 1-0089	Lat. 46.1927 Long. 51.48329	85 foot deep hole	Total Phosphorus, Chlorophyll "a" Secchi Disk DO/Temp
Dam Lake 1-0096	Lat. 46.4393 Long. 51.50783	50 foot deep hole	Total Phosphorus Chlorophyll "a" Secchi Disk DO/Temp

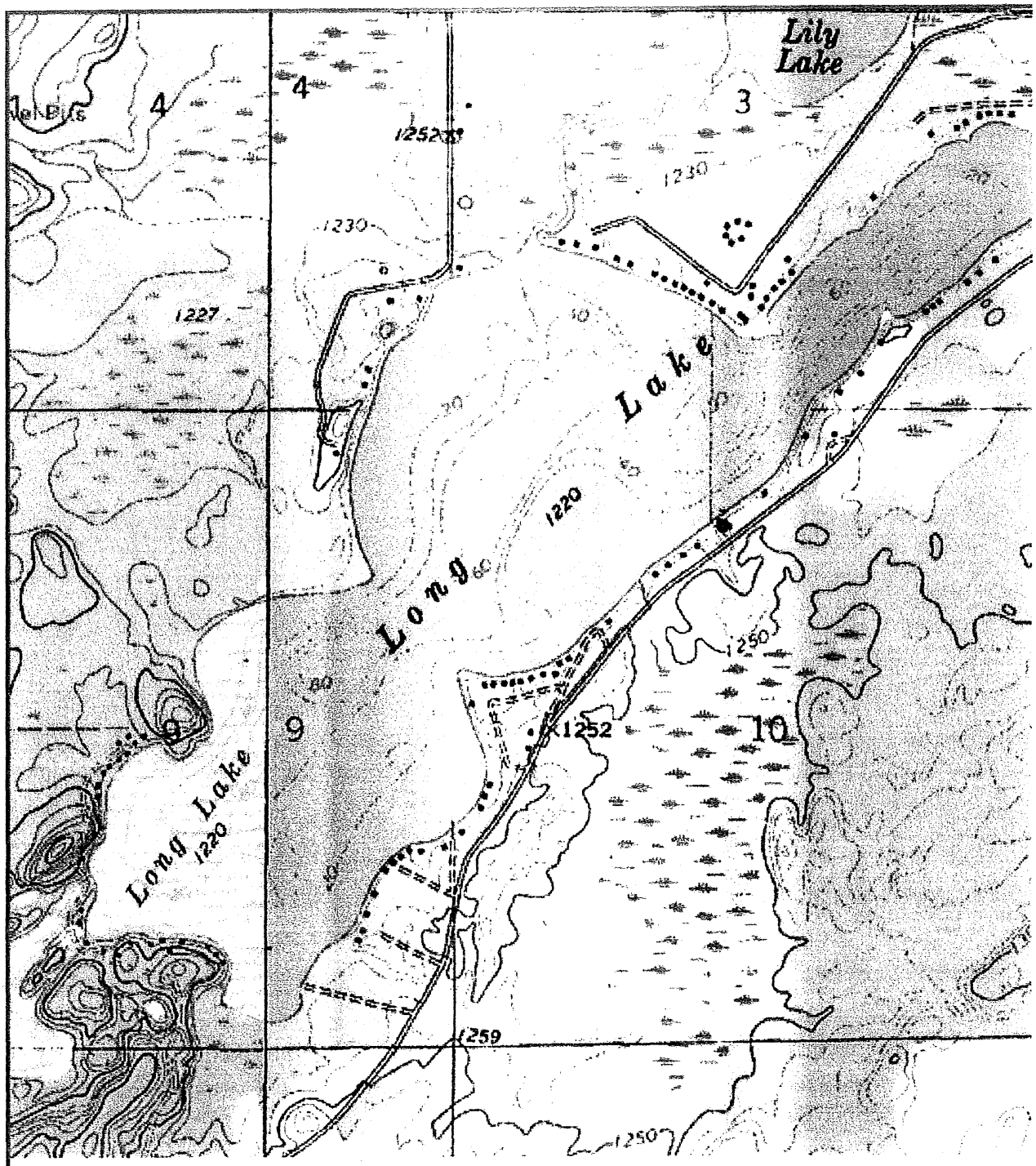
Dam Lake Sites
01-0096



Dam Lake Sites
01-0096



Long Lake Sites
01-0089



6.3 - Sampling Schedule

Parameter(s)	Frequency	Completeness	Time of Day	Time of Year	# of Years	Special Weather Conditions
Total Phosphorus Chlorophyll "a"	Bi-weekly	Min. needed 1 sample per month per site for 5 months (May to September) 50%	Between 10 a.m. and 3 p.m.	Growing season May – Sept.	Dam Lake - 2 years then every 3rd year Long Lake – 3 years then every 3rd year	Collect at same time of Secchi disk reading
Secchi Disk	Bi-weekly	Min. needed 1 sample per month per site for 5 months (May to September) 50%	Between 10 a.m. and 3 p.m.	May-Sept.	On going	On bright, calm days
Dissolved Oxygen – temp.	Bi-weekly	Min. needed 1 sample per month per site for 5 months (May to September) 50%	Between 10 a.m. and 3 p.m.	May-Sept.	Dam Lake - 2 years then every 3rd year Long Lake – 3 years then every 3rd year	Same time as Secchi Disk reading

7.1 - Quality Control Measures

Parameters	% Quality Control Samples							Evaluation
	Field Blanks	**Field Dups.**	**Calib Stds**					
Total Phosphorus	Depends on Lab	10% of all sites						Performed by Certified Lab
Secchi Disk	NA	Each sample						Performed by trained volunteers in field (see Precision Goals in Worksheet 5.4) RPD
Chlorophyll "a"	Depends on Lab	10% of all sites						Performed by Certified Lab
Dissolved Oxygen Temperature	NA	Each sample	Each Sampling Using an oxygen saturated sample					Performed by trained volunteers in field (see Precision Goals in Worksheet 5.4) RPD

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 samplers
2) Documentation: Purchased from RMB Labs, spring 2005
3) Inspection: Check to make sure stored and cleaned as directed below
Calibration: Not required
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 sampler ends.
Discard cleaning solution and repeat until all the 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.

1) Equipment Type: Secchi Disks
2) Documentation: None
3) Inspection, Calibration, and Maintenance: Secchi Disk Rope will be re-measured and marked on an annual basis for accuracy.

