

# Appendix A. Public Input for Long Range Plan Development

Advisory Committee Records

Balsam Lake Property Owner Survey Results

2012 Long Range Plan Feedback

# Balsam Lake Long Range Plan

## Advisory Questionnaire Responses<sup>1</sup>

To what extent are the following issues of concern to you for Balsam Lake?

Please check the appropriate response for each concern listed.

	TOP ISSUES			
	Not at all (0)	Some (1)	Quite a Bit (2)	A Great Deal (3)
Protecting existing water clarity			2.6	
Lack of water clarity in all lake basins			2.0	
Lack of water clarity in East Balsam			2.4	
Protecting native aquatic plants <sup>2</sup>		1.6		
Excessive invasive aquatic plant growth*			2.4	
Excessive native aquatic plant growth**		1.4		
Lake user conflicts	0.8			
Limits to navigation		1.6		
Loss of natural scenery around the lake		1.5		
Loss of fish and wildlife habitat		1.9		
Declines in walleye numbers and size			2.1	
Other, please specify:				
Other, please specify:				

\* **Invasive aquatic plants** - Invasive plants are "out of place." They are usually introduced by human action to a location where they did not previously occur naturally and then dominate their new location. Eurasian water milfoil and curly leaf pondweed are examples of aquatic invasive species.

\*\***Native aquatic plants** – plants which grow submerged in water, floating on the water, or in shallow water. Native aquatic plants are naturally present in the lake. They provide food and cover for fish and wildlife and stabilize lake sediments and shorelines.

### What do you think could be done to address the issues you identified as “quite a bit” or “a great deal” of concern (above)?

Please list the issue, then explain what you think should be done.

01: We absolutely must clear out the west end [of Little Balsam]. We do not need to into the reeds etc, just the sludge. It would in no way get near any rice that might be in the swamp.

01: We need larger walleye fingerlings every year

<sup>1</sup> Citizen Responses: Survey 01 – 06

Commissioner Responses: Survey A-G

Advisor Responses: Survey ADV

<sup>2</sup> Topics highlighted in blue relate to aquatic plant management plan issues. The Balsam Lake Aquatic Plant Management Plan was updated in 2010. The Aquatic Plant Management Plan is found on the website BLPRD.com. It will be updated in 2014.

- 03: 1) Water clarity: Develop a good understanding of the forces impacting water clarity and educate the interested parties. Build in a “what’s in it for me” statement. May be different for different stake holders.
- 03: 2) Protect native aquatic plants: continue with education: Healthy native plant population= healthy lake. This topic is going to conflict with individual lakeshore property owners desiring navigation and swim beach. Again. The “what’s in it for me and acceptable compromise.
- 03: 3) Invasive Aquatic Growth 1<sup>st</sup> line of defense =- boat landings. Maintain the boat landing education by summer interns. Consider college intern with environmental major. 2<sup>nd</sup> line of defense – early detection & eradication put in place a contingency program so steps can be implemented with immediacy.
- 03: 4) Loss of scenery: continue with current program. verify that properties acquired have conservation easements in force that align with scenery protection goals, lake habitat goals, stewardship goals for perpetuity.
- 03: 5) Loss of fish & wildlife habitat: covered above
- 03: 6) introduction of invasive species such as zebra mussels. See item #3 above.
- 05: Water Clarity, identify areas of low water clarity and treat w/alum.
- 05: Lack of Water Clarity – protect areas where secchi readings show improvement by treating low clarity areas.
- 05: Lack of W.C. in East Balsam – Alum, as was suggested at July mtg. BLPRD 2011.
- 05: Protect native aquatic plants – education lake dwellers on need for these and why they should not be “raked out” of shoreline areas.
- 05: Excessive invasive plants – as state above “out of place”. Not natural and could harm plants and fish and wildlife that are native to Balsam Lake.

06:

Invasive Aquatic Plants and Water Clarity - According to all recent resident surveys shown in the Long Rang plan, water quality and invasive plants are the top two problems concerning the Balsam Lake residents. Probably due to increasing ease of plant transport and difficult enforcement of same, I think almost all lakes in Minnesota and Wisconsin now have some problem with invasive and destructive aquatic plants. The entirety of East Balsam Lake now has plants that are invading the basin, preventing navigation, severely limiting swimming, and creating an eyesore and "smellsore" in July and August.

- B: Keep on BLPRD Agenda
- C: East Balsam Clarity – work issues of Phosphor control. Also methods to reduce water exchange rate from 1 ½ yrs to 8-10 months.
- D: Alum treatment East Balsam
- D: Work w/Polk County on land use issues
- E: Spray
- F: District is doing.
- G: Fish – don’t know the answer
- G: Protecting native plants/navigation – treat only where really necessary
- G: Water clarity E. Balsam – study the phosphorus/maybe an Alum treatment

ADV1: Loss of natural scenery & fish and wildlife habitat: protect remaining habitat and scenery areas through land purchases or conservation easements. Encourage shoreland restorations.

Please list specific issues you believe the BLPRD should not address.

Please explain why.

05: I believe BLPRD should not address Lake User Conflicts. As example, complaint about PWC or boats to close to shore belong in the realm of Water Patrol. Limits to navigation – if there are areas that only affect landowner, I believe the landowner should take care of it. In major channels – then BLPRD should.

06:

**I think any issue that is NOT concerned with water clarity or quality should be put very low on the list of activities studied and funded by the BLPRD (or the DNR). Enjoyment of water pleasure activities, safer navigation, increased tourism, increased business in BalsamLake, and residents' property values are all greatly enhanced when the BLPRD concentrates its efforts on water clarity and quality. Unfortunately, this may be the BLPRD's most difficult issue to attack.**

C: Back lot development – the county zoning should control environmental issues with back lot development

E: Lake user conflicts –

F: Road construction that will allow great boat population to the already burdened lake.

F: Discontinue financially subsidizing other taxing authorities in Polk County

G: Harvesting

G: Fish population

Below is a list of existing or proposed activities intended to improve Balsam Lake. Please tell us if you think each activity should be pursued by BLPRD. (Circle a response for each item.)

	Definitely no	Probably no	Unsure	Probably yes	Definitely yes
Educate children about lake issues	0	1	2	3	3.6 4
Educate adults about lake issues	0	1	2	3	3.6 4
Prevent runoff from farms	0	1	2	3	3.6 4
Prevent runoff from residences	0	1	2	3	3.4 4
Information to reduce waterfront runoff	0	1	2	3	3.6 4
Stock fish	0	1	2	2.9 3	4
Be involved in local planning and zoning	0	1	2	3	3.4 4
Pay residents to install water quality practices	0	1	1.9 2	3	4
Pay farmers to install water quality practices	0	1	2	2.1 3	4
Monitor lake water quality	0	1	2	3	3.9 4
Improve boat landings	0	1	2	2.5 3	4
Increase boating regulation enforcement	0	1	2	2.3 3	4
Acquire property to protect the lake	0	1	2	2.7 3	4
Expand "slow no-wake" zones	0	1	1.6 2	3	4
Study phosphorus release from lake sediments	0	1	2	3	3.2 4
Pursue an alum treatment in East Balsam	0	1	2	2.4 3	4
Investigate creating East Balsam outflow	0	1	2	2.4 3	4
Reconsider sewer system expansion	0	1	1.4 2	3	4
Monitor for aquatic invasive species	0	1	2	3	3.7 4
Prevent aquatic invasive species introduction	0	1	2	3	4
Protect sensitive aquatic habitat areas	0	1	2	3	3.3 4
Spray herbicides for native aquatic plants	0	1	2	2.6 3	4
Harvest native aquatic plants	0	1	1.7 2	3	4
Spray herbicides for invasive aquatic plants	0	1	2	3	3.4 4
Harvest invasive aquatic plants	0	1	2	2.2 3	4
Other (list)	0	1	2	3	4
Other (list)	0	1	2	3	4
Other (list)	0	1	2	3	4

**Where would you like to see the BLPRD place more emphasis?**

01: Little Balsam

02: Clean water and run off control

03: Preventing the introduction of invasive species

03: Monitoring for invasive species

03: Contingent plans to eradicate if discovered.

05: Preventing invasive plants from being introduced into B.L.

05: Protecting and improving water clarity

06:

Since East Balsam is essentially man made, this basin is quite shallow which encourages internal sediment load, frequent mixing of the water column, and subsequent phosphorus release. Since an alum treatment seems the only current viable and somewhat long term solution to the excess phosphorus, the BLPRD should expedite the alum study and then quickly move to treat the entire S1 basin. If they are asked, the residents may offer to help defray the cost. The BLPRD should also complete a study of ways to increase water flow and reduce residence time on East Balsam. Increasing the outflow at the south end may reduce residence time and could prevent phosphorus from entering the main lake if flow is reversed in Big Narrows.

A: Sanitation around the lake

B: CBCW

C: Little Balsam sedimentation issues – delta changed, tracking changes, potential dredging, further investigation of in-lake sedimentation basin west end of Little Balsam.

F: The district’s “Mission Statement”.

G: Control of invasive aquatic plants

ADV1: Work with the Village of Balsam Lake to develop a storm water management plan if one does not current exist.

**Are you aware of practices or projects in place at other lake organizations that should be considered for the BLPRD?**

01: No

03: No- but Minnesota seems to be in a world of sh\*\*.

05: No

06:

I am not currently aware of any; but I may be interested in doing some research on the topic. Some lakes in southern MN may have similar water quality problems similar to East Balsam.

C: Obtain adjacent Balsam Lake wetlands donations (zero cost) similar to the 40 acres Half Moon District received in 2010 (NW corner, Tamrac creek)

D: Review alternative funding mechanisms for the clean boats/clean waters program (boat launch fees, county, other)

E: Education of the public

F: Water pressure stations at public landings to prevent the spread of invasive species.

G. No

ADV1: Lake Fair

ADV1: Quantification of “P” release from CLP

**How much attention should the BLPRD place on each of these potential causes of Balsam Lake natural resource concerns? (Please check a response for each potential cause of concern)**

	Level of attention			
	None (0)	A Little (1)	Moderate (2)	A Great Deal (3)
Agricultural fields - soil erosion			2.1	
Rural residential development		1.6		
Back lot development and increase in impervious (hard) surfaces		1.6		
Waterfront development			2.3	
Agricultural fertilizer and pesticide use			2.1	
Residential/lawn fertilizer and pesticide use			2.4	
Septic systems			2.0	
Construction site or road construction		1.7		
Forest management		1.2		
Loss of wetlands		1.9		
Agricultural livestock operations		1.9		
Invasion of non-native, invasive species			2.9	
Excessive harvest of fish (incl. fishing tournaments)		1.4		
Non-metallic mining/gravel pits	0.8			
Off-road (ATV) vehicle use	0.5			
Illegal removal of native aquatic plants		1.3		
Other, please specify:				
Other, please specify:				

**Rank the importance of the characteristics listed below for potential land acquisition by the BLPRD. A given parcel could ultimately have several of these characteristics.**

Rank by checking the appropriate response for each characteristic

	Not at all important (0)	Of little importance (0)	Don't know (2)	Somewhat important (3)	Very important (4)
Significant water quality practice to be constructed				3.7	
Prevents development that would impact water quality.				3.7	
Is a groundwater recharge area				3.0	
Undeveloped shoreline of Balsam Lake			2.9		
Presence of sensitive, rare, threatened and/or endangered plants or animals				3.0	
Provides critical habitat for sensitive, rare, threatened and/or endangered plants or animals				3.1	
Prevents development that would impact fish and wildlife habitat				3.3	
Opportunities to create/expand environmental education			2.7		
Opportunities to create/expand public nonmotorized recreational trails			2.0		
Opportunities to expand lake access	0.9				
Significant geologic features			2.5		
Significant historical features			2.4		
Threatened by development pressure			2.9		
Adjacent to public land			2.3		
Significant scenery			2.5		
At least 10 acres			2.2		
Visible to the public from roadways, waterways, etc.		1.8			
Adjacent to protected private land			2.3		
Other (list)					
Other (list)					
Other (list)					

**Are you aware of any properties adjacent to Balsam Lake or within the Balsam Lake watershed that you believe the BLPRD should consider acquiring in the future?**

01: No

02: No

04: No

05: No

06: No, I am aware of none; but I have not done any research on this topic.

C: No

E: Not a priority right now

F: No

G: None at the present time

ADV1: The islands in the lake

**If so, please list location and owner if known.**

03: Louis (Sonny) and Dorothy Leisch – 1825 Pine Island Point Court

04: Don't know

A: Darrell Alen Farm

B: Beach property Faith Lutheran Church

C: N/A

F: N/A

**Why do you think this property should be acquired by the BLPRD?**

03: Mr & Mrs. Leisch own wooded property that abuts to Stumps Bay

A: Drains into East Balsam

B: Noted as developable site

C: N/A

F: N/A

ADV1: Most [islands] are undeveloped or have undeveloped areas that provide important habitat and scenic beauty for the lake

**What educational topics should the BLPRD emphasize?**

- 14 Invasive species prevention
- 11 Benefits of native aquatic plants
- 8 Activities of the BLPRD
- 6 Local land use planning and zoning
- 14 Impacts of waterfront development and how to minimize them
- 11 Importance of shoreland habitat
- 6 Water use rules and regulations
- 11 Zero phosphorus fertilizer
- Other Names and phone numbers of the "BLPRD Associates" (volunteers)
- Other \_\_\_\_\_
- Other \_\_\_\_\_

D: comment related to waterfront education – Consider regulations, not education

**In your opinion, what are the Balsam Lake P&R Districts greatest strengths?**

- 01: A great concern for Balsam Lake
- 01: A taxing entity that can fund projects.
- 02: Improve the lake quality & prevent degrading of lake
- 03: Its ability to leverage every dollar in to three dollars of benefits
- 03: Focus Focused on Balsam Lake water quality and wildlife habitat
- 03: A learning organization
- 04: Keeping people involved regarding lake issue!
- 05: The current board – all knowledgeable & resourceful people
- 05: the record of getting things done – see page 3
- 05: not afraid to take on tough issues
- 06:

- 1. Excellent team of commissioners. Willing to seek suggestions from the residents. Great Dockside newsletter.
- 2. Excellent help from Harmony Environmental. High respect at the DNR for Harmony's work. Excellent results for pursuit of grants.
- 3. Good respect from and relationship with the DNR.

- A: Water quality
- A: Invasive plants
- C: District Commissioner involvement
- C: Securing/outourcing quality contractors
- C: Studying key lake quality issues
- D: Ability to fund projects (with resources, \$)
- E: Educated & Knowledgeable board members
- E: Open communication with DNR & other advisory entities

- F: Financial means to complete projects
- G: Dedicated board members
- G: Good support by the lake residents
- G: Funds available to work with
- ADV1: ?

**In your opinion, how could the BLPRD’s programs, services, and operations improve?**

- 01: Individuals that have private agenda’s under the disguise that it is good for the lake. Many local people are of the opinion that the BLPRD is run mostly by rich nonresidents who don’t care about locals. They are somewhat right and wrong but that is what they think.
- 02: More information output to the general public throughout the year.
- 03: Education Step up contact with lake residents for purpose of education
- 04: Increase limits on bass catch’s plus reduce size limit
- 04: Focus on removal of aquatic plant growth (lily pads)
- 05: finding a way to improve attendance at annual mtg – a way to get owners to become involved, educated and supportive of your work.
- 06:
  - 1. Study ways that residents can help improve water quality. If it is deemed valuable, bring back mechanical harvesting of plants along the shoreline.
  - 2. Study the feasibility of creating and maintaining a group of volunteers (1 or 2 from each basin) that can communicate and organize the residents to help improve the water quality.
  - 3. Create volunteer work teams. If necessary, raise funds from the residents to start projects that will improve water quality.

