A Cooperative Effort Between:

Morrison County Planning and Zoning
Morrison Soil and Water Conservation District
Minnesota Department of Natural Resources

For:

Lake Shamineau Association and the people of the State of Minnesota

Final Report
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Chuck Forss
July 2008
Introduction:

The Morrison County Planning & Zoning Office partnered with the Soil & Water Conservation District and the MN Department of Natural Resources to conduct a visual assessment along the 11 miles of shoreline on Lake Shamineau. The assessment utilized digital photography, GPS, and GIS technology to document riparian land use practices and conditions along the banks. The photography was taken from the water front perspective near the docks.

Purpose:

The information collected provides a much needed tool and benchmark of shoreline conditions available to various Lake Stewards including, the Lake Association, the DNR, Morrison County, and the Soil and Water Conservation District. This project meets the goals of the 2002 Morrison County Water Plan in its role as a resource for the needs of the waters in Morrison County. The assessment was not designed to identify or “catch” any violators of the Land Use Ordinance but to provide a tool for those interested in a snapshot of the shoreline as of that day. In particular we were interested in knowing how much of the shoreline was adequately protected with buffers and natural shoreline. We focused on buffers and natural shoreline because of their ability to protect the lake from runoff containing contaminants and nutrients, and the habitat buffers provide to fish and wildlife. By identifying available resources in this report, we provide for those who may want to implement beneficial shoreline practices information as to how they would go about accomplishing healthy shoreline practices.

Methodology:

The crew of 5 persons with support from Shamineau Lake Association floated the shoreline and gathered data along the study area. Detailed GIS grid maps with GPS coordinates were used to document specific locations. Every parcel of shoreline was digitally photographed and a verbal description of shoreline recorded and later transcribed into attached lists. Each property was located with a GPS, identified and added to already existing geographical data available to Morrison County. The team attempted to identify significant beds of invasive aquatic vascular plants, note and locate with a GPS coordinate if appropriate. An aquatic plant specialist was available for identification and an assessment of abundance. Any other significant conditions relative to water quality or riparian habitat including feedlot issues, obvious septic violations, and suggested shoreland restoration projects were identified and documented in the comments section of the assessment.

Assessment:

The Assessment Team prepared this final report in both hard copy as well as digital CD (which will be forthcoming). The report consists of photographs of every tax parcel of land along the study area and GPS coordinates of location. The assessment will be incorporated into the new Morrison County Land Records Viewer, offering very detailed information about the current conditions of the Lake Shamineau shoreline.

The shoreline condition was placed into one of 8 categories: (1) 20-30 ft large buffer (2) 10-20 ft medium sized buffer (3) 0-10 ft small buffer (4) Rip Rap (5) Grass to Shoreline (6) Natural Shoreline (7) Retaining Wall (8) Sand. Sand beached were noted in the comments and included in the categories. Below is the description of classification criteria. The raw assessment results will be provided in a separate table upon request.
Partners:
The team utilized a 20-foot pontoon as a work platform. Mike Fedde from the Lake Association provided insight on the 2nd day regarding ownership, etc. The team welcomed the cooperation from the Lake Association. This project is considered an activity of the Morrison County Water Plan and all others involved were full time employees of Morrison County, Minnesota DNR, and Morrison Soil and Water Conservation District. They were Jane Starz and Chuck Forss (Morrison County Zoning Office), Helen McLennan, Alan Ringwelski, and Joe Backowski (Morrison Soil and Water Conservation District). Tim Crocker (Minnesota DNR) was not present during the actual assessment on the lake. He was involved in the in the review and support of the assessment.

Summary of Results:
In this final report, an analysis of the shoreline indicates the following.