1) Equipment Type: DO/Temperature meters
2) Documentation: Date purchased and from whom? (Model #)
3) Inspection Calibration and Maintenance: Per owner's manual

Will add specifics for DO meter after purchase.

8.1 - Field and Laboratory Sheets

Type of Sheet: Secchi Disk paper worksheets provided by MPCA.

Copies Attached (Y/N) Appendix A

Type of Sheet: Field Sheet for TP and Chlorophyll "a" and Dissolved Oxygen Temperature

Copies Attached (Y/N): Appendix B (Will be attached when obtained from RMB Labs)

Type of Sheet: Analytical results are available electronically from RMB Labs

Copies Attached (Y/N): No

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
Total phosphorus **Chlorophyll "a"**	Field sheets accompany samples to lab where they are checked-in and verified.	Entered on RMB Lab website	At Lab	Electronically at Lab database
Secchi Disk	Field sheets accompany samples to lab where they are checked-in and verified. Field sheets sent to MPCA for entry	Entered on RMB Lab website MPCA employee will enter data	At Lab Another MPCA employee (to be determined) will validate	Electronically at Lab database Electronically in MPCA database
***Dissolved Oxygen and temperature**	Field sheets accompany samples to lab where they are checked-in and verified. Field sheets sent to MPCA for entry	Entered on RMB Lab website MPCA employee will enter data	At Lab Another MPCA employee (to be determined) will validate	Electronically at Lab database Electronically in MPCA database

* Specific data pathway to be determined.

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**
Missing Data	When a certain value is missing N/A will be used to signify missing data.

*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	X			
Other Contact (like MPCA rep, SWCD rep)	X			
Sampling personnel	X	X		
Sample medium	X			
Sample collection methods	X			
Equipment Used	X			
Field measurement methods	X			
Comments about data transfer, Submission	X			
Project Study Area	X			
Design & sampling frequency	X	X	X	
Programs associated				
Cooperating Org.'	X			
QA plan summary/reference	X			

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).		X		
Parameter	X			
Sample fraction				
Reporting units	X	X	X	
Comparable standard method	X	X	X	
Field preservation method	X	X	X	
Detection limit				
Lab certified for parameter?	X			
Length of Analysis	X			
Temperature basis				