- C: Provide additional financial resources within statute limitations (2.5 miles)
- C: Provide resources for a full time executive director
- C: Provide for internet access in District offices
- E: Education of lake owners & open communication
- E: Increase limits on bass & eliminate size
- E: More involvement with other lake rehabs
- F: Re-focus on the district’s “Mission Statement”.
- G: More information to the lake residents (education)
- ADV1: ?

**What threats (out of its direct control) could hinder BLPRD’s ability to deliver its programs/services?**

- 01: Even though I have been a leader in purchasing land to protect it, the most recent purchase a land in Stump Bay was for way too much money and has soured many people. The price will definitely hurt future support.
- 03: Political – I am concerned that other units of government, may protect their turf or expand their control at the expense of BLPRD. (This has got a lot to do with money & control.)
- 04: DNR rules regarding the issue of permits for removal of weed native & invasive!
- 05: State legislation – Political forces attempting to use Balsam Lake for their own purposes.
- 05: Local government conflicts with BLPRD Charter/Commission.

06:

1. Increased DNR regulations. Miscommunication between DNR and BLPRD.
2. Reduction of restrictions on shoreland usage that may allow the creation of very large or unattractive shorelines and residences.
3. Reduction of DNR respect for BLPRD goals, studies, commissioners, and helper organizations.

A: Cost

B: Loss of Volunteers

B: Loss of Board Members

B: Tax Revolt

C: Reduced DNR support – grant awards – more difficult to obtain

C: DNR support of aquatic plant control – both native and invasive

E: Strict DNR rules & regulations

E: Money

F: The loss of confidence and financial support

G: ?

ADV1: Budget cuts to government agencies and grant programs

#### **What comments and complaints from residents should the Long Range Plan address?**

03: We paid a premium for the Soltau Property. This sets expectation (or precedence) for future acquisitions.

04: Weed control, jet skis, loud music

05: Water quality

06:

**Water quality. Water quality. Water quality.**

**The levels of recreational enjoyment and ease of navigation on East Balsam have been declining steadily for the past 10 years. With the help of volunteers, the BLPRD should act now to stop and reverse this trend. Residents want to help and have asked me how they can be involved.**

A: Invasive plants

C: Riparian rights of shoreowners – aquatic plant control

E: Excessive weeds

E: Enforcement of excessive speeds & noise of water toys & people

F: East Balsam water quality

G: CLP control

G: Navigation problems

G: Fish populations

ADV1: all comments related to the goals & objectives of the long range plan should be addressed.

ADV1: all other comments could be summarized w/a response indicating that they aren't pertinent.

Other comments

02: I received this on 1-18-12 (it was mailed 1-13-12) so didn't have much time to review material.

**Please list your name and affiliation so that we may follow up with any questions.**

01: Greg Moore, 1926 145<sup>th</sup> Street, Balsam Lake

02: Ray J. Giudice, 205 Indianhead Shores Dr., Balsam Lake, WI 54810

03: Ray Sloss 612-965-6455

04: Carl E. Pentland Lake resident for over 60 years.

05: Deborah Irestone – land/shoreline/owner/seasonal cabin

06:

Paul Heysse                      319-365-6304  
1826 120th St  
(West shore of East Balsam for 25 years)

Interested volunteer with main residence in Iowa.

A: No name indicated

B: Carl Holmgren

C: Howard Seim

D: Dave Wagner

E: Caroline Rediske

F: Tom Miller

G: Milt Stanze

ADV1: Alex Smith - DNR

**Balsam Lake Long Range Plan  
Advisory Committee Meeting**

**Wednesday, January 25<sup>th</sup>, 6:30 p.m.**

Executive Conference Room (downstairs)  
Polk Business Center  
215 Main Street Balsam Lake

**AGENDA (draft)**

- 6:30 pm Welcome and Introductions – Howard Seim
- 6:40 pm Long Range Plan and Committee – schedule, purpose and roles, plan goals
- 7:00 pm Questionnaire Review and Discussion
- 7:30 pm Modifications to plan goals?
- 8:00 pm Review/add to Recommended Management Activities (pg 46)
- 8:15 pm Identify priority management activities for discussion at next meeting
- 8:30 pm Adjourn

Management Plan Consultant

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**Balsam Lake Long Range Plan  
Advisory Committee Meeting #2**

**Wednesday, February 15th, 6:30 p.m.**

Executive Conference Room (downstairs)  
Polk Business Center  
215 Main Street Balsam Lake

**AGENDA**

- 6:30 pm Welcome and Review Schedule
- 6:40 pm Review Lake Management Goals (committee)
- 7:00 pm Review Lake Management Activities  
Ideas for Education (committee)
- 7:30 pm Water Quality Study Results (Dave Wagner)
- 8:00 pm Address questions from last meeting  
Committee discussion about activities
- 8:30 pm Adjourn

**Schedule**

Draft implementation plan for committee review – March 1  
3 page summary and 1 page response survey for lake residents – draft in April  
Distribute survey to residents – late May  
Survey return – mid June  
Draft plan released for public comment – late June  
Public comment period ends – July 21, 2012 (annual meeting)  
Final plan – end of July

Management Plan Consultant

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**Balsam Lake Long Range Plan  
Advisory Committee Meeting #2  
Meeting Notes**

**Wednesday, February 15th, 6:30 p.m.**

**Next Meeting:**

**After BLPRD Board Meeting**

**Saturday, April 21**

**10:45 a.m.**

**Activities Discussed at the Advisory Meeting #2**

1) Ways to enhance information and education

**MEETING DISCUSSION RESULTS**

**Additional methods for implementation:**

Sponsor and participate in events to reach lake residents

Lake fairs, Balsam Lake homeowner's activities, look for/create fun activities with food.

Distribute information through email lists, *Shorelines* (Balsam Lake Homeowner's newsletter), Lakeland cable television, articles in local newspapers, at the Polk County Information Center, etc.

Provide "welcome to the lake" information to new residents. Create road captains to keep track of new residents and see that information gets distributed.

**Consider for each method:**

Encourage volunteer participation.

**Educational Messages for the BLPRD:**

Explain "What's in it for me" to lake residents

What's new?

What are the rules? Who do I call for information?

What services are available?

It is your lake – take care of it?

Focus on what individuals can do.

Boater safety

2) Cost sharing for waterfront and agricultural practices

Provide an update of agricultural impacts on the lake

Review continuation and content of waterfront runoff program

**Questions reviewed by advisory committee.**

*Should the lake district consider cost sharing for waterfront practices?*

Yes: 13    No: 0    Don't Know: 0

*Should the lake district consider cost sharing for agricultural practices?*

Yes: 11    No: 1    Don't Know: 1

*Should there be an independent review of the Barr study results?*

Yes: 2    No: 7    Don't Know: 4

**Should the following questions be pursued by the BLPRD?**

***How much does curly leaf pondweed contribute to the phosphorus load of East Balsam?***

Yes: 10    No: 1    Don't Know: 2

*To pursue this question, estimates can be made of the amount of phosphorus present in CLP tissue and the amount released to the water column based on literature review results. To back calculate for 2010, it would also be necessary to provide these estimates for a range of CLP which might have been present during the study, since CLP beds were not measured in East Balsam that year. It will be extremely difficult to measure phosphorus loading from CLP in 2012 because the large beds in East Balsam are all targeted for an early season herbicide treatment.*

***How significant is watershed (specifically agricultural) loading to East Balsam?***

Yes: 11    No: 2    Don't Know: 0

*Existing water quality models from the 2010 study can be used to estimate the in-lake water quality effect of various changes of watershed loading for each basin. Basin S-1 (East Balsam) and Basin S-4 (Main Basin) are of particular interest.*

***What are the historical phosphorus levels and sedimentation rates in the basin?***

*The BLPRD has decided to pursue a sediment study which would identify sedimentation rates and water quality at various times in history. NOT SURE HOW MANY CORES AND WHERE THEY ARE LOCATED.*

**Is it legally possible to create an additional outflow for East Balsam?**

Yes: 11      No: 2              Don't Know: 0

*With a general description of the changes to water flow and levels which might occur, the necessary permits and permissions could be investigated. They might include: flooding existing wetland (federal and state permits), changing regulated water levels at the dam (DNR regulated), allowing water to flow and pond on private property (private easements), culverts under a county highway, among others.*

**Would an additional outflow improve water quality in the basin?**

**Is it technically possible to create such an outflow?**

Yes: 6      No: 4              Don't Know: 3

*If initial indications are that the project is potentially legally feasible, the first question would be to assess the potential impact on water quality for East Balsam. This question might be answered with data and additional modeling from the 2010 water quality study. Further investigation would be needed to assess how additional flow would be created and the impacts on East Balsam and other lake basins.*

**What is the appropriate amount of alum to use to control sediment release of phosphorus? How much would this cost?**

Yes: 8      No: 1              Don't Know: 4

*The BLPRD board already has a proposal from Barr to evaluate phosphorus release from East Balsam Lake sediments in the laboratory in order to estimate the amount of alum needed to improve water clarity in East Balsam.*

*An alternative method is to measure in situ (in the lake) sediment released nutrients using flux chambers. Jeremy Williamson (Polk LWRD) is willing to develop a study design in cooperation with scientists from UW-Stout, the University of Minnesota, and the St. Croix Watershed Research Station. An in-situ measurement would allow comparison between sites with and without CLP.*

**Balsam Lake Long Range Plan  
Advisory Committee Meeting #3**

**Saturday, April 21**

**10:45 a.m.**

Executive Conference Room (downstairs)  
Polk Business Center  
215 Main Street Balsam Lake

**AGENDA**

- 10:45 am Welcome and Review Schedule
- 11:00 am Questions Raised in Comments  
Fish sticks  
Walleye stocking  
Lake levels  
Others
- 11:20 am Prioritizing Activities  
Most important (what is most critical to complete?)  
Most immediate (what should be done first?)
- noon Adjourn

**Schedule**

Draft implementation plan for committee review – April 27  
3 page summary and 1 page response survey for lake residents – draft April 27  
Distribute survey to residents – late May  
Survey return – mid June  
Draft plan released for public comment – late June  
Public comment period ends – July 21, 2012 (annual meeting)  
Final plan – end of July

Management Plan Consultant

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# Balsam Lake Long Range Plan Activity Prioritizing Worksheet RESULTS 4/21/12

The purpose of this worksheet is to prioritize activities within the Long Range Plan. Keep in mind that the committee already selected top priority and “normal” or lower priority goals.

This process asks you to select activities which are 1) the most important and 2) the most immediate. Ranges of costs are provided when available. Most are very rough estimates. Some activities are grant eligible. Final activity costs would be determined with a bidding process which would follow the development of a more detailed scope of work.

In each ranking process, you will be given a certain number of choices in the form of stickers to place next to activities. If you feel an activity is particularly important, you may wish to use more than one sticker for that choice.

## **Ranking Importance**

Consider known costs and benefits of each activity and how likely you think the activity will help to meet the goal it is under.

**Please select your top priority activities as instructed for each goal. These activities are those you feel are the most important or critical to pursue in order to reach the goals.**

## **Ranking Immediacy**

Keep in mind that the BLPRD board will need to schedule activities. The first work plan will be developed for the next two years. The work plan will include costs, potential grant sources, a timeline, and partners for each selected activity. The intent is for the work plan to be reviewed and updated each year. New activities from the plan, and/or others which fit the goals and objectives, may be added as the plan is implemented.

**The second step is to review all activities in Goals 1 – 8 and select those top 20 activities which should begin first. Consider these the most immediate priorities. Results are shown in boxes to the right of the activity.**

Top Priority

**Goal 1:** Enhance Balsam Lake property owners' and visitors' understanding of lake issues and increase their involvement in protecting and improving the lake.

**Instructions:** Choose the 4 most important activities in Goal 1 by marking/placing your sticker to the left of the activity.

Choose up to 1 activity that shouldn't be done. Cross off the box or place a black sticker in the box.

**Results:** One point was given for each colored sticker.

One point was subtracted for each black sticker. These results are shown at left.

Importance		Immediacy
12	1. Dockside Newsletter <sup>1</sup> (\$5,000 annually) Seek assistance from Polk County LWRD, UWEX, DNR, and other agencies to author appropriate articles on priority topics Publish newsletter at least three times per year	10
7	2. BLPRD Web Site Update with information from articles above Update maps on web site	6
9	3. BLPRD Annual Meetings Distribute handouts and present information on priority topics (guest speakers and authors)	10
3	4. Signage at Boat Landings (\$500 - \$2,000) Expand signage to private landings, waterfront restaurants, and resorts	8
2 (-1)	5. Workshops and Tours (for example, for the Waterfront Runoff Program) (\$500 - \$1,000 each)	0
6 (-1)	6. Sponsor and participate in events to reach lake residents (Volunteer or staff time, activity/food costs)	2
3	6a. Lake fair, special BLPRD activities, create fun activities with food 6b. Participate in activities organized by others, e.g., Balsam Lake Homeowner's Association	1
3 (-1)	7. Distribute information through email lists, <i>Shorelines</i> (Balsam Lake Homeowner's newsletter), Lakeland cable television, articles in local newspapers, at the Polk County Information Center, etc. (Volunteer or staff time)	3
3 (-5)	8. Provide "welcome to the lake" information to new residents. Create road captains to keep track of new residents and see that information gets distributed. (Volunteer or staff time)	0

<sup>1</sup> The February 2010 resident survey identified newsletters as the preferred way for residents to receive information from the BLPRD.

Top Priority

**Goal 2:** Manage native and invasive aquatic plants according to the goals, objectives, and activities outlined in the Aquatic Plant Management Plan.

Activities

The implementation plan from the 2010 Aquatic Plant Management Plan is included as Appendix **XX**.

**Choose the 10 most important activities in Goals 3 and 4 by marking/placing your sticker to the left of the activity.**

**Choose up to 2 activities that shouldn't be done. Cross off the box or place a black sticker in the box.**

Top Priority

**Goal 3:** Improve water clarity and quality in Balsam Lake.

Objective A: Better understand lake processes to target actions.

Objective B: Improve water quality in East Balsam.  
*(Could establish in-lake water quality objective here)*

Objective C: Improve water quality in all lake basins including Little Balsam, Main Basin, Stump Bay, Boston Bay, and the Mill Pond.

Top Priority

**Goal 4:** Maintain water clarity and quality in Balsam Lake.

Goal 3 Activities

Importance

Immediacy

7

1a. Complete a sediment phosphorus release study of East Balsam. (OBJ A) (\$16,000)

9

1 (-6)

1b. Consider an alum treatment and other management practices based on the sediment study results and estimated costs. (OBJ B, C) (Unknown)

0

13

2. Complete a sediment core study to assess the natural or reference condition for lake water quality and the impacts of land use changes and management efforts over the past 150 years in East Balsam, Little Balsam, and the Main Basin. (OBJ A) (w/ Polk County LWRD) (\$20,000/\$7,500 match)

9

Importance		Immediacy
6 (-2)	3. Complete additional water quality analysis for East Balsam to answer the following questions: (OBJ A) 3a. How much does curly leaf pondweed contribute to the phosphorus load of East Balsam? (\$3,000?)	4
4 (-1)	3b. How significant is watershed (specifically agricultural) loading to East Balsam? (\$1,000?)	13
7 (-2)	4. Review feasibility and potential improvements to water clarity by creating an additional outflow for East Balsam in a stepwise manner. 4a. Is it legally possible to create an additional outflow for East Balsam? (Unknown cost)	10
1	4b. Would an additional outflow improve water quality in the basin? (Unknown cost)	0
3	4c. Is it technically possible to create such an outflow? (Unknown cost)	6
1	5. Re-evaluate water quality objectives and activities based upon the results of the sediment core study, CLP analysis, and East Balsam outflow analysis along with information from the 2010 water quality study. (OBJ A)	1
4	6a. Reassess agricultural best management practice needs and priorities in the East Balsam and Main Basin watershed. Identify actively cropped agricultural fields/farms, measure soil phosphorus on farm fields, and model P release using SNAP plus (an agricultural water quality model). (OBJ A) (w/Polk LWRD) (Unknown)	13
(-1)	6b. Support conservation practice cost sharing (such as for nutrient management planning and minimum tillage) for fields with high phosphorus release identified above. (OBJ B, C) (\$10,000 to \$30,000 annually)	2

**Goal 3 and 4 Activities**

8	7. Encourage the Village of Balsam Lake to develop a stormwater management plan. (OBJ C) (Level of support could vary)	8
4	8. Encourage the Village of Balsam Lake to adopt an erosion control and stormwater ordinance to ensure that sediment and nutrients from construction and redevelopment are kept on site. (OBJ C) (Level of support could vary)	9
4	9. Encourage the Village of Balsam Lake to adopt the Polk County Shoreland Zoning rules, so properties within the village limits are subject to the same sets of rules as those under county jurisdiction. (OBJ C) (Level of support could vary)	8

Importance

Immediacy

5

10. Work cooperatively with DNR, Polk County, the Village of Balsam Lake, and Towns to address water quality concerns related to land use planning, ordinance implementation, road construction and maintenance, and other government functions. (OBJ C) (Volunteer time, engineering support)

3

**Goal 4 Activities**

8 (-1)

11. Maintain installed watershed practices  
Dredge sediment as needed to maintain the Balsam Acres sediment basin effectiveness (dredge at about 50% level). (volunteer time to monitor, dredging costs unknown)

5

2

12. Continue the waterfront runoff program with education, design assistance, and cost sharing for the installation of water quality practices on individual lots. (\$25,000 - \$30,000/\$6,250 - \$7,500 match annually)

4

**Evaluating Progress of Management Efforts / Monitoring (for Goals 3 and 4)**

9

13. Continue volunteer Citizen Lake Monitoring Secchi-depth measurements in East Balsam, Little Balsam and the Main Basin. Add Secchi monitoring in Stump Bay and Boston Bay. (volunteer time)

9

3

14. Participate in expanded Citizen Lake Monitoring to include long-term phosphorus and chlorophyll a levels. Expanded Citizen Lake Monitoring is currently available in East Balsam and the Main Basin. Request additional monitoring from DNR for Little Balsam, then Stump Bay and Boston Bay. (volunteer time)

2

**Instructions: Choose the 4 most important activities in Goals 5 through 8 by marking/placing your sticker to the left of the activity. Choose up to 1 activity that shouldn't be done. Cross off the box or place a black sticker in the box.**

**Results: One point was given for each colored sticker. One point was subtracted for each black sticker.**

Goal 5: Protect, maintain, and improve fisheries and fish and wildlife habitat in and around Balsam Lake.

Objective A: Support DNR actions to improve walleye numbers and size.

Objective B: Increase installation of woody habitat in the lake.

Objective C: Improve near-shore habitat.

Importance		Immediacy
- 4	1. Consider paying to supplement DNR stocking of walleye fingerlings. (OBJ A) (about \$1 each)	0
6	2. Identify areas where fish habitat could be enhanced and move forward with activities such as “fish sticks”. (OBJ B, C) (e.g., Bone Lake, \$5,000 + 200 volunteer hours for 12 sites)	12
3	3. Protect critical watershed and habitat areas on Balsam Lake shorelines and watersheds following the guidelines in Appendix Z. (OBJ C) (land purchase/easement costs vary)	3
	<del>4. Continue the waterfront runoff program with education, design assistance, and cost sharing for the installation of water quality practices on individual lots. (OBJ C) (\$25,000 to \$30,000/\$6,250 – \$7,500 match annually) This activity was crossed off because it is repeated under another goal.</del>	

Goal 6: Promote the preservation and restoration of natural vegetation and scenery along the shoreline.

Importance		Immediacy
2	1. Promote technical assistance provided by the Polk County LWRD, UWEX, DNR and other agencies. (volunteer, printing)	5
6 (-3)	2. Consider BLPRD incentives to plant native plants along the water's edge. (Bone Lake pays \$300 each for small plantings + consultant support)	9
	<del>3. Protect critical habitat areas on Balsam Lake shorelines following the guidelines in Appendix Z. (land purchase/easement costs vary) This activity was crossed off because it is repeated under another goal.</del>	

Goal 7: Maintain and enhance recreation and navigation.

1 (-3)	1. Replace the box culvert between the Mill Pond and Town Bay with a bridge to allow more boat access. (\$250,000)	5
14	2. Re-assess the feasibility of dredging to enhance navigation in Little Balsam. (This activity was not pursued because permits for extensive dredging were not likely to be issued by DNR staff who stated concern about potential impacts to wild rice present.) a. monitor extent of sediment delta in Little Balsam annually. (unknown)	5

Goal 8: Improve BLPRD operations.

1	1. Encourage involvement and volunteerism – use teams of volunteers	5
1	2. Establish a mission statement	1
1	3. Consider options to complete activities if volunteers are not available. One option is to consider pursuing a full or part-time executive director.	0
8	4. Maintain efficient operations of the BLPRD office. For example, consider providing internet access in the office.	5
2	5. Interact with other lake districts	1

# Balsam Lake Property Owner Survey Results

**Please complete and return in the enclosed self-addressed stamped envelope to:**

BLPRD  
 PO Box 202  
 Balsam Lake, WI 54810

**301 of 800 surveys returned: 38%**

1. Which of the following best describes when you use your Balsam Lake home/property?  
 (Please consider the property you use most if you own more than one.)

**(Check one)**

- 61 of 301 20% Full-time residency
- 64 of 301 21% Seasonal – continued occupancy for months at a time
- 171 of 301 57% During weekends, vacations, and/or holidays
- 2 of 310 0.6% Rental to others
- 1 of 301 0.3% Land Only
- 3 of 301 1% No Response

2. How long have you owned property on Balsam Lake? **(Check one)**

- 13 of 301 4.3% 0 to 2 years
- 26 of 301 8.6% 2+ to 5 years
- 45 of 301 15% 5+ to 10 years
- 75 of 301 24.9% 10+ to 20 years
- 137 of 301 45.4% More than 20 years
- 5 of 301 1.6% No Response

3. Please indicate your degree of participation in the following activities at Balsam Lake?

**(Circle appropriate response for each item)**

	None	A little	Some	Quite a bit	A great deal	Average
<u>Appreciating peace and tranquility</u>	0	1	2	3	4	3.48
<u>Enjoying the view</u>	0	1	2	3	4	3.69
<u>Fishing</u>	0	1	2	3	4	2.13
<u>Jet skiing</u>	0	1	2	3	4	0.07
<u>Motor boating</u>	0	1	2	3	4	2.82
<u>Non-motorized boating</u>	0	1	2	3	4	1.19
<u>Observing wildlife</u>	0	1	2	3	4	3.13
<u>Wind surfing</u>	0	1	2	3	4	0.14
<u>Scuba diving or snorkeling</u>	0	1	2	3	4	0.12
<u>Swimming</u>	0	1	2	3	4	2.33
<u>Water skiing</u>	0	1	2	3	4	1.49
<u>Other (list)</u>	0	1	2	3	4	
<u>Snow shoe</u>	1 response at 4			<u>Sailing</u>	5 ave 3	
<u>Running</u>	1 response at 4			<u>Tubing</u>	5 ave 3.2	

Entertain. & Family time	2 at 4	Sun bathing	1 at 3
Snowmobile on lake	3 ave. 2.67	Ice Walking	1 at 1
Walks in Winter	1 at 3	Water Therapy Handi.	1 at 3
Socializing	1 at 4	Wake Boarding	2 ave 3.5
Enjoy Restaurants	1 at 3	Star gazing	1 at 4
Kayaking	1 at 3	Walking	1 at 3
Biking	1 at 3	Paddle boats	1 at 1
Out of Cities	1 at 4	Ice Fishing	1 at 4
Gardening	1 at 4	No Response	1

4. Please indicate how much each of the following **negatively** impacts your use of the lake. If you believe the concern is not present on the lake, circle "0".

(Circle appropriate level of negative impact for each item)

	Level of Negative Impact							Average Score
	Not present	No impact	A little	Some	Quite a bit	A great deal	Unsure	
Algae growth	0	1	2	3	4	5	6	3.71
Small fish size	0	1	2	3	4	5	6	2.65
Not enough fish	0	1	2	3	4	5	6	2.76
Lake level too high	0	1	2	3	4	5	6	1.21
Lake level too low	0	1	2	3	4	5	6	2.61
Native aquatic plant* growth	0	1	2	3	4	5	6	3.4
Invasive aquatic plant** growth	0	1	2	3	4	5	6	3.68
Loss of wildlife habitat	0	1	2	3	4	5	6	2.87
Boat congestion	0	1	2	3	4	5	6	2.81
Noise	0	1	2	3	4	5	6	2.82
Loss of natural scenery	0	1	2	3	4	5	6	2.57
Other (list)	0	1	2	3	4	5	6	
Culvert Size	1 at 5							
Too many bass tourn.	1 at 4							
Fewer Loons	1 at 4							
Muck	1 at 5							
Water Clarity	2 at 4							
Loose Dogs	1 at 5							
ATVs	1 at 5							
Garbage in Lake	2 at 4							
DNR is a poison	1 at 1							
Light Pollution	2 at 4.5							
Street Light Glare	1 at 5							
Moss on Lake Bottom	1 at 5							
Rock wall McMansions	1 at 5							
Renting out Docks	1 at 5							
Increase Boat Houses	1 at 1							
Neighbors Renting	1 at 1							
Silt	1 at 5							
Operation of PWC	1 at 5							
Float Planes	1 at 1							
Too weedy to canoe	1 at 4							
Too weedy to boat	1 at 4							
Large houses right on lake	1 at 1							
Noise from large boats	1 at 5							
Jet Skiing too close to shore	1 at 5							

<u>Jet skiing noise</u>	<u>1 at 5</u>
<u>Jet skiing speed</u>	<u>1 at 5</u>
<u>No response</u>	<u>4</u>

\***Native aquatic plants** – plants which grow submerged in water, floating on the water, or in shallow water. Native aquatic plants are naturally present in the lake. They provide food and cover for fish and wildlife and stabilize lake sediments and shorelines.

\*\* **Invasive aquatic plants** - Invasive plants are "out of place." They are usually introduced by human action to a location where they did not previously occur naturally and then dominate their new location. Eurasian water milfoil and curly-leaf pondweed are examples of aquatic invasive species.

**QUESTIONS RELATED TO AQUATIC PLANT MANAGEMENT FOLLOW**

Note that aquatic plants are rooted in the lake bottom or floating on the lake surface. Particles of algae floating in the lake are not considered aquatic plants.

5. How would you describe the overall amount of aquatic plants in the lake? **(Check one)**

- 48 of 301 16 % Not sure
- 5 of 301 1.6% Too few
- 66 of 301 21.9% Right amount
- 177 of 301 58.8% Too many
- 5 of 301 1.6% No Response

6. Which best describes the amount of rooted aquatic plants near the shore (in the water)? **(Check one)**

- 33 of 301 10.9% Not sure
- 9 of 301 3 % Too few
- 70 of 301 23.3% Right amount
- 181 of 301 60.1% Too many
- 7 of 301 2.3% No Response

7. At what time period during the year do you consider the aquatic plant growth in Balsam Lake to be excessive? **(Check all that apply)**

- 25 of 301 8.3 % May - June
- 224 of 301 74.4% July - August
- 3 of 301 1 % August - September
- 53 of 301 17.6% September - October
- 23 of 301 7.6% I don't know
- 43 of 301 14.3% Aquatic plant growth is always excessive
- 9 of 301 3 % Aquatic plant growth is never excessive
- 3 of 301 1 % No Response

8. During the past few years how much, if at all, have aquatic plants limited participation for you or your family in the following activities? **(Circle the appropriate response for each item)**

	Do not participate	Not at all	A little	Somewhat	Quite a bit	A great deal	Average:
Swimming	0	1	2	3	4	5	2.85
Fishing	0	1	2	3	4	5	1.99
Motorized boating	0	1	2	3	4	5	2.35
Non-motorized boating	0	1	2	3	4	5	1.17
Enjoying the view	0	1	2	3	4	5	1.73
Water skiing or tubing	0	1	2	3	4	5	1.79
Jet skiing	0	1	2	3	4	5	0.98

1 No Response

9. Curly leaf pondweed is an aquatic invasive plant that is found in many lakes in Wisconsin.

Do you believe that you can identify this plant? **(Check one)**

68 of 301 22.6% Definitely no

64 of 301 21.3% Probably no

67 of 301 22.3% Not sure

64 of 301 21.3% Probably yes

35 of 301 11.6% Definitely yes

3 of 301 1 % No Response

10. How much of a problem, if at all, do you consider curly leaf pondweed growth in Balsam Lake?

**(Check one)**

40 of 301 13.3% Large problem

57 of 301 18.9% Moderate problem

176 of 301 58.5% Unsure

16 of 301 5.3% Small problem

6 of 301 2 % No problem

6 of 301 2 % No Response

11. Curly leaf pondweed has been found in Balsam Lake. The potential impacts of this invasive plant include overtaking native plants, impeding navigation in early summer, and increasing phosphorus levels in the water when the plant dies in June or July. The Lake District has previously used the herbicide Endothall to control the growth of curly leaf pondweed early in the season to avoid impacts to native plants. Should the Lake District continue control efforts for curly leaf pondweed? **(Check one)**

4 of 301 1.3 % Definitely no

3 of 301 1 % Probably no

34 of 301 11.3 % Not sure

88 of 301 29.2 % Probably yes

167 of 301 55.5 % Definitely yes

5 of 301 1.6 % No Response

12. In 2009, the Lake District spent about \$5,000 to treat an 8 acre area of curly leaf pondweed with herbicide and to monitor the results. Should curly leaf pondweed management efforts be expanded to additional acreage? **(Check one)**

8 of 301 2.6 % Definitely no

4 of 301 1.3 % Probably no

68 of 301 22.6 % Not sure

102 of 301 33.9 % Probably yes

114 of 301 37.9 % Definitely yes

5 of 301 1.7 % No Response



**QUESTIONS RELATED TO THE WATERFRONT RUNOFF PROGRAM FOLLOW**

15. Below is a list of landscaping practices designed to protect and improve lake water quality. Please tell us which practices, if any, you use at your Balsam Lake property or whether or not you are familiar with the practice. **(Check one for each line)**