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				
Station name	X	X	X	
Station type				
Waterbody type (stream, lake, wetland)	X	X	X	
Station description	X	X	X	
Site ID	X	X	X	
Ecoregion name				
Travel directions				
Station latitude-longitude or UTM	X			
Geo-positioning method				
Datum				
Map scale	X			
Site lat-long	X			
State/county	X			
HUC code	X			
River Reach				
DNR Lake ID	X			
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	
Time		X	X	
Station ID				
Site ID				
Activity ID, type and category		X	X	
Medium				
Sample depth		X	X	
Sampling personnel	X	X	X	
Activity comments				
Sample collection method and equipment	X	X		
Sample preservation	X		X	
Lab ID	X		X	
Lab sample ID			X	
Lab certified?	X		X	
Results		X	X	
Field/lab ID				
Lab Sample Temperature				
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?
Total Phosphorus	**Benchmarks** Northern Lakes & Forest (NFL) reference lakes 14-27 ug/L **Methodology** Calculate the summer mean and complete at the percentiles of the reference lakes in our ecoregion	Dam, Long, Watershed Committee, MPCA, SWCD	No, we are using this ourselves, but it is not required by any Data user
Chlorophyll "a"	**Benchmarks** Northern Lakes & Forest (NFL) reference lakes 4-10 ug/L **Methodology** Calculate the summer mean and complete at the percentiles of the reference lakes in our ecoregion	Same as above	Same as above
Secchi Disk	**Benchmarks** Northern Lakes & Forest (NFL) reference lakes 8-15 feet (2.4 to 4.6 meters) **Methodology** Calculate the summer mean and complete at the percentiles of the reference lakes in our ecoregion	Same as above	Same as above

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 parameter's 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)
Compare our phosphorus, Chlorophyll "a", Secchi Disk readings as expressed in the Carlson Trophic Index to other lakes in our ecoregion.	Calculate season means for all parameters and convert to TSI to see if they fall within the ranges for our ecoregion.	Point to Point graph for visual comparison
Comparing Parameters		

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 initial findings and conclusions our technical committee, including our local SWCD has agreed to look at the data, finding, 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 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 watershed committee will be responsible for preparing reports and presentations.

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	SWCD Our own group MPCA		X	X	X			X		X	
Newsletter/Brochure	Own group, landowners							X		X	

5) Where/When will message be delivered? In both Lake Associations' spring newsletters for data collected the previous season.

6) What would you expect to happen as a result of your report or presentation? Lake owners will become more informed as to the water condition of their lakes compared to others with similar characteristics.

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
01/01/05	02/01/05	Planning	Research temp/DO meters	Sid & Bruce		
3/1/05	4/15/05	Planning	Prepare instructions for testing	Dolores		
03/01/05	03/15/05	Purchase	DO/Temperature meters	Bruce & Dolores		
03/01/05	03/15/05	Purchase	Secchi Disk and Integrated Samplers			
05/01/05	5/15/05	Training	Train volunteers on water testing	Bruce & Don		
4/15/05	5/01/05	Planning	Determine new sampling location for Long Lake	Don & Sid		
05/15/05	09/15/05	Testing	Start analysis of lakes	Volunteers		
T/B/D	T/B/D	Management	Make site visits, when necessary, with new volunteers	Bruce & Don		
03/01/06	05/01/06	Analysis	Publish first year sampling results	Watershed committee		

11.2 - Volunteer Monitors Contact Information

Name	Address	Phone	Email	Sites Monitored/ Other Notes
Mike Auspos	**29931 – 344th Lane Aitkin MN 56431**	**218-549-3139 480-982-1279 winter**	**mhematite@frontiernet.net**	
Sid Brotherton	**32711 – 310th Pl. Aitkin MN 56431**	**218-549-3414 480-924-4602 winter**	**NA**	
Al Gallus	**9129 Belvedere Dr. Eden Prairie MN 55347**	**952-949-3137**	**argallus@us.ibm.com**	
Don Glimsdal	**32003 Nuthatch Ave Aitkin MN 56431**	**218-549-0622 (Lake) 507-931-5803-Home**	**glims@juno.com**	
Dick Holmberg	**32070 – 315th Pl. Aitkin MN 56431**	**218-549-3214 (Lake) 612-866-4360 Home**	santad@att.nett	
Al McGee	**29243 – 350th Lane Aitkin MN 56431**	**218-549-3136**	**NA**	
Eno Olson	**33236 – 310th Pl Aitkin MN 56431**	**218-549-3615 (Lake) 480-641-9963 (AZ)**	**NA**	
Bruce Reimann	**34206 Nature Ave Aitkin MN 56431**	**218-549-3203**	reimann@frontiernet.net	
Dolores Wickham	**29324 – 335th lane Aitkin MN 56431**	**218-549-3158**	dwickha1@frontiernet.net	
VOLUNTEER: John LaClair	**29188 – 335th Lane Aitkin MN 56431**	**218-549-3209**	**NA**	
ADVISOR: Ed Feiler	**Dept. of Natural Resources (DNR) Brainerd office**	**218-825-3001**	**Ed.feiler@dnr.state.mn.us**	