	Already use	Familiar but not used	Not familiar
Rain gardens	12.6%	55.5%	18.9%
Rain barrels	7 %	70.4%	10.3%
Shoreline buffer zones	59.1%	24.9%	9.3%
Native plants anywhere on lake property	55.5%	19.3%	15.3%
Infiltration pits or trenches	7 %	41.2%	38.5%
Water diversions	20.9%	37.5%	28.6%
Not fertilizing or using zero phosphorus fertilizer	80.4%	12 %	4.3%
Other, please list			

Natural rocks SBZ AU 0.7%    RG Plan to 0.7%    RB plan to 0.3%    SBZ Plan to 0.3%  
 NP Plan to 0.3%    Run off Away from lake AU 0.3%    Less Grass/More shrub AU 0.3%  
 No Grass Cutting AU 0.3%    Don't burn leaves AU 0.3%    Installed "shore sox" 0.3%  
 No response 0.7%

16. In the following list, please indicate which water quality landscaping practice, if any, you would consider putting in place on your Balsam Lake property. Please see the definitions below. If you already use the practice, please check the box. **(Check all that are of interest)**

- 124 of 301    41.2%      Rain gardens
- 102 of 301    33.9%      Rain barrels
- 172 of 301    57.1%      Shoreline buffer zones
- 158 of 301    52.5%      Native plants anywhere on lake property
- 63 of 301    20.9%      Infiltration pits or trenches
- 98 of 301    32.6%      Water diversions
- 203 of 301    67.4%      Not fertilizing or using zero phosphorus fertilizer
- 33 of 301    10.9%      No Response
- Other, please list \_\_\_\_\_
- 1 of 301    0.3%      Postage stamp size lot
- 1 of 301    0.3%      Don't have mow able shoreline
- 1 of 301    0.3%      Roof water into an abandoned septic system (functional)
- 1 of 301    0.3%      Have 2nd WD that could use a "pit"
- 1 of 301    0.3%      Let people handle own property, w/o gov't control

**Rain gardens** – Rain gardens are depressions in the landscape planted with flowers and grasses. A rain garden is positioned to capture runoff from rain events and absorb the water over several hours to a few days.  
**Rain barrels** – Rain barrels capture water from a rain gutter downspout for watering gardens and potted plants.  
**Shoreline buffer zone** – Areas of planted or naturally-growing native vegetation beginning at the water’s edge and extending upland. Shoreline buffer zone minimum depths generally extend 35 feet back from the high water mark.  
**Infiltration pit or trench** – A depression lined with filter fabric and filled with rock. Runoff is directed to the pit or trench for temporary storage until it soaks into the ground.  
**Water diversion** – A practice that directs water flow to a place where it can soak into the ground rather than flow to the lake. Arranging gutters and downspouts to direct water so that it doesn’t flow to the lake is an example. Berms (low ridges), drain tile, and channels are other means to divert water.

17. Are you aware of the free visits the Lake District offered in 2008 and 2009 to lake residents to address waterfront property runoff? **(Check one)**

141 of 301 46.8% Yes

153 of 301 50.8% No

7 of 301 0.3% No Response

18. Have you taken advantage of these services? **(Check one)**

23 of 301 7.6% Yes (If you choose this answer, go to Question 20)

72 of 301 23.9% No, but I plan to (If you choose this answer, go to Question 20)

185 of 301 61.5% No (If you choose this answer, go to Question 19)

20 of 301 6.6% No Response

19. If you don't plan to request a free visit, please describe the reason. **(Check one)**

92 of 301 30.6% It is not needed on my property.

12 of 301 3.9% I don't have time.

12 of 301 3.9% I am concerned about inviting someone representing the Lake District onto my property.

24 of 301 7.9% I don't have the money to install a landscaping practice to address waterfront runoff.

44 of 301 14.6% I don't know enough about the visit.

14 of 301 4.6% No Response

Other \_\_\_\_\_

1 of 301 0.3% Charities my property

1 of 301 0.3% Not sure of benefits/practice landscaping tech.

2 of 301 0.6% Small lot

1 of 301 0.3% Not there on weekdays

2 of 301 0.6% Handle property w/o gov't body

1 of 301 0.3% Limited use on home

1 of 301 0.3% Property 4 sale

1 of 301 0.3% I have a plan!!

1 of 301 0.3% Don't drive

1 of 301 0.3% Condo assn.

1 of 301 0.3% Don't live right on lake

20. The Balsam Lake District sends out information regarding its management activities and living on the lake. How do you prefer to receive information from the Balsam Lake District?

**(Check all that apply)**

4 of 301 1.3% I do not wish to receive information from the Lake District

257 of 301 85.3% Docksider Newsletter

82 of 301 27.2% Annual meeting

131 of 301 43.5% Special mailings

76 of 301 25.3% Web site

86 of 301 28.6% E-mail notices

14 of 301 4.7% No Response

Other, please specify \_\_\_\_\_

1 of 301 0.3% Same been doing

# 2012 LONG RANGE PLAN FEEDBACK

(Updated 07-30-2012)

QUESTION	YES	NO	COMMENT'S
Continue educational activities	16	8	Enjoy this
Complete a sediment core study	13	11	
Complete a sediment phosphorous release study	16	8	High priority!
Encourage VOBL to develop storm water management plan	8	16	
Maintain installed watershed practices	15	9	
Continue citizen lake monitoring	10	14	
Identify areas where fish habitat could be enhanced. Install 'fish sticks'	13	11	
Re-assess the feasibility of dredging to enhance navigation in Little Balsam	10	14	Other parts of the lake as well. Nope.

## *List important activities you think we may be missing:*

1. This was a very good Walleye lake. We have been here 30 years and can no longer catch many. Love to fish and eat them.
2. Please continue to stock Walleye.
3. Lower high limits on Bass; way too many Bass.
4. Waves from large boats towing skiers causing damage to shorelines. Create no wake zones and limit skiing times.
5. Investigate additional conservation around East Balsam to limit run-off.
6. Reduce Bass and increase Walleye population.
7. Stump Bay needs to be studied.
8. Stocks the Walleye's and get it back to what it was.
9. Navigation in Bays is difficult with Lilly-pads and vegetation; unable to move with motors July/August. Ban fertilizers. It has been worse every year since 1995.
10. Seeing more fish kill due to poor water quality.
11. Assess all of Balsam Lake for Alum treatment possibilities.
12. Have sponsors of fish tournaments pay for monitors at the landings. Many boats likely come from invested waters.
13. The water in East Balsam affects everyone; Alum now and continue with treatments in north bay of East Balsam.

14. Many weeds make in unable to swim and collect garbage.
15. Early in the morning boaters turn Little Balsam into a drag strip.
16. What does “No Wake” mean?
17. Too much emphasis on water for fish and not enough on using the lake for swimming.
18. For years we could use DNR approved chemicals to reduce the weeds so we could swim. Fishing off the dock has not improved and swimming is worse because of the weeds.
19. Number one priority is Weed Removal!
20. Number two priority is Fish Stocking!
21. Spraying weed areas in Bay’s; example area – Leeland Court
22. Under Goal #1: Increasing owner’s knowledge of protecting the lake... they need to understand the harm caused by big waves to the shoreline created by boats too big for a lake the size of Balsam. Of course this would be hard to regulate, but people need to be aware of this issue. It may stop someone from purchasing a boat too huge for the depth and size of our dear Balsam Lake.
23. The weeds close to shore are out of control. It is embarrassing to have friends visit our cabin when the kids can’t even get into the water.

**Additional things we should consider when implementing the Long Range Plan:**

1. Educate and encourage residents to attend the BLPRD meetings.
2. Activities are all very good. Need to prioritize based on available assets, time, money, etc.
3. Thank you for all your efforts.
4. Additional docks should be placed at 46 landing; less number of home owners.
5. More docks at Village landing cause more traffic.
6. Be cautious with dredging; causes more traffic.
7. The DNR should give permission to use chemicals for private swimming areas.
8. We pay a lot of money for taxes; we should all be able to use our lakefront for swimming.
9. Swimming is excellent exercise.
10. Consider acquiring a Weed Harvester.
11. Will commercial or individual weed control be allowed again? It certainly makes Balsam Lake unpopular.
12. The fish have plenty of weeds out a few feet from shore!

# Appendix B. Bibliography and Brief Summary of Related Planning and Study Documents.

## Watershed Studies and Plans

*An Appraisal of the Surface Water Resources of the Balsam Branch Priority Watershed.* The Wisconsin Nonpoint Source Priority Watershed Program. Wisconsin Department of Natural Resources. August 1989.

The primary phosphorus sources to Balsam Lake are agricultural runoff (37%) and Rice Lake (via Rice Creek) (18%). Recommendations from the appraisal:

- Target a 60 percent phosphorus loading reduction in the areas draining directly to surface water flowing to Balsam Lake (a whole lake reduction of 42%).
- An intensive urban nutrient reduction program
- Consider in-lake remediation (alum treatment) for Little Balsam.
- Reduce nutrients from Rice Creek tributary

*Potential Environmental Effects Upon Little Balsam Lake. Proposed Balsam Hills Development.* Short Elliott Hendrickson Inc. July 1994.

A comprehensive review of the proposed Balsam Hills 35 lot residential development on 90 acres of the Simonson property of Little Balsam Lake was conducted. Some of the environmental issues identified:

- A five-fold increase in stormwater runoff from the area to be developed.
- Total phosphorus loading will increase from about 6 pounds to about 18 pounds.
- Stormwater and septic drainfield loading will result in a 5% annual increase in total stormwater loading to Balsam Lake.
- Increased phosphorus loading will not have a significant effect on lake water clarity.
- On-site wetlands will be impacted.

*Nonpoint Source Control Plan for the Balsam Branch Priority Watershed Project.* Wisconsin Department of Natural Resources, et. al. April. 1995.

The Balsam Branch Priority Watershed Project plan examines the sources of nonpoint pollution in the watershed and guides the implementation of pollution control measures. Funding was available for installation of water quality best management practices from 1996 – 2006.

The entire watershed drains approximately 110 square miles. The Balsam Lake subwatershed is roughly 15,000 acres with about 60 percent of the land in agricultural use and 9 percent in residential development. The watershed plan established an in-lake summer phosphorus concentration of 16 ug/l. Nutrient loading reduction of 25 percent would result in a 13.7 percent reduction of phosphorus entering Balsam Lake.

*Monitoring Results for Rice Creek, Otter Creek, and Rice Lake.* Roesler, Craig. Wisconsin Department of Natural Resources. February 1999.

The study was completed to reassess the significance of phosphorus loading from Rice Lake via Rice Creek and Otter Creek. Earlier studies identified Rice Lake water flowing through Rice Creek to Balsam Lake as the most significant phosphorus source. Study results showed that the total phosphorus load from Otter Creek slightly exceeded that from Rice Creek. Phosphorus load increased downstream from where Otter Creek and Rice Creek joined presumably from agricultural runoff and groundwater inflow.

Sediment loads were higher in Rice Creek than Otter Creek upstream of where they join. Rice Creek picked up additional sediment load between the confluence of Rice and Otter Creeks and where Rice Creek enters Balsam Lake.

Rice Lake water clarity improved significantly from the late 1980s and early 1990s when summer secchi depths averaged 0.9 feet. Summer secchi depths from 1995 – 1998 were 3 – 5 feet. Total phosphorus and chlorophyll a concentrations decreased along with increased secchi depths.

*Letter to Allen Dornfeld, BLPRD from Thomas MacDonald, Barr Engineering.* August 9, 2002.

The letter summarizes the results of a sediment study conducted at Little Balsam. Water depth and sediment characteristics were analyzed in the channel of Rice Creek where it flows into Balsam Lake and in three locations in Little Balsam. Water depth in the channel of Rice Creek just before it enters Balsam Lake is 1.2 feet and the sediment depth is 4.0 feet. Lake water depth and sediment depth increased with each sample point further from the mouth of the creek from a water depth of 1 foot and a sediment depth of 7.5 feet to a water depth of 15 feet and a sediment depth of 22 feet. The third lake sample point is about 675 feet from the channel sample point.

The letter concluded that sediment buildup in Little Balsam Lake is due primarily to upstream sources. Emergent vegetation results from sediment build-up. Reducing sediment build up could be accomplished by convincing landowners to install conservation practices such as buffer strips. A second sedimentation basin

might be constructed on Otter Creek. Dredging would be necessary to reclaim the lake area and remove emergent vegetation.

*Planning Grant Applications.* Barr Engineering for the Balsam Lake Protection and Rehabilitation District. February 2005.

This project evaluates contributions of sediment to Little Balsam from Otter Creek and Rice Creek. The project is divided into four phases for funding purposes. Phase 1 evaluates flow, sediment, and nutrients from Otter Creek. Phases 2 and 3 evaluate Rice Creek upstream and downstream of where Otter Creek flows into Rice Creek, and Phase 4 combines the data into a report.

*Little Balsam Lake Inflow Study.* Prepared for the Balsam Lake Protection and Rehabilitation District. Barr Engineering. February 2007.

Rice Creek and Otter Creek stream flow and water quality measurements were taken from April through August 2006. The study also measured depth of the sediment delta in Little Balsam Lake using GPS. Study conclusions are as follows:

- Annual phosphorus loading from Rice Creek and Otter Creek watersheds to Little Balsam was low in 2006. Phosphorus export was only .009 kg/acre (.02 pounds/acre).
- Annual sediment loading from the watersheds was also low in 2006. TSS export was only 1.1 kg/acre (2.4 pounds/acre).
- The sedimentation basin on Rice Creek and a wetland on Otter Creek result in less than expected sediment and phosphorus loads to Little Balsam.
- Based on 2006 data, sediment would accumulate in Little Balsam from Rice Creek at a rate of .08 feet over one acre of lake area. The rate of sediment accumulation does not explain the observed changes in the delta in Little Balsam in recent years.
- Dredging of lake sediments is recommended over construction of sedimentation ponds. Sedimentation ponds could be constructed at the end of Otter Creek or on Rice Creek close to Highway 46 to reduce sedimentation rates to the lake. However, dredging lake sediments may be more cost effective. It would also be important to analyze dissolved and total phosphorus. Only particulate phosphorus would be removed with sedimentation basin construction.
- Runoff yield was estimated to be 4.8 inches per year adjusting data for the low precipitation in 2006.
- Internal lake processes should be examined to further understand the influences to lake water quality. These include phosphorus release from lake sediment, measurements of zooplankton, phytoplankton, and fisheries.

*Balsam Lake Water Quality Study*. Prepared for Balsam Lake Protection and Rehabilitation District. Barr Engineering. June 2011.

Phosphorus and water budgets were analyzed in 2010. The lake was divided into six basins for the purposes of the study. Results are reported in water quality information summarized earlier in this report. Water quality models were used to estimate the relative contribution of various sources of phosphorus for each basin. Precipitation, flow, and water quality data were collected in three of the lake's tributaries in 2010. Watershed data was used to compare phosphorus yields in these areas, and to estimate phosphorus load from the land in others.

The study recommends the following:

- A sediment study for East Balsam to design an alum treatment
- Periodic inspection and maintenance of the Rice Creek sedimentation basin
- Annual secchi disc monitoring and trend analysis of results
- Watershed practices emphasizing reductions from crop land
- Periodic water quality monitoring

Rice Creek/Little Balsam Lake Sediment. *Memos to Balsam Lake Protection and Rehabilitation District*. Barr Engineering. November 2008 through February 2009.