11.3 - Committees and Data Users Contact Information

Committee:_Dam/Long Lake Watershed Committee

Name/ Organization	Address	Phone	Email	Area of Expertise for committee
Bruce Reimann Dam Lake Association	See 11.2	218-549-3203	Previously listed	Organization skills, policy and procedures experience.
Don Glimsdal Long Lake Association	See 11.2	507-931-5803	Same	Exotic weed control experience, conservationist, experienced viewpoint
Sid Brotherton Long Lake Association	See 11.2	218-549-3414	NA	Business background, detailed oriented and organizational skills.
Dolores Wickham Dam Lake Association	See 11.2	218-549-3158	Same as above	Organizational skills, detail oriented, task and completion oriented .

Data Users:

Name/Organization	Title, if applicable	Address	Phone	Email
Dam & Long Lake Owners	NA	Dam & Long Lake	Not available	Not Available
MPCA – Pam Skon	Vol. Monitoring Coordinator	520 Lafayette Rd N St. Paul MN 55155	651-296-8544	Pamela.Skon@state.mn.us
ASWCD – Steve Hughes	Director	Aitkin, MN 56431	218-927-3149	swcd@mlecmn.net

11.4 - Over-all Budget

1) Revenues:

Item	*Description*	*Budget*
MLA/RCM Grant	One time only	$3000.00
	TOTAL REVENUE	**$3000.00**

2) Expenses:

Type of Expense	*(unit price)*	*(number of units)*	*Total Budget*
Temp/DO meter	425.00	2	**850.00**
Shipping coolers	10.00	20 coolers/5 mo.	**200.00**
Lab cost per lake for 2005 sampling season for TP & Chlorophyll "a"	19.00	10 TP + 10 Chl x 2 lakes = 40 samples	**760.00**
Lab cost per lake for 2006 sampling season for TP & Chlorophyll "a"	19.00	10 TP + 10 Chl x 2 lakes = 40 samples	**760.00**
Lab cost per lake for 2007 sampling season for TP & Chlorophyll "a"	19.00	10 TP + 10 Chl x 1 lakes = 20 samples	**380.00**
Integrated Sampler	25.00	1 for each lake = two	**50.00**
Printing Monitoring Plan	5.00	Ten	**50.00**
		TOTAL EXPENSES 2005	**$3050.00**

3) Balance: *---(expected revenue minus expected expense)----------* ***$ - 50.00***

4) In-Kind Contributions:

Item	*Description*	*Value*
Volunteer hours-Dam & Long	15 hours @ $16/hour	$4000.00
Volunteer mileage-Dam & Long	1,000 miles @ .36/mile	$ 360.00
SWCD staff hours	15 hours @ $50/hour	$ 750.00
	TOTAL IN-KIND VALUE	**$5110.00**

12.1 Follow-up

Group/Audience	***How Follow-up will happen:***	***Schedule***
Property owners	Newsletter	Each spring
Soil & Water conservation district	Newsletter	Each spring

12.2 - Evaluation

Annual Evaluation Components	*Questions to Ask:*	*Tools used for evaluation*
Collected and interpreted data	Does the information provided meet the needs of our data users?	Solicited feedback in newsletter article
Volunteer satisfaction with current procedures	What can we do to improve methods?	Face to face meeting with volunteers

3 to 5 Year Evaluation Components	*Questions to Ask:*	*Tools used for evaluation*
Does the current monitoring plan still meet the needs of the data users?	How have expectations/needs changed for data users?	Annual association meetings and personal interviews with SWCD and MPCA personnel

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

Bruce Reimann will maintain a written copy.