November 8, 2009

Reports results of a site visit with BLPRD, Barr and DNR representatives to investigate options for managing sediment delta in Little Balsam.

- Considered options for locations of sedimentation basins on Rice Creek from Little Balsam to upstream of State Highway 46 (referred to as County 46 in the memo). There are challenges for basin placement because of steep banks west of 46 and a high quality wetland just upstream of the inflow to Little Balsam where construction would likely not be allowed.
- According to DNR, localized dredging could be considered only outside of the wetland and the area where wild rice is growing.
- DNR recommended removing the dock at the north end of Little Balsam as the dock encourages channelized flow which may bring sediment into the north end of Little Balsam (as opposed to a meandering stream). [From the 2010 aerial photo, it appears this dock has been moved to the northeast away from the channel.<sup>1</sup>]

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<sup>1</sup> Polk County online GIS mapping. Polkcowi.wgxtreme.com

January 15, 2009

This memo answers questions raised by BLPRD representatives.

- The sediment bed load in Rice Creek might be measured and its significance to future management is considered. Future management is likely to be a sedimentation basin which is not recommended.
- The suggestion for removing the dock to slow water flow is reviewed.
- Explains that dredging outside of the line of vegetation could prevent advance of shallow water and resulting increased vegetative growth. It is difficult to predict when repeated dredging would be needed.
- Sediments are tested by taking samples through the ice and analyzing the samples in the lab. Proceeding with soil tests is recommended. Potential disposal/use of sediments is unknown until the sediments are characterized.
- Recommends pursue a permit to dredge 5,000 yd<sup>3</sup> near the outlet of Rice Creek to a depth of 6 feet. Localized dredging is recommended with two owners each pursuing a permit for a portion of that amount to avoid an environmental assessment.
- A summary of Wisconsin regulations for dredging is included.
- A cost estimate for pursuing the permit (\$15,000) and designing/supervising the dredging (\$100,000 - \$150,000 is provided).

February 6, 2009

The BLPRD previously authorized Barr to pursue a preliminary dredge permit.

DNR and the Great Lakes Indian Fish and Wildlife Commission state that a permit would not likely be approved.

Future dredging of navigation channels would be considered for boat access if access from owners' docks is impaired.

Recommendations:

- Measure sediment out from owners' docks and in other locations near the sediment delta in Little Balsam annually.
- Install watershed best management practices to reduce sediment loads
- Monitor bed loading in Rice Creek.

## Aquatic Plant Management

*Aquatic Plant Management Sensitive Area Assessment Summary.* Wisconsin Department of Natural Resources. August 1989.

Identified 26 areas on the lake with aquatic plant values and management requirements for each area.

*Balsam Lake Macrophyte Surveys and Management Plan.* Prepared for Balsam Lake Protection and Rehabilitation District. Barr Engineering. February 2000.

A macrophyte survey that evaluated plant coverage, density, and species composition was completed in the summer of 1999. About 41 percent of the lake area is covered by aquatic plants. Plant diversity in Balsam Lake was relatively high when compared with fifty Wisconsin lakes. A total of 26 species were found. Coontail was the most frequently occurring species found in Balsam Lake. Curly-leaf pondweed, a non-native invasive plant, occurred at 56 percent of the sample points.

The management plan includes ten goals:

- Remove vegetation from public swimming areas
- Remove vegetation from public boat landings
- Improve navigation through areas containing dense plant beds
- Minimize the spread of coontail
- Improve recreation
- Limit curly-leaf pondweed growth
- Preserve native species and limit the introduction of non-native species
- Preserve and/or improve fish and wildlife habitat
- Protect and/or improve the quality of resources for all to enjoy
- Minimize disturbance to sensitive areas

The plan proposes three main steps using herbicide treatments:

Primary Plan to treat public swimming areas, boat landings, and boat passageways.

Secondary Plan to treat priority areas of curly leaf pondweed.

Tertiary Plan to treat additional curly leaf pondweed areas as funds allow.

*Balsam Lake Protection and Rehabilitation District Aquatic Plant Management Report.* Prepared for Balsam Lake Protection and Rehabilitation District. Aquatic Engineering, Inc. March 2003.

This is a report of aquatic plant management efforts for the summer of 2002. The project evaluated the public boat landing areas for the presence of Eurasian Water Milfoil and found none present. The second goal of the project was to reduce the density of plants in twenty-five foot wide navigation channels. Successful clearing of navigation channels was reported.

*Balsam Lake Aquatic Plant Survey and Management Plan.* Prepared for Balsam Lake Protection and Rehabilitation District. December 2005. Barr Engineering.

The study reports a healthy, diverse, high quality native plant community in Balsam Lake that has changed little since 1999. One positive change noted is the reduced occurrence of curlyleaf pondweed. Despite the favorable aquatic plant community, the plan identifies specific locations that require annual management. Swimming beaches, boat landings, and navigation channels require herbicide treatment once or twice each summer amounting to 14 acres. An additional 33 acres with very high plant density are recommended for herbicide treatment. The total recommended treatment area is less than two percent of the lake's surface area. A long term treatment program recommends use of lime slurry to reduce plant density, including curlyleaf pondweed density, to attain favorable long-term changes in problematic areas.

Berg, Matthew S. *Warm Water Point/Intercept Macrophyte Survey Balsam Lake, Polk County, Wisconsin.* Endangered Resource Services, LLC. July 2009.

This report includes the results of the first point intercept study of aquatic plants for Balsam Lake. The aquatic plant surveys found that Balsam Lake has a healthy, abundant, and diverse plant community. The study measures rake fullness for aquatic plants at 608 of the designated 1095 GPS survey points where plants were found. Overall plant diversity was very high in the lake with 46 different native species found. The three non-native invasive species found were curly leaf pondweed, purple loosestrife, and reed canary grass.

Maps of plant distribution and density are provided for each species in the lake. Sediments are also characterized. Measures of occurrence are also reported for each species.

Plants grew as deep as 19 feet. However, coontail (*Ceratophyllum demersum*), forked duckweed (*Lemna trisulca*), and small pondweed (*Potamogeton pusillus*) were the only species that regularly occurred below 12 feet. As the plants present along the gradual drop offs in East Balsam and Stump Bay demonstrate, species

richness, diversity and total rake biomass generally decline with increasing depth. Figure 17 is a map of various areas of Balsam Lake discussed below.

The lake's shallow bays supported extensive submergent, floating, and emergent plant beds. Shallow water and thick organic muck appear to promote both high plant density and species richness. Of the shallow bays, Idlewild, Stump, and Raskin were the most diverse. Each bay had unique species not found anywhere else on the lake. Idlewild in particular had several species more commonly associated with acidic lakes that have floating bogs.

The sandy/rocky bottom areas and relatively narrow littoral zone of Little Balsam, Boston Bay, most of the north shore, and island borders supported fewer species in lower densities, although the species were unique to these habitats.

Berg, Matthew S. *Curly-leaf Pondweed P/I, Bed Mapping, and Pre/Post Herbicide Surveys Balsam Lake, Polk County, Wisconsin*. Endangered Resource Services, LLC. June 2009, 2010, and 2011.

Results of a June point intercept survey and curly leaf pondweed bed mapping is reported. Detailed measurements of CLP and native plant density are also reported within beds of curly leaf pondweed treated with herbicides. The measurements are taken both before and after treatment. As recommended in the Aquatic Plant Management plan, CLP beds are mapped and described each year beginning in 2010. Treatment areas are selected based upon the previous years' mapping and pretreatment surveys. Detailed pre and post monitoring occurs in areas treated with herbicide for CLP control.

*Aquatic Plant Management Plan. Balsam Lake Polk County, Wisconsin.* Harmony Environmental. October 2010.

This Aquatic Plant Management Plan presents strategies for managing aquatic plants by protecting native plant populations, managing curly leaf pondweed, and preventing establishment of invasive species through the year 2014. The plan includes data about the plant community, watershed, and water quality of the lakes. It also reviews a history of aquatic plant management on Balsam Lake.

Management strategies presented are based upon five plan goals:

1. Manage established invasive species and eradicate newly introduced invasive species to reduce their impacts to the lake.
2. Prevent the introduction of aquatic invasive species.
3. Maintain navigation for fishing and boating in problem areas, access to lake residences, and comfortable swimming at the village beach.
4. Increase lake residents' and visitors' understanding of aquatic plants and management.
5. Preserve the diverse native aquatic plant community in Balsam Lake.

An action plan outlines activities to be carried out each year. They include:

- Early season herbicide treatment of priority curly leaf pondweed beds.
- Invasive species monitoring for prevention and early identification.
- A comprehensive Clean Boats, Clean Waters program to educate lake users.
- Contingencies for monitoring and maintaining navigation through native plant beds.
- An aquatic plant management education program.

## Lake Studies

*Balsam Lake Polk County. Feasibility Study Results: Management Alternatives.*  
Wisconsin Department of Natural Resources. Office of Inland Lake Renewal. 1979.

The recently formed Balsam Lake Inland Lake Protection District requested technical assistance from the Department of Natural Resources. The study included measurement and descriptions of 1) nutrient loading from stream and groundwater inflow, 2) in-lake water chemistry, 3) algal densities, and 4) macrophyte abundance and distribution. Balsam Lake is identified as a mesotrophic lake with moderate fertility. The gamefish population is described as exceptionally strong and well balanced. The problems identified were: 1) extreme variation in water clarity, with poor conditions occurring during much of the summer and 2) excessive weed abundance in select areas that receive heavy recreational use.

Recommendations are made for protecting groundwater quality with contributions of septic systems emphasized. Watershed protection emphasized creating buffer zones along the lake and its tributaries, minimizing impervious surfaces and exposed soil, and influencing land use decisions as the watershed develops. Protecting critical watershed areas by purchasing property is mentioned. Aquatic plant management methods considered as reasonable options are herbicide applications and harvesting.

*Analysis of Balsam Lake (Polk County, Wisconsin) with Recommendations for Improved Lake Management.* September 1986. Lim Tech Consultants. Report No. LT-R46902.

This study analyzed water chemistry in various areas of Balsam Lake and its tributaries in 1986. The study's conclusions are as follows:

1. Water quality of Balsam Lake is good in spring and becomes poor due to algal blooms in July.
2. Nutrient and suspended solids loading are the primary contributing factors to decreased water quality.
3. Rice Creek is an important source of nutrients and solids to Balsam Lake.
4. Standard control methods for reducing suspended solid load of Rice Creek will be ineffective in reducing nutrient load (because much of the phosphorus is in the form of dissolved phosphorus).
5. Influent groundwater, contaminated due to defective septic systems, is an important source of nutrients to Balsam Lake.

6. Human wastes enter Balsam Lake, and pose a potential human health risk.
7. Chemicals have been extensively used in Balsam Lake to control nuisance macrophytes and algae and have largely proven to be ineffective, and could potentially be contributing to worsening water quality.

Resulting recommendations:

1. The BLPRD should assess the specific sources of nutrients and erosion on Rice Creek and develop appropriate management strategies. This process should be followed by appropriate monitoring to assure effective and continued control.
2. The BLPRD should determine if human waste and presumed nutrient contamination of Balsam Lake is due to isolated defective septic systems or comprises a more widespread problem.
3. The BLPRD should adopt a nutrient reduction based approach to maintaining water quality in Balsam Lake. In addition to the recommendations above, this would involve discontinuing chemical control of macrophytes and algae and continuation of mechanical weed harvesting, dissemination of information to area residents concerning fertilization of lawns, use of chemicals, and proper shoreline management to reduce runoff and erosion.

*Water and Phosphorus Budgets and Trophic State, Balsam Lake, Northwestern Wisconsin.* 1987 – 1989. U. S. Geological Survey. Water Resources Investigations Report 91-4125.

Water and total-phosphorus budgets were determined for Balsam Lake in northwestern Wisconsin. Rice Creek and near-lake drainage accounted for 80 percent of the phosphorus entering the lake. Principal sources of phosphorus input to Balsam Lake in decreasing order were Rice Creek, near-lake drainage, precipitation, Harder Creek, and groundwater. Internal loading from sediments was not quantified. Outflow to Balsam Branch removed 30 percent of the phosphorus that entered the lake. The main basin was identified as mesotrophic. The northwest basin of the lake or “Little Balsam” was identified as upper mesotrophic to lower eutrophic.

*Restoring Rice Lake at Milltown, Wisconsin.* Department of Natural Resources. Madison, Wisconsin. 1991.

Wind and high water, after decades of erosion and runoff from farms and municipal wastewater treatment plant, converted a clear lake bordered by wild rice into a turbid one dominated phytoplankton. Water turbidity led to poor aquatic macrophyte diversity. Secchi disk transparency decreased each June to

about 13 inches. Under such light-limited conditions, macrophytes had little chance to grow. Efforts to seed wild rice were largely unsuccessful because muskrats eat most of the shoots that sprouted. Establishing wild rice would be desirable to blunt the force of the wind that stirs up sediments and creates turbid water.

*Letter to Gerald Kafka, BLPRD from Stephen J. Field, United States Geological Survey. June 3, 1994.*

The letter reports progress on evaluating Balsam Lake water quality according to data collected from October 1992 to September 1993. The letter stresses that results are unpublished and therefore preliminary. A final report from the study was not located.

Some key results:

- Algal growth appears to be dependent upon the amount of available phosphorus rather than nitrogen.
- Water quality varies throughout Balsam Lake.
- Balsam Lake is a mesotrophic to eutrophic lake.
- Poorer water quality in 1993 compared with 1991 and 1992 may have been due to excessive runoff in June and July 1993.

*Balsam Lake Water Quality Study. Prepared for the Balsam Lake Protection and Rehabilitation District. June 2011. Barr Engineering Company.*

Phosphorus and water budgets were analyzed in 2010 in a study completed by Barr. The lake was divided into six basins for the purposes of the study. Results are reported in water quality information summarized earlier in this report. Water quality models were used to estimate the relative contribution of various sources of phosphorus for each basin. Precipitation, flow, and water quality data were collected in three of the lake's tributaries in 2010. Watershed data was used to compare phosphorus yields in these areas, and to estimate phosphorus load from the land in others.

The study recommends the following:

- A sediment study for East Balsam to design an alum treatment
- Periodic inspection and maintenance of the Rice Creed Sedimentation basin
- Annual secchi disc monitoring and trend analysis of results
- Watershed practices emphasizes reductions from crop land
- Periodic water quality monitoring

## Feasibility Studies

*Feasibility Study Glenna Property – Balsam Lake. Prepared for the Balsam Lake Protection & Rehabilitation District. Balsam Lake, WI. Mead & Hunt, Inc. January 1996.*

The primary study goal was to analyze phosphorus removal structural practices along Rice Creek as it flows through the Glenna site that would remove at least 50 percent of the phosphorus loading into Balsam Lake from Rice Creek. The report recommended a combination of a sediment basin with chemical precipitation that drains into a wetland. The following activities were recommended:

- Participate in the Balsam Lake Priority Watershed Program
- Undertake a detailed design project
- Apply for construction permits.
- Construct the practice.
- Maintain the structure.

*Balsam Acres – Rice Creek Phosphorous Sedimentation Basin. Balsam Lake Protection and Rehabilitation District. Cedar Corporation. April 1998.*

The objectives of this project were to determine a cost effective phosphorus removal rate for Rice Creek; locate and size an appropriate sedimentation basin on Rice Creek within the Balsam Acres property (formerly known as the Glenna property); and prepare plans, specifications, and estimates for the proposed project.