Appendix A: MPCA Secchi Field Sheet

To Be Attached

Appendix B: Field Sampling Sheet

To Be Attached

December 20, 2005

Dear Sandy,

The following is the evaluation report for the Dam / Long Lake citizen monitoring team group:

A. The money was spent to purchase the following equipment (1.) two temperature and dissolved oxygen meters and two water sampling tubes which were all purchased in late April (2.) We also spent money on lab tests to support the samples taken during the season (3.) a Secchi disc was also purchased (4.) Finally, we purchased the transportation to get the samples to the lab for analysis [actual cost of each item, ref. claim forms for June & Sept.]

B. See attached multi-lake data summary from our lab RMB. We have established good baseline data for CHLA and TP along with Secchi disk readings. We pick from from our training book and reference manual that both of our lakes readings are where you would expect them to be for a lake in our part of MN!

C. We will continue to communicate to all stakeholders in the watershed about the condition of the waters and what we all can do to help improve them. Also, Long Lake will do one more year of water quality testing so that they too will have two years of baseline data. After 2006, we plan to do no formal testing except Secchi disk, temperature and dissolved oxygen for 12 more then we plan to do a season of testing on both lakes to check for changes in the readings.

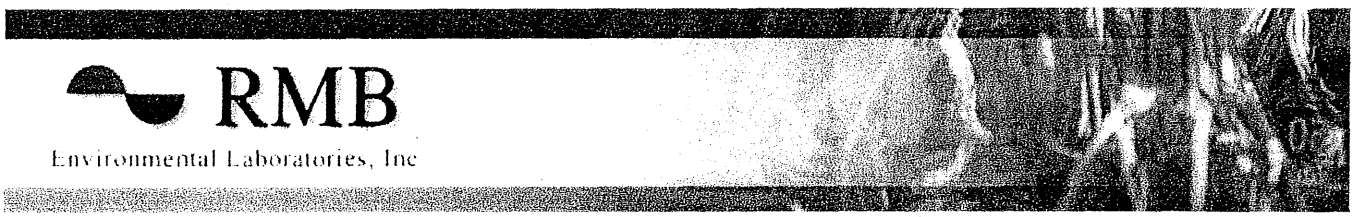
If you have any further questions, you may contact either Sid or myself.

Sandy, Thank you for all your help and support

Sincerely,

Bruce Reimann Sid Brotherton

Bruce Reimann Sid Brotherton



Multi-Lake Data Summary

Printer Friendly Return to

Aitkin County, From: 6/16/2005 To: 9/15/2005

Lake	MN ID#	Field Site#	Sampler	Sample Date	Sample Time	Lab Code	TP ug/L	ChlA ug/L	Secchi Ft.	TSI Phos.	TSI ChlA	TS Ft
Dam	01-0096	201	J. LaClair	6/20/2005	1600	42756	19	7	9.5	47	50	4
Dam	01-0096	201	J. LaClair	7/5/2005	1515	43222	16	8	9	44	51	4
Dam	01-0096	201	J. LaClair	7/27/2005	1500	44396	20	9	9.5	47	52	4
Dam	01-0096	201	J. LaClair	8/10/2005	1830	44724	22	10	8	49	53	4
Dam	01-0096	201	J. LaClair	8/29/2005	1700	46466	20	8	7	47	51	4
Dam	01-0096	201	J. LaClair	9/13/2005	1400	45990	23	11	7.5	49	54	4

Lake	MN ID#	Field Site#	Sampler	Sample Date	Sample Time	Lab Code	TP ug/L	ChlA ug/L	Secchi Ft.	TSI Phos.	TSI ChlAL	TS Ft
Long 01-0089	01-0089	~~205~~ 101	Sid Brotherton & Eno Olson	6/16/2005	0930	42473	15		8	43	0	4
Long 01-0089	01-0089	~~205~~ 101	Brotherton / Johnson	7/12/2005	1115	43468	20	5	11.25	47	46	4
Long 01-0089	01-0089	101	Sid Brotherton & Eno Olson	8/2/2005	1115	44389	13	4	9.5	41	44	4
Long 01-0089	01-0089	101	Sid Brotherton & Eno Olson	8/22/2005	0915	45226	87	10	8.5	69	53	4
Long 01-0089	01-0089	101	Sid Brotherton & Eno Olson	9/15/2005	1035	46032	15	7	12.5	43	50	4