## Planning Documents

*Polk County Land and Water Management Plan.* Polk County Land Conservation Committee. September 2009.

The Polk County Land and Water Resources Management Plan describes the strategy the Land and Water Resources Department (LWRD) will employ from 2010 –2019 to addresses agriculture and non-agriculture runoff management, stormwater discharge, shoreline management, soil conservation, invasive species and other environmental degradation that affects the natural resources of Polk County.

These goals of the plan are:

- Goal 1. Protect the water quality of our groundwater, lakes, streams, rivers, creeks, and associated ecosystems.
- Goal 2. Protect shorelines, undeveloped riparian land, wetlands, grasslands, forests, farmland, and agricultural resources to perpetuate the benefits they provide: habitat and associated native wildlife communities, clean water, clean air, carbon sequestration, aesthetic beauty, and recreational opportunities.
- Goal 3. Support and develop the human resources in Polk County that manage our natural resources – both LWRD and volunteer management groups.

This plan specifies how the LWRD will implement NR 151 (Runoff Management). It involves identifying critical sites, offering cost-share and other programs, identifying BMPs, monitoring and evaluating projects for compliance, conducting enforcement activities, tracking progress, and providing information and education. Polk County has local shoreland protection, zoning, subdivision, animal waste, and non-metallic mining ordinances. Enforcing these rules and assisting other agencies with programs are part of our ongoing activities. Other activities to implement the NR 151 Standards include carry out information and education strategies, write nutrient management plans, provide technical assistance to landowners and lakeshore owners, perform lake studies, collaborate with other agencies, work on a rivers classification system, set up demonstration sites of proper BMPs, control invasive species, and revise ordinances to offer better protection of resources.

The NR151 standards were updated in 2010. Agricultural standards related to soil erosion limits, management of manure and wastewater, tillage setback from streams, and phosphorus runoff from crop fields. Non agricultural standards required control of runoff and sediment from developed sites.  
<http://legis.wisconsin.gov/resb/code/nr/nr151.pdf>

## Appendix C. Glossary

**Aeration** — To add air (oxygen) to the water supply. Generally used in lake management to reduce the release of phosphorus from lake sediments or to prevent fish kills.

**Algae** — Small aquatic plants without roots that contain chlorophyll and occur as single cells or multi-celled colonies. Algae form the base of the food chain in aquatic environments.

**Algal bloom** — Heavy growth of algae in and on a body of water resulting from high nutrient concentrations.

**Alluvium** — Clay, silt, sand, gravel, or similar detrital material deposited by running water.

**Alkalinity** — The acid combining capacity of a (carbonate) solution, also describes its buffering capacity.

**Animal waste management** — A group of practices including barnyard runoff management, nutrient management, and manure storage facilities designed to minimize the effects of animal manure on surface and groundwater resources.

**Aquatic plant survey** — A systematic mapping of types and location of aquatic plants in a water body, usually conducted in a boat. Survey information is presented on an aquatic plant map.

**Aquifer** — A water-bearing stratum of permeable rock, sand, or gravel.

**BMP's (Best Management Practices)** — Practices or methods used to prevent or reduce amounts of nutrients, sediments, chemicals or other pollutants from entering water bodies from human activities. BMP's have been developed for agricultural, silvicultural, construction, and urban activities.

**Bathymetric map** — A map showing depth contours in a water body. Bottom contours are usually presented as lines of equal depth, in meters or feet.

**Benchmark** — A mark of reference indicating elevation or water level.

**Benthic** — Bottom area of the lake (Gr. *benthos* depth).

**Biocontrol** — Management using biological organisms, such as fish, insects or micro-organisms like fungus.

**Biomass** — The total organic matter present (Gr. *bios* life).

**Bottom barriers** — Synthetic or natural fiber sheets of material used to cover and kill plants growing on the bottom of a water body; also called sediment covers.

**Buffer strips** - Strips of grass, shrubs, trees, and other vegetation between disturbed areas and a stream, lake, or wetland.

**Cluster development** - Grouping homes on part of a property while maintaining a large amount of open space on the remaining land.

**Chlorophyll** — The green pigments of plants (Gr. *chloros* green, *phyllon* leaf).

**Conservation easement** — A legal document that restricts the use of land to farming, open space, or wildlife habitat. A landowner may sell or donate an easement to a government agency or a private land trust.

**Consumers** — Organisms that nourish themselves on particulate organic matter (Lat. *consumere* to take wholly).

**Contact herbicide** — An herbicide that causes localized injury or death to plant tissues it contacts. Contact herbicides do not kill the entire plant.

**Cost effective** — A level of treatment or management with the greatest incremental benefit for the money spent.

**Decomposers** — Organisms, mostly bacteria or fungi, that break down complex organic material into its inorganic constituents.

**Detritus** — Settleable material suspended in the water. Organic detritus comes from the decomposition of the broken down remains of organisms. Inorganic detritus comes from settleable mineral materials.

**Dissolved oxygen** — A measure of the amount of oxygen gas dissolved in water and available for use by microorganisms and fish.

**Drainage basin** — The area drained by, or contributing to, a stream, lake, or other water body (see watershed).

**Drawdown** — Decreasing the level of standing water in a water body to expose bottom sediments and rooted plants. Water level drawdown can be accomplished by physically releasing a volume of water through a controlled outlet structure or by preventing recharge of a system from a primary external source.

**Dredging** — Physical methods of digging into the bottom of a water body to remove sediment, plants, or other material. Dredging can be performed using mechanical or hydraulic equipment.

**Ecology** — Scientific study of relationships between organisms and their surroundings (environment).

**Ecosystems** — The interacting system of a biological community and its nonliving surroundings.

**Emergent plants** — Aquatic plants that are rooted or anchored in the sediment around shorelines, but have stems and leaves extending well above the water surface. Cattails and bulrushes are examples of emergent plants.

**Endothall** — The active chemical ingredient of the aquatic contact herbicide Aquathol®.

**Environmental Protection Agency** — The federal agency responsible for enforcing federal environmental regulations. The Environmental Protection Agency delegates some of its responsibilities for water, air, and solid waste pollution control to state agencies.

**Epilimnion** — The uppermost, warm, well-mixed layer of a lake (Gr. *epi* on, *limne* lake).

**Eradication** — Complete removal of a specific organism from a specified location, usually refers to a noxious, invasive species. Under most circumstances, eradication of a population is very difficult to achieve.

**Erosion** — The wearing away of the land surface by wind or water.

**Eutrophic** — Refers to a nutrient-rich lake. Large amounts of algae and weeds characterize a eutrophic lake (see also "Oligotrophic" and "Mesotrophic").

**Eutrophication** — The process of nutrient enrichment of a lake leading to increased production of aquatic organisms. Eutrophication can be accelerated by human activity such as agriculture and improper waste disposal.

**Exotic** — Refers to species of plants or animals that are not native to a particular region into which they have moved or invaded. Eurasian watermilfoil is an exotic plant invader.

**Fecal coliform** — A group of bacteria used to indicate the presence of other bacteria that cause disease. The number of coliform is particularly important when water is used for drinking and swimming.

**Floating-leafed plant** — Plants with oval or circular leaves floating on the water surface, but are rooted or attached to sediments by long, flexible stems. Waterlilies are examples of rooted floating-leafed plants.

**Fluridone** — The active chemical ingredient of the systemic aquatic herbicide SONAR®.

**Flushing rate** — Term describing rate of water volume replacement of a water body, usually expressed as basin volume per unit time needed to replace the water body volume with inflowing water. The inverse of the flushing rate is the (hydraulic) detention time. A lake with a flushing rate of 1 lake volume per year has a detention time of 1 year.

**Food chain** — A sequence of organisms where each uses the next as a food source.

**Freely-floating plants** — Plants that float on or under the water surface, unattached by roots to the bottom. Some have small root systems that simply hang beneath the plant. Water hyacinth and tiny duckweed are examples of freely-floating plants.

**Glyphosate** — The active chemical ingredient of the systemic herbicide RODEO®.

**Ground-truthing** — Close or on-the-ground observation used to test the validity of observations made at a distance as in aerial or satellite photography

**Groundwater** — Underground water-bearing areas generally within the boundaries of a watershed, which fill internal passageways of porous geologic formations (aquifers) with water that flows in response to gravity and pressure. Often used as the source of water for communities and industries.

**Habitat** — The place or type of site where a plant or animal naturally lives and grows.

**Herbicide** — A chemical used to suppress the growth of or kill plants.

**Habitat** — The physical place where an organism lives.

**Hydraulic detention time** — The period of detention of water in a basin. The inverse of detention time is flushing rate. A lake with a detention time of one year has a flushing rate of 1 lake volume per year.

**Hypolimnion** — The cold, deepest layer of a lake that is removed from surface influences (Gr. *hypo* under, *limne* lake).

**Integrated aquatic plant management** — Management using a combination of plant control methods that maximizes beneficial uses, minimizes environmental impacts and optimizes overall costs.

**Limiting nutrient** — Essential nutrient needed for growth of plant organism which is the most scarce in the environment. Oftentimes, in freshwater systems, either phosphorus or nitrogen may be the limiting nutrient for plant growth.

**Limnology** — The study of inland waters (Gr. *limne* lake).

**Littoral** — The region of a body of water extending from shoreline outward to the greatest depth occupied by rooted aquatic plants.

**Loam** — A soil consisting of varying proportions of sand, clay, and silt. Generally well-suited for agriculture.

**Loess** — A loamy soil deposited by wind.

**Macrophyte** — Large, rooted or floating aquatic plants that may bear flowers and seeds. Some plants, like duckweed and coontail, are free-floating and are not attached to the bottom. Occasionally, filamentous algae like *Nitella* sp. can form large, extensive populations and be an important member of the aquatic macrophyte community.

**Mesotrophic** — Refers to a moderately fertile nutrient level of a lake between the oligotrophic and eutrophic levels. (See also "Eutrophic" and "Oligotrophic.")

**Milligrams per liter (mg/l)** — A measure of the concentration of substance in water. For most pollution measurements this is the equivalent of "parts per million" (ppm).

**Mitigation** — The effort to lessen the damages from a particular project through modifying a project, providing alternatives, compensating for losses, or replacing lost values.

**Morphology** — Study of shape, configuration, or form.

**Navigable waters** — A water body with a bed and a bank that can float a watercraft at any point in the year.

**Niche** — The position or role of an organism within its community and ecosystem.

**Nitrogen** — A chemical constituent (nutrient) essential for life. Nitrogen is a primary nutrient necessary for plant growth.

**Nonpoint source pollution (NSP)** — Pollution whose sources cannot be traced to a single point such as a municipal or industrial wastewater treatment plant discharge pipe. Nonpoint sources include eroding farmland and construction sites, urban streets, and barnyards. Pollutants from these sources reach water bodies in runoff. They can best be controlled by proper land management.

**Non-target species** — A species not intentionally targeted for control by a pesticide or herbicide.

**Nutrient** — Any chemical element, ion, or compound required by an organism for the continuation of growth, reproduction, and other life processes.

**Nutrient management plan** — A guidance document that provides fertilizer and manure spreading recommendations for crop fields based upon soil test results and crop needs. Plans are sometimes referred to as NRCS 590 plans for the Natural Resources Conservation Service Standard that guides their preparation.

**Oligotrophic** — Refers to an unproductive and nutrient-poor lake. Such lakes typically have very clear water. (See also "Eutrophic" and "Mesotrophic.")

**Ordinary high water mark** — The point on the bank or shore up to which the water leaves a distinct mark on the shore or bank from its presence, wave action, or flow. The mark may be indicated by erosion, destruction of or change in vegetation, or another easily recognizable characteristic.

**Oxidation** — A chemical process that can occur in the uptake of oxygen.

**pH** — The negative logarithm of the hydrogen ion activity. pH values range from 1-10 (low pH values are acidic and high pH levels are alkaline).

**Peat** — Soil material formed by partial decomposition of plant material.

**Pesticide** — Any chemical agent used to control specific organisms, such as insecticides, herbicides, fungicides, etc.

**Phosphorus** — A chemical constituent (nutrient) essential for life. Phosphorus is a primary nutrient necessary for plant growth. When phosphorus reaches lakes in excess amounts, it can lead to over-fertile conditions and algae blooms.

**Photosynthesis** — Production of organic matter (carbohydrate) from inorganic carbon and water in the presence of light (Gr. *phos*, *photos* light, *synthesis* placing together).

**Phytoplankton** — Free floating microscopic plants (algae).

**Point (pollutant) source** — A source of pollutants or contaminants that discharges through a pipe or culvert. Point sources, such as an industrial or sewage outfall, are usually readily identified.

**Pollution** — The presence of materials or energy whose nature, location, or quantity produces undesired environmental effects. Pollutants can be chemicals, disease-producing organisms, silt, toxic metals, oxygen-demanding materials, to name a few.

**Primary production** — The rate of formation of organic matter or sugars in plant cells from light, water, and carbon dioxide (Lat. *primus* first, *producere* to bring forward). Algae are primary producers.

**Priority watershed** — A drainage area selected to receive state money to help pay the cost of controlling nonpoint source pollution.

**Problem statement** — A written description of important uses of a water body that are being affected by the presence of problem aquatic plants.

**Producers** — Organisms able to build up their body substance from inorganic materials.

**Productivity** — A measure of the amount of living matter which is supported by an environment over a specific period of time. Often described in terms of algae production for a lake.

**Public Awareness/Outreach** — Programs designed to share technical information and data on a particular topic, usually associated with activities on or around a water body.

**Recruitment** — The process of adding new individuals to a population.

**Residence time** — The average length of time that water or a chemical constituent remains in a lake.

**Riparian** — Belonging or relating to the bank of a lake, river, or stream.

**Riprap** — Broken rock, cobbles, or boulders placed on the bank of a stream to protect it against erosion.

**Rotovation** — A mechanical control method of tilling lake or river sediments to physically dislodge rooted plants. Also known as bottom tillage or derooting.

**Runoff** — Water from rain, snowmelt, or irrigation that flows over the ground surface and returns to streams and lakes. Runoff can collect pollutants from air or land and carry them to receiving waters.

**Secchi depth** — A measure of transparency of water (the ability of light to penetrate water) obtained by lowering a secchi disc into the water until it is no longer visible. Measured in units of meters or feet.

**Secchi disc** — A 20-cm (8-inch) diameter disc painted white and black in alternating quadrants. It is used to measure light transparency in lakes.

**Sediment** — Soil particles suspended in and carried by water as a result of erosion.

**Sensitive areas** — Plant communities and other elements that provide important fish and wildlife habitat as designated by the Wisconsin Department of Natural Resources.

**Septic system** — Sewage treatment and disposal for homes not connected to sewer lines usually with a tank and drain field. Solids settle to the bottom of the tank. Liquid percolates through the drain field.

**Standing crop** — The biomass present in a body of water at a particular time.

**Storm sewers** — A system of sewers that collect and transport rain and snow runoff. In areas that have separated sewers, such stormwater is not mixed with sanitary sewage.

**Stratification** — Horizontal layering of water in a lake caused by temperature-related differences in density. A thermally stratified lake is generally divided into the epilimnion (uppermost, warm, mixed layer), metalimnion (middle layer of rapid change in temperature and density) and hypolimnion (lowest, cool, least mixed layer).

**Submersed plants** — An aquatic plant that grows with all or most of its stems and leaves below the water surface. Submersed plants usually grow rooted in the bottom and have thin, flexible stems supported by the water. Common submersed plants are milfoil and pondweeds.

**Susceptibility** — The sensitivity or level of injury demonstrated by a plant to effects of an herbicide.

**Suspended solids (SS)** — Small particles of solid pollutants suspended in water.

**Systemic herbicide** — An herbicide in which the active chemicals are absorbed and translocated within the entire plant system, including roots. Depending on the active ingredient, systemic herbicides affect certain biochemical reactions in the plant and can cause plant death. SONAR<sup>®</sup> and RODEO<sup>®</sup> are systemic herbicides.

**Thermal stratification** — Horizontal layering of water in a lake caused by temperature-related differences in density. A thermally stratified lake is generally divided into the epilimnion (uppermost, warm, mixed layer), metalimnion (middle layer of rapid change in temperature and density), and hypolimnion (lowest, cool, least mixed layer).

**Thermocline** — (Gr. *therme* heat, *klinein* to slope.) Zone (horizontal layer) in water body in which there is a rapid rate of temperature decrease with depth. Also called metalimnion, it lies below the epilimnion.

**Tolerable soil loss** — The tolerable soil loss rate, commonly referred to as “T,” is the maximum average annual rate of soil erosion for each soil type that will permit a high level of crop productivity to be sustained economically and indefinitely (ATCP 50.01(16)).

**Topographic map** — A map showing elevation of the landscape in contours of equal height (elevation) above sea level. This can be used to identify boundaries of a watershed.

**Total maximum daily loads** — The maximum amount of a pollutant that can be discharged into a stream without causing a violation of water quality standards.

**Transect lines** — Straight lines extending across an area to be surveyed.

**Tributaries** — Rivers, streams, or other channels that flow into a water body.

**Trophic state** — The level of growth or productivity of a lake as measured by phosphorus content, algae abundance, and depth of light penetration. Lakes are classified as oligotrophic (low productivity, "good" water quality), mesotrophic (moderate productivity), or eutrophic (high productivity; "poor" water quality).

**Turbid** — Lack of water clarity. Turbidity is closely related to the amount of suspended materials in water.

**Uniform dwelling code** — A statewide building code specifying requirements for electrical, heating, ventilation, fire, structural, plumbing, construction site erosion, and other construction related practices.

**University of Wisconsin Extension (UWEX)** — A special outreach and education branch of the state university system.

**Vascular plant**— A vascular plant possesses specialized cells that conduct fluids and nutrients throughout the plant. The xylem conducts water and the phloem transports food.

**Variance** — Government permission for a delay or exception in the application of a given law, ordinance, or regulation. Also, see water quality standard variance.

**Waste** — Unwanted materials left over from manufacturing processes; refuse from places of human or animal habitation.

**Water body usage map** — A map of a water body showing important human use areas or zones (such as swimming, boating, fishing) and habitat areas for fish, wildlife and waterfowl.

**Water quality criteria** — A measure of the physical, chemical, or biological characteristics of a water body necessary to protect and maintain different water uses (fish and aquatic life, swimming, etc.).

**Water quality standards** — The legal basis and determination of the use of a water body and the water quality criteria; physical, chemical, or biological characteristics of a water body, that must be met to make it suitable for the specified use.

**Water quality management area (WQMA)** — The area within 1,000 feet from the ordinary high water mark of navigable waters that consists of a lake, pond or flowage; the area within 300 feet from the ordinary high water mark of navigable waters that consist of a river or stream; and a site that is susceptible to groundwater contamination, or that has the potential to be a direct conduit for contamination to reach groundwater. (NR 151.015(24))

**Water quality standard variance** — When natural conditions of a water body preclude meeting all conditions necessary to maintain full fish and aquatic life and swimming, a variance may be granted.

**Watershed** — The entire surface landscape that contributes water to a lake or river.

**Watershed management** — The management of the natural resources of a drainage basin for the production and protection of water supplies and water-based resources.

**Wetland** — Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a variety of vegetative or aquatic life. Wetland vegetation requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas.

**Wisconsin administrative code** — The set of rules written and used by state agencies to implement state statutes. Administrative codes are subject to public hearing and have the force of law.

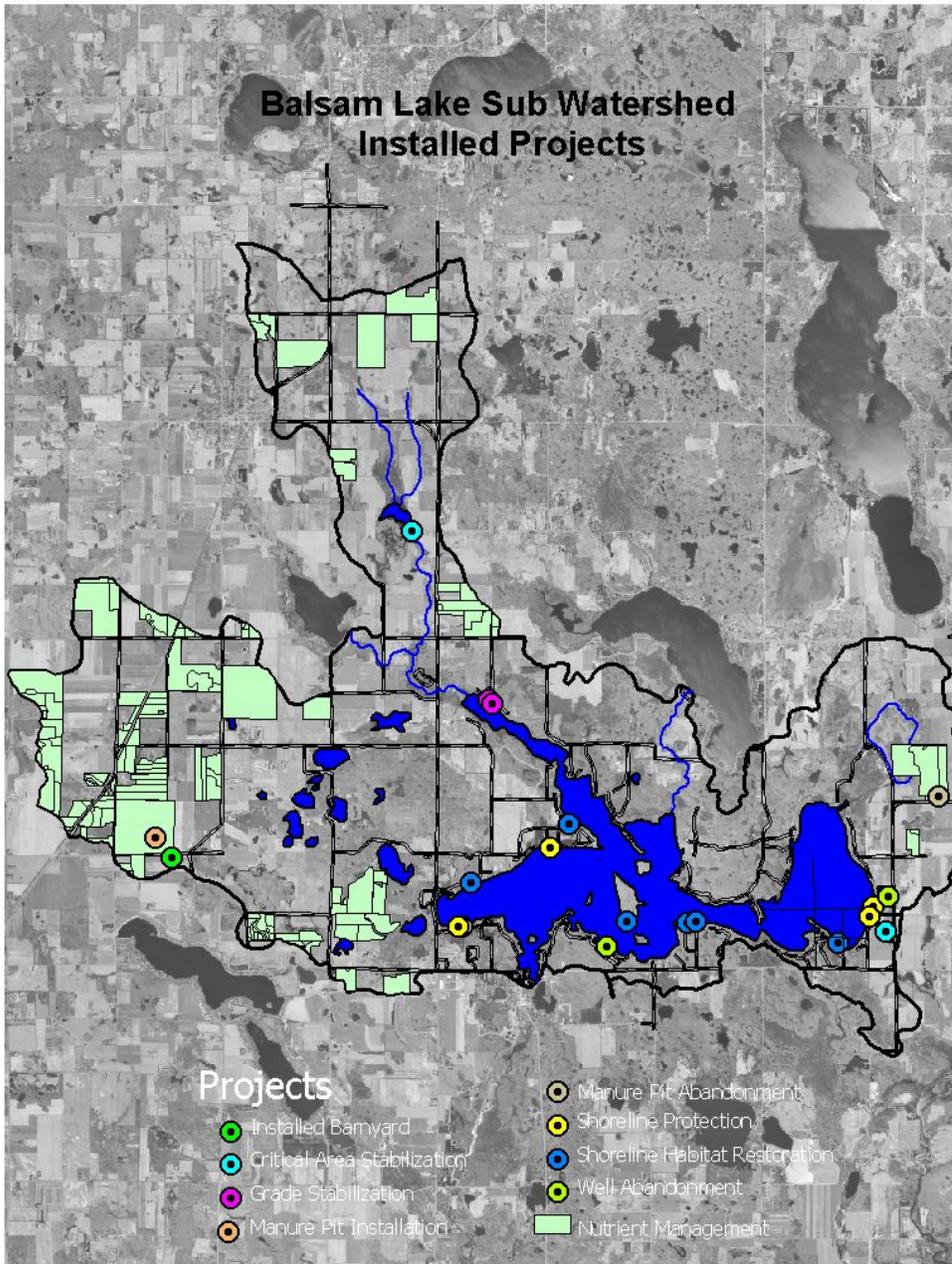
**Wisconsin priority watershed program** — A cost-share program established by the state legislature in 1978 to help pay the costs of controlling nonpoint source pollution.

**Zooplankton** — Microscopic animal plankton in water (Gr. *zoion* animal). *Daphnia* sp. or water fleas are freshwater zooplankton.

**Glossary sources:** Washington State Department of Ecology; Maribeth Gibbons Jr.; Wisconsin priority watershed planning guidance.

# Appendix D. Balsam Branch Priority Watershed Accomplishments

Practices installed through the Balsam Branch Priority Watershed from 1995 – 2005 are illustrated in the map below.<sup>1</sup>



<sup>1</sup> Watershed and data and maps provided by Dave Peterson, Polk County Land and Water Resources Department. January 2006.

The cost share budget for these practices is included in the table below.

### Balsam Branch Summary

Based on state cost-sharing from Cost Share Agreements

Sub-Watershed	Practice	# Contracts	Amount	
<b>Balsam Lake</b>	Barnyard	1	\$44,044	
	Critical Area Strabilization	2	\$3,379	
	Grade Stabilization	4	\$21,892	
	Livestock Fencing	1	\$175	
	Livestock Watering	1	\$2,100	
	Milk House Waste Control	1	\$3,071	
	Manure Storage	1	\$35,000	
	Manure Storage Abandonment	1	\$6,751	
	Nutrient/Pest Management	5	\$23,663	
	Shoreline Habitat Restoration	7	\$15,087	
	Other Shoreline Protection	8	\$15,856	
	Well Abandonment	2	\$595	
	Wetland Restoration	1	\$50	
	<b>TOTAL</b>			<b>\$171,663</b>

### Barnyard inventory in the Balsam Lake Sub-watershed

Many changes have happened since the original barnyard inventory taken in 1994. In 1994 there were 29 barnyards inventoried for a total contribution of 1,121 pounds of P. Since 1994, there has been no significant increase in the number of animal producers.<sup>2</sup> Retirement and economic attrition has claimed 15 of these originally inventoried farms. Based on the modeling at the time of inventory, these reductions amount to approximately 629.9 pounds of annual P loading. One farm has expanded and another has plans for an expansion, but the livestock are enclosed in a free stall, which will contain any runoff. Of the 14 active farms, 7 have developed and implemented nutrient management plans.

<sup>2</sup> Data from producer lists from USDA and UW-Extension.

# Balsam Lake Subwatershed Barnyards



**Barnyard Status**

- Not Active
- ★ Active
- ★ Inventoried Barnyards

## Appendix E. BLPRD Work Plan 2013–2014

Goal 1. Enhance Balsam Lake property owners' and visitors' understanding of lake issues and increase their involvement in protecting and improving the lake.					
Activity <sup>1</sup>	Partners	Timeframe	Annual Cost Estimate	Source of funding	Comments <sup>2</sup>
<b>Dockside newsletter</b>	PCLWRD DNR UWEX	3 times per year	\$5,500	BLPRD	Solicit articles from partners. Topic priorities in plan. Printing and board expense budget item. Ongoing
<b>BLPRD annual meetings</b>	PCLWRD DNR UWEX Consultants	July each year	\$500	BLPRD	Board expense budget item. Ongoing
<b>BLPRD web site updates</b>	PCLWRD DNR UWEX Consultants	Ongoing	\$1,000	BLPRD	Include newsletter articles on web site. Lake management budget item.
Sponsor and participate in events to reach lake residents	BLHA PCLWRD PCALR	2014	\$1,000	DNR Small Scale Lake Planning Grant	Amount listed matches a \$4,000 small scale grant.

<sup>1</sup> High priority activities are listed in bold type.

<sup>2</sup> Budget items listed correspond to the annual Balsam Lake Protection and Rehabilitation District budget categories.

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Goal 2. Manage native and invasive aquatic plants according to the goals, objectives, and activities outlined in the Aquatic Plant Management Plan.

<b>Activity</b>	<b>Partners</b>	<b>Timeframe</b>	<b>Cost Est.</b>	<b>Source of funding</b>	<b>Comments<sup>3</sup></b>
Curly leaf pondweed herbicide control and monitoring – 56 acres in East Balsam in 2012	DNR Contractor Consultant	Annually	\$37,500	DNR Aquatic Invasive Species Control Grant (2012-2014, \$7,410 annually)	BLPRD APM Lead supervises this work
Invasive species prevention – Clean Boats, Clean Waters monitoring and education	DNR Unity High School PCLWRD	Annually	\$16,700	DNR Aquatic Invasive Species Education Grant (\$16,700 grant annually)	AIS Lead supervises this work
Aquatic plant management for navigation	DNR Contractor	Annual monitoring Treatment if needed	\$2,000 (monitoring) \$3,650 (treatment)	BLPRD budget	BLPRD APM Lead supervises this work
Update aquatic plant point intercept survey	Contractor	Summer 2013	\$9,000	Request AIS planning funds (02/13)	BLPRD APM Lead supervises this work
Update aquatic plant management plan	Consultant	Fall/Winter 2013/14	\$8,000	Request AIS planning funds (02/13)	BLPRD APM Lead supervises this work

<sup>3</sup> Budget items listed correspond to the annual Balsam Lake Protection and Rehabilitation District budget categories.

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Goal 3. Improve and maintain water clarity and quality in Balsam Lake.

<b>Activity<sup>4</sup></b>	<b>Partners</b>	<b>Timeframe</b>	<b>Cost Estimate</b>	<b>Source of funding</b>	<b>Comments<sup>5</sup></b>
<b>Complete sediment core study (East Balsam, Little Balsam, Main Basin)</b>	Polk LWRD DNR	Early 2013 – 2014	\$6,750 (grant match)	Remaining funds; DNR lake planning grant (apply 08/12)	POLK LWRD will apply for lake planning grant 08/12
<b>Complete sediment phosphorus release study in East Balsam</b>	Consultant	Summer 2013	\$16,000	Grant potential ?	Barr Engineering estimate
Investigate permitting for East Balsam Outflow	DNR Consultant?	End 2013/14	?	BLPRD	
East Balsam water quality analysis – CLP and agricultural loading	Consultant	2013	?	BLPRD	Barr Engineering – add-on to WQ study?
Evaluate agricultural priorities in East Balsam and Main Basin	Polk LWRD	End 2013/14	?	Small scale DNR grant	Likely will cost to contract with PCLWRD

<sup>4</sup> High priority activities are listed in bold type.

<sup>5</sup> Budget items listed correspond to the annual Balsam Lake Protection and Rehabilitation District budget categories.

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Goal 3. Improve and maintain water clarity and quality in Balsam Lake.

Activity <sup>6</sup>	Partners	Timeframe	Cost Estimate	Source of funding	Comments <sup>7</sup>
<b>Encourage Village of Balsam Lake to consider a stormwater management plan</b> and ordinance review.	Village	Early 2013-14	?	DNR planning grant	Begin discussions with Village. Consider matching grant to encourage plan development.
Be involved in land use planning, permitting, ordinance development, and implementation activities that affect Balsam Lake water quality	DNR PCLWRD Village Towns	Ongoing	\$5,000 annually for occasional engineering review	BLPRD	Commissioners attend meetings and alert board to potential concerns/important activities, Lake management budget item, Ongoing
<b>Maintain installed watershed practices<sup>8</sup></b>	PCLWRD	Annually		BLPRD	Balsam Acres
Review waterfront runoff program and consider continuation					

<sup>6</sup> High priority activities are listed in bold type.

<sup>7</sup> Budget items listed correspond to the annual Balsam Lake Protection and Rehabilitation District budget categories.