Budget Request Form

A. Group Name: Dam and Long Lake Watershed Management Plan Committee

B. Fiscal Agent: (Name/Address/Phone of Person responsible to receive/handle funds:
Bruce Reimann 34206 Nature Avenue Aitkin, Minnesota 56431 218-549-3203

C. Name that should appear on the check: Bruce Reimann

D. Amount requested $3000.00

E. Budget from Step 11:

Revenues:

Item	*Description*	*Budget*
Grant	Water quality monitoring grant	$3000.00
	TOTAL REVENUE	**$ 3000.00**

Expenses:

Type of Expense	*(unit price)*	*(number of units)*	*Total Budget*
Temp/DO meter	803.00	2	**1606.00**
Shipping coolers	28.00	20 coolers/5 mo.	**280.00**
Lab cost per lake for 2005 sampling season for TP & Chlorophyll "a"	19.00	10 TP + 10 Chl x 2 lakes = 40 samples	**760.00**
Lab cost per lake for 2006 sampling season for TP & Chlorophyll "a"	19.00	4 TP + 4 Chl x 2 lakes = 16 samples	**304.00**
Integrated Sampler	25.00	1 for each lake = two	**50.00**
Printing Monitoring Plan	5.00	Ten	**50.00**
		TOTAL EXPENSES 2005	**$3050.00**

Balance: *---(expected revenue minus expected expense)----------* ***$ - 50.00***

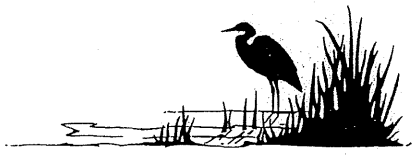
In-Kind Contributions:

Item	*Description*	*Value*
Volunteer hours- Dam &Long	15 hours @ $16.00/hour	$4000.00
Volunteer mileage	1,000 miles@ .36/mile	$360.00
SWCD staff hours	15 hours @ $50.00/hour	$750.00
	TOTAL IN-KIND VALUE	**$5110.00**

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***
Temp/DO meter	$803.00	2	$1606.00	**$1606.00**	**$1606.00**		
Shipping coolers	$10.00	28	$280.00	**$280.00**		**$100.00**	**$180.00**
Lab Costs - 2005	$19.00	40	$760.00	**$760.00**		**$380.00**	**$380.00**
Lab Costs May/June 2006	$19.00	16	$304.00	**$304.00**			**$304.00**
Integrated Sampler	$25.00	2	$50.00	**$50.00**	**$50.00**		
Printing Plan	$5.00	10	$50.00				
TOTAL EXPENSES 2005			**$ 3050.00**	**$3000.00**	**$1656.00**	**$480.00**	**$864.00**

DAM LAKE ASSOCIATION
DECEMBER, 2005



Pres.	**Al McGee**	**218-549-3136**
V. Pres.	**Robin Maalis**	**763-755-6960**
Treasurer	**Bruce Reimann**	**218-549-3203**
Recorder/Secretary	**Dolores Wickham**	**218-549-3158**

FROM THE PRESIDENT - Dam Lake has iced over and the houses have arrived.

As I sit here and think about 2005, I am wondering if we have done enough as an association. I don't think we have and we need to take better care of our lake. We need to learn more ways in which to do this. I would like to see more people involved, not necessarily as being an officer but attending the few meetings that we have each year, helping with road clean up or participating in a social event that is planned. We are hoping to have more social events in the coming year and at this time it is in the thinking process

Next year's elections will be that of president and treasurer. This year, because we could not get nominations for secretary, Dolores Wickham has assumed the duty of secretary and recorder. There was discussion of combining these two positions at the fall meeting and the few in attendance approved. Robin Maalis is the new vice president. We will be reviewing our Articles of Incorporation and will bring a new set to the spring meeting for members' input. During this past year, I have met more residents and enjoy their views. We can learn much from each other.

Betty and I hope your Holidays are met with good health and great enjoyment.

Al McGee

The purpose of the Dam Lake Association is to provide education opportunities for the members to learn how to be better stewards of the lake along with its surrounding watershed, provide a forum to discuss and resolve common issues and to host social events to enable the members to get to know one another better.