<sup>8</sup> Balsam Acres sediment basin to be dredged every 10 – 15 years (built in 1999). Cost estimate is \$21,500. Assumes 1 foot of sediment accumulated across entire 2.44 acre basin at a cost of \$5.50 per cubic yard to excavate and dispose of sediment.

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GOAL 3. Evaluating progress of management efforts / monitoring.					
Activity <sup>9</sup>	Partners	Timeframe	Cost Estimate	Source of funding	Comments <sup>10</sup>
Volunteer Secchi-depth measurements	DNR	Ongoing Spring to Fall		DNR	Need to be sure that volunteers are in place, Occurs for Little Balsam, East Balsam and Main Basin. Add Stump Bay and Boston Bay.
Expanded self-help monitoring	DNR	Start in 2013 for Little Balsam; 2014 for Stump Bay and Boston Bay	\$1,000	DNR Self Help Monitoring BLPRD	Water testing budget item, Currently set up for East Balsam and Main Basin

<sup>9</sup> See plan page 35 for more information about plan activities.

<sup>10</sup> Budget items listed correspond to the annual Balsam Lake Protection and Rehabilitation District budget categories.

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Goal 4. Protect, maintain, and improve fisheries and fish and wildlife habitat in and around Balsam Lake.					
Activity <sup>11</sup>	Partners	Timeframe	Cost Estimate	Source of funding	Comments <sup>12</sup>
<b>Investigate areas for fish habitat enhancement and implement “fish sticks” program.</b>	DNR PCLWRD	2013-2014	Unknown	DNR Lake Protection Grant BLPRD Apply May 1, 2013	May be able to combine with other lake management activities

Goal 5. Promote the preservation and restoration of natural vegetation and scenery along the shoreline.					
Activity	Partners	Timeframe	Cost Estimate	Source of funding	Comments
Consider BLPRD incentives for native plants	PCLWRD Consultant	2014	?	BLPRD	Could include technical assistance in lake protection grant w/fish sticks.
Promote technical assistance provided by other agencies.	PCLWRD UWEX DNR	Ongoing	See ed budget	BLPRD Small scale lakes planning grant	On the web site
Protect critical habitat areas according to guidelines in Appendix F.	DNR	Ongoing	?	BLPRD Lake Protection Grant	New acquisitions not well-supported at this time.

<sup>11</sup> High priority activities are listed in bold type.

<sup>12</sup> Budget items listed correspond to the annual Balsam Lake Protection and Rehabilitation District budget categories.

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Goal 6. Maintain and enhance recreation and navigation					
Activity <sup>13</sup>	Partners	Timeframe	Funding need estimate	Source of funding	Comments
<b>Monitor extent of sediment delta in Little Balsam</b>	?	Annually	?	BLPRD	
<b>Re-assess the feasibility of dredging to enhance navigation in Little Balsam</b>	?	2014	?	BLPRD	
Replace the box culvert between the Mill Pond and Town Bay with a bridge	Village Polk LWRD Polk County Highway	2013?	\$250,000	BLPRD	

<sup>13</sup> High priority activities are listed in bold type.

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Other Activities Included in Annual Budget					
Activity	Partners	Timeframe	Funding needed	Source of funding	Comments
Dam maintenance		Annually	\$10,000	BLPRD	
Board expenses		Annually	\$8,000	BLPRD	
Office expenses / administrative assistant		Annually	\$5,000	BLPRD	
Administrative and financial expenses		Annually	\$6,500	BLPRD	

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# Appendix F. Land Protection Guidelines

**Balsam Lake Protection and Rehabilitation District  
June 2012**

These guidelines establish priorities and procedures for land protection for the Balsam Lake Protection and Rehabilitation District (BLPRD). Forms for each of these steps are provided.

## **Priorities for Land Protection**

The property evaluation form shows the priorities for land protection based upon input from the advisory committee and advisors. The property evaluation reviews priorities in a qualitative manner. This will allow the board to consider the appropriateness of a single parcel for protection. It is unlikely that several parcels will be reviewed simultaneously.

A questionnaire soliciting input for the development of the Balsam Lake Long Range plan was used to assist in establishing land protection procedures. It was sent to an advisory committee of BLPRD commissioners, volunteer citizens, and agency advisors. Results related to land acquisition are included at the end of this section.

Top rankings for land protection involved water quality and habitat concerns. There was also some support for land protection for scenery and undeveloped/natural shoreline. These rankings are consistent with the overall priorities in the Long Range Plan. The goal related to water quality improvement and maintenance is a top priority in the plan. The goal related to preserving natural vegetation and scenery is ranked lower in priority. Habitat protection was in-between the two.

In the committee questionnaire, acquiring property to protect the lake received a moderate ranking of 2.7 on a scale from 0 to 4 (definitely no to definitely yes). Other activities that addressed water quality and invasive species received more support with scores ranging from 2.9 to 4.0.

## Property Identification for Habitat Protection

The largest undeveloped habitat area on Balsam Lake remains the Stump Bay area. Additional properties adjacent to BLPRD-owned Stump Bay parcels might be considered in the future. Undeveloped areas on Balsam Lake's islands were also mentioned for consideration for acquisition.

Department of Natural Resources Staff<sup>1</sup> offered suggestions for habitat protection around Balsam Lake for certain species. Their comments can guide selection of parcels for protection.

Eagles - There is one known nesting pair on the northern side of the lake. In addition to using the lake itself for foraging, eagles will benefit from any efforts to maintain/promote white or red pine (especially important is to maintain any large trees of these species near the shoreline), which are favored nesting, roosting and perching trees.

Osprey - There is a nesting pair just west of the lake. Osprey also utilize the fishery of Balsam Lake. Maintaining any tall snags (dead trees) near the shoreline could provide a nesting tree for osprey in the future, should a new pair come into the area.

Northern yellow lady's slipper - This plant can be found in cedar swamps, black ash swamps and possibly alder swamps. Protection of these habitats could be important for this species.

Leafy white orchis - This plant can be found in 'open bog' swamps.

## **Procedures for Land Protection**

1. **Landowner** inquires about property for protection. This may result from general outreach about the BLPRD conservancy efforts or targeted landowner contacts. Targeted contacts will occur if known development or water quality threat exists.
2. **Board member** who was contacted completes property nomination form and evaluation sheet and presents information regarding the property to the **BLPRD board**.
3. **Board member and Conservancy Lead** review and finalize forms and gather other supporting information in preparation for **board** review. Partner organizations may be called upon for assistance.
4. **Conservancy Lead** presents administrative/financial characteristics of the proposal to the **board**. The presentation should include but is not limited to the following:
  - Project property/easement cost?*
  - Project survey/appraisal/legal costs?*
  - Who will likely partner with the BLPRD?*
  - Is donation a potential from the landowner?*
  - Might adjacent landowners donate to the project?*
  - Potential grant sources?*
  - Will this be a reasonable project to manage?*
  - Current property taxes?*

---

<sup>1</sup> Comments provided by Ryan Magana, Additional comments expected from Michelle Carlisle, wildlife biologist, and Aaron Cole, fisheries technician.

*Will change in land use change assessment?  
Conservation easement management costs? (10-15% of land value)*

5. **Conservancy Lead** makes recommendation to the **board** regarding the proposal.
6. **Board** approves or disapproves further investigation into property.
7. **Board** designates a **lead** and **co-lead** contact for the project if approved.
8. Lead and/or co-lead discuss options for land protection further with landowner. Consider using a professional appraiser or real estate agent to negotiate purchase price with the owner or set a maximum price based upon the appraised value.  
*The BLPRD may consider facilitating land transactions by:*
  - Approaching landowners with protection options*
  - Finding partner organization willing to hold easement or title*
  - Assisting with negotiations with landowners*
  - Requiring management fee for conservation easements*
  - Contracting management of easements if feasible*
  - Raising funds from the public*
  - Holding conservation easements*
  - Acting as a transitional landowner (buy and then resell property)*
  - Refer to other land trusts or organizations*
  - Other pertinent information*
9. **Board** seeks funding to support transaction if needed . **Board** approval is required for grant applications and major fundraising efforts.
10. **Member approval of land acquisition budget at annual meeting** is required for entering into any purchase agreements.

#### Property Identification for Water Quality

Parcels to enhance water quality are more difficult to identify in advance. Agriculture was identified as the largest watershed contributor to water quality problems in the Main Basin and East Balsam. However, more specific areas were not identified in the 2011 water quality study. A single activity in the Long Range Plan addresses agricultural watershed loading. This activity is suggested for the Polk County Land and Water Resources Department.

*Reassess agricultural best management practice needs and priorities in the East Balsam and Main Basin watersheds. Identify actively cropped agricultural fields/farms, measure soil phosphorus on farm fields, and model phosphorus release using SNAP plus (an agricultural water quality model).*

High priority fields might be targeted for acquisition and best management practices if pollutant loading cannot be adequately addressed with agricultural BMPs on farmer-owned land. The Glenna Farm (now Balsam Acres) provides an example of this type of approach to land acquisition.

**Property Nomination Form**

Owner's Name (list all owners w/ primary contact first)\_\_\_\_\_

Mailing Address (primary contact)\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone Number Day\_\_\_\_\_Evening\_\_\_\_\_

Email Address\_\_\_\_\_

Property Parcel Number\_\_\_\_\_

Property Mailing Address (if available) \_\_\_\_\_

\_\_\_\_\_

S \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_

- ✓ Include property location drawn on plat map, aerial photo, or USGS Quadrangle map.
- ✓ Indicate adjacent land uses and zoning on the property map.
- ✓ Note any potential building sites on the property.

Size of parcel in acres\_\_\_\_\_

Feet of Balsam Lake frontage \_\_\_\_\_

Feet of stream frontage\_\_\_\_\_

Is landowner interested in a conservation easement or transfer of ownership (circle one)?

Is landowner willing to donate a portion of the value of a conservation easement or fee title?

Yes \_\_\_\_\_ No \_\_\_\_\_ Not sure \_\_\_\_\_

If yes, list approximate dollar value or percentage of total value\_\_\_\_\_

Potential partners for easement or title acquisition (conservation organizations, municipalities, DNR, etc.)\_\_\_\_\_

\_\_\_\_\_

**Balsam Lake Protection and Rehabilitation District  
Property Evaluation Form**

**Pass/Fail** - Property must be in the Balsam Branch Watershed

Check all of the characteristics that apply. Categories and characteristics are listed in order of priority with those in bold considered high priority. Board decisions to pursue protection of properties will be based upon a consideration of these priorities.

*Water quality*

- Critical parcels for improving Balsam Lake water quality**
- Prevents development that would negatively impact water quality**
- Groundwater recharge area**

*Significant habitat area*

- Prevents development that would negatively impact habitat**
- Presence of state or federally listed plants or animals**
- Significant wildlife value**
- In Stump Bay area**
- Significant wetland areas
- Undeveloped Balsam Lake shoreline

*Unique environmental areas*

- Adjacent to stream
- Significant geologic features
- Significant historical features

*Location/general characteristics*

- Threatened by development pressure
- Significant scenery
- Adjacent to public land
- Adjacent to protected private land
- At least 10 acres

*Recreation*

- Opportunities to create/expand environmental education

*Funding*

- Landowner offers property or easement as a donation to the BLPRD
- DNR Lake Protection Grant funding is likely (based on review of grant scoring)

**RESULTS FROM LONG RANGE ADVISORY COMMITTEE QUESTIONNAIRE**

January 2012

**Rank the importance of the characteristics listed below for potential land acquisition by the BLPRD. A given parcel could ultimately have several of these characteristics.**

Rank by checking the appropriate response for each characteristic

	Not at all important (0)	Of little importance (0)	Don't know (2)	Somewhat important (3)	Very important (4)
<b>Significant water quality practice to be constructed</b>				3.7	
<b>Prevents development that would impact water quality.</b>				3.7	
<b>Prevents development that would impact fish and wildlife habitat</b>				3.3	
<b>Provides critical habitat for sensitive, rare, threatened and/or endangered plants or animals</b>				3.1	
<b>Is a groundwater recharge area</b>				3.0	
<b>Presence of sensitive, rare, threatened and/or endangered plants or animals</b>				3.0	
Undeveloped shoreline of Balsam Lake			2.9		
Threatened by development pressure			2.9		
Opportunities to create/expand environmental education			2.7		
Significant scenery			2.5		
Significant geologic features			2.5		
Significant historical features			2.4		
Adjacent to public land			2.3		
Adjacent to protected private land			2.3		
At least 10 acres			2.2		
Opportunities to create/expand public nonmotorized recreational trails			2.0		
Visible to the public from roadways, waterways, etc.		1.8			
Opportunities to expand lake access	0.9				

## Appendix G. Important Contacts

### Balsam Lake Protection and Rehabilitation District Board

**Howard Seim, Chairman**

1425 Molan Terrace  
Columbia Heights, MN 55421  
Home: 763-574-0480  
Lake: 715-825-2302  
E-mail: [howardseim@aol.com](mailto:howardseim@aol.com)  
Term Expires: July 2013

**Tom Miller, Vice-Chairman**

1466 195th Avenue  
Balsam Lake, WI 54810  
Home: 715-825-4157  
Lake: 715-485-3121  
E-mail: [t-miller68@hotmail.com](mailto:t-miller68@hotmail.com)  
Term Expires: July 2012

**Caroline Rediske**

805 Park Drive  
Balsam Lake, WI 54810  
Home: 715-485-3780  
Office: 715-485-3780  
E-mail: [sewbusybl@centurytel.net](mailto:sewbusybl@centurytel.net)  
Term Expires: April 2013  
(Appointed by Village of Balsam Lake)

**Loren Johnson**

1758 190th Street  
Centuria, WI 54824  
Home: 715-646-2361  
Cell: 715-296-3875  
E-mail: [landpjohnson@centurylink.net](mailto:landpjohnson@centurylink.net)  
Expires: July 2014

**Carl Holmgren, Secretary/Treasurer**

105 Indianhead Point Road  
Balsam Lake, WI 54810  
Home: (715) 485-9421  
Cell: 715-523-9191  
E-mail: [holmgren@lakeland.ws](mailto:holmgren@lakeland.ws)  
Term Expires: April 2013  
(Appointed by County Board)

**Milt Stanze**

806 Maple Leaf Court  
St. Croix Falls, WI 54024  
Home: 715-557-0902  
E-mail: [m.stanze@yahoo.com](mailto:m.stanze@yahoo.com)  
Term Expires: July 2012

**David Wagner**

962 W. Hoyt Ave.  
St. Paul, MN 55117  
Home: 651-488-0784  
Work: 651-266-6261  
E-mail: [david\\_wags@comcast.net](mailto:david_wags@comcast.net)  
Term Expires: July 2014

## Web Sites

**Balsam Lake Protection and Rehabilitation District:** [www.blprd.com](http://www.blprd.com)

**Balsam Lake Home Owners Association:** [www.balsamlake.com](http://www.balsamlake.com)

**Balsam Lake Village:** [BalsamLakeVillage.com](http://BalsamLakeVillage.com)

**Balsam Lake, Wisconsin:** [BalsamLakeWI.com](http://BalsamLakeWI.com)

**Polk County Land and Water Resources Dept.:** <http://www.co.polk.wi.us/landwater>

**WAL / Wisconsin Association of Lakes:** [wisconsinlakes.org](http://wisconsinlakes.org)

**Wisconsin DNR:** [dnr.wi.gov](http://dnr.wi.gov)