2005 ACCOMPLISHMENTS

- We are members of the Aitkin County Lakes & Rivers Association. There is much to be learned at these meetings and everyone is invited and encouraged to attend. A big concern is the shoreland management that is before the Legislature.
- We received state grant money which allowed us to purchased a Temperature/Dissolved Oxygen meter costing over $1000. Furthermore, we were able to pay for all expanded lab testing this past season, which will help to give us a good baseline data about the quality of our lake. Our thanks goes out to John and Kate LaClair for all their efforts in testing our water. If anyone is interested in participating, we encourage you to either contact John or one of the board members.
- Road clean up was completed twice this year for the eighth year on County Road 4 by our association. This effort makes this road more attractive when you are traveling on it.
- Hosted luncheon/social after spring road clean-up.
- Published Newsletter three times that included various articles of an educational nature.
- Held spring and fall membership meetings.
- The beaver have been kept in check and three large beaver dams were destroyed with dynamite on Dam Brook.

- We held a very successful 4th of July boat parade in 2005 and prizes were handed out. There are plans in the making for the parade in 2006.
- If you are planning a family picnic and have need for a large grill, there is one available for your use. It is one that was used for our pig roasts. Our only request is that it is returned in a timely manner and clean.
- A weed cutter is also available. You may contact any board member for details!

The following article has been submitted by Bruce Reimann and Don Glimsdal (of Long Lake)

Greetings from the Dam and Long Lake Watershed Committee. As you will recall, we earned a $3,000.00 grant earlier this year so that we could purchase sampling equipment and do water quality monitoring. This gives us the opportunity to keep track of what is happening to the water quality beyond the basic water clarity data (Secchi disk) that we have been getting each year. Our thanks to John & Kate LaClair who have been using this equipment in fact, this is actually their second year testing for Phosphorus & Chlorophyll A as last year they used equipment loaned to them from the MCPA.

We are now getting four additional pieces of data that helps us understand what is going on in our lakes. Taking a properly handled water sample and sending it to an environmental lab in Detroit Lakes determine levels of the first two. Total **phosphorus** is important because as with plants growing on land, it is also a prime nutrient for plants growing in the water. The more that is available the better they grow. An adequate supply is necessary for good fish cover but too much negatively effects the lake. **Chlorophyll A** is one of nature's early building blocks and can be used as food by very small organisms. The more phosphorus that is available, the more Chlorophyll A can be present. However, in excess it can cause a lake to be like Pea soup. The other two pieces of information are direct readings that are provided by the new equipment. We can now develop a profile by taking readings at various depths from the surface to the bottom of the lake measuring water **temperature** and the **dissolved oxygen**. Oxygen, of course, being a supporter of life, without it, no life can exist.

Now that you understand what we are testing for and why, we can report that the data that we have to date for both lakes falls within the parameters that would be expected for lakes that are within the Northern Lakes and Forests Ecoregion. What **this information develops for us is a baseline** so that as we retest in about five years, we can compare the two sets of readings to see if we have taken good care of our watershed lakes or if we have mistreated them. What we see in the future is up to all of us.

This year our **water clarity** varied from a high in mid June through late July of 9 to 9-1/2 feet to a low of 7-1/2 to 7 feet in late August to mid September. While there are seasonal variations for Dam Lake, this is within the range of clarity levels for our lake. The LaClairs have been reporting water clarity to the MPCA for the last 18 years and according to them, it has been as high as 11 feet with lower, stable water levels and as low as 7 feet when rains flush out the old plant material from the swamps of our watershed.

UPCOMING IN 2006 - please put these dates on your 2006 calendars!

Spring meeting followed by road clean up - Saturday, April 29
Boat Parade - Saturday, July 1 More information next June
Road Clean-up - Saturday, August 19
Annual meeting (elections) - Saturday, August 26 at town hall with potluck luncheon, games and fun
Landscaping project on Dam Lake - date to be announced.

We will try to get someone from the Sheriff's office to speak to us, especially about the problem with the Meth labs that have been found in our county, at our first meeting in the spring.

Submitted by: Bruce Reimann 6/14/06

Dam, Lily & Long Lake water monitoring grant and activities

How the program is going:

With this being our second season of testing we have gained a much better understanding of where our lakes fit with other lakes in our part of the state, how healthy/unhealthy we are. Also, We have communicated our baseline data to all the residents in our watershed since this is the approach we took since 2002. We now have the knowledge because of our training to better understand our collective actions and how it will affect our lakes within the watershed. Finally we currently publish an article on such topics in each of our association news letters.

Where we spent the funds:

We spent the mojority of the grant money on testing equipment with the balance going for testing lab expenses and transportation charges for the samples. Of note, we plan to loan to other associations our equipment when they aren't in use by us.