<table>
<thead>
<tr>
<th>Description</th>
<th>LB</th>
<th>MB</th>
<th>SB</th>
<th>RR</th>
<th>GS</th>
<th>NS</th>
<th>RW</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large buffer with herbaceous under story and woody canopy.</td>
<td>Parcels with Large Buffer</td>
<td>0</td>
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<tr>
<td>Medium sized buffer with mainly herbaceous under story and with few woody species. Bank stability is probably okay, but could be problem if more woody species disappear. Note native vegetation species.</td>
<td>Parcels with Medium Buffer</td>
<td>14</td>
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<tr>
<td>Small buffer with mostly herbaceous under story and there may be few trees. Bank stability is questionable based on the amount of woody species. Note native vegetation characteristics and bank erosion.</td>
<td>Parcels with Small Buffer</td>
<td>91</td>
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<td>Rip-rap is a type of landscaping that consists of small to large boulders piled along the shoreline. Note rip-rap size dimensions and whether it was used in conjunction with a buffer. Note buffer size as well.</td>
<td>Parcels with Rip Rap Shoreline</td>
<td>135</td>
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<tr>
<td>Grass is mowed up to the edge of the shoreline. Note any woody or herbaceous species if present. Also note if there is any bank erosion, due to no buffer.</td>
<td>Parcels with Grass to the Shoreline</td>
<td>29</td>
<td></td>
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<tr>
<td>Natural shoreline is well vegetated with large amounts of herbaceous under story and woody species in the canopy. Stabilized bank due to the large amounts of herbaceous and woody vegetation</td>
<td>Parcels with Natural Shoreline</td>
<td>86</td>
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<td></td>
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<tr>
<td>Retaining walls are made of cement or railroads ties, which are used to try to stabilize the shoreline or river bank. Does not stabilize bank because it creates more shifting than what would naturally occur. Note retaining wall size and whether it was used in conjunction with a buffer zone. Note buffer size and vegetation species.</td>
<td>Parcels with Retaining Walls</td>
<td>14</td>
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<tr>
<td>Parcels with Sand Beach Area</td>
<td>50</td>
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</tbody>
</table>

This adds up to 419 parcel assessments.

It should also be noted that of the parcels with rock rip-rap, only 7 had natural or buffered shoreline in conjunction with the rock rip rap. These parcels will be counted among the healthy parcels on the lake.

Discussion of Results:
The unit of measurement for this assessment that was utilized was the parcel. Therefore, the results are
given as percent of parcels. It should be noted that not all parcels are the same size. Some have 300ft of frontage or more while some only have 25ft of frontage. The reason this unit was used is because individuals only have control of what happens on their parcel. In order to enhance the shoreline it is going to have to be done parcel by parcel, owner by owner.

Overall Shamineau has a relatively healthy shoreline. Almost half, 47% or 198 of 419, of the parcels on the lake have a shoreline practice that serves the lake in a healthy manner. These practices are medium and small buffers, natural shoreline, and rock rip-rap that is associated with either natural or buffered shoreline.

These practices are considered healthy or good for the lake because they not only prevent erosion that occurs as a result of wave action but also these practices reduce and slow runoff. Natural shoreline and buffers slow and may even stop runoff from running into the lake. Figures 1 and 2 are two good examples of buffers that we found on Shamineau.

On the other hand about 53%, or 221 of 419, of the parcels do not serve the lake in a healthy manner. These are parcels with rock rip-rap that is not associated with natural shoreline or buffer strips, sand beaches, grass to the shoreline, and retaining walls.

These shoreline practices are considered inadequate for the lake because although they may reduce erosion from wave action, they fail to stop or slow runoff from getting into the lake because they are impervious or don’t hold much water. Rip rap should be used in conjunction with riparian buffers.

If 75% of the shoreline or more is protected (natural or buffered) that would be considered Excellent, 50% or greater Good, 25% or greater Fair, less than 25% poor. I think we can say that the shoreline on Shamineau is fair to good. About half of the parcels have some sort of protection from runoff and most have wave action erosion under control. Only 2% of the parcels had an erosion problem. However, about half 53% of the parcels lack some type of runoff control.

Relatively speaking, half of the shoreline of the lake is protected. However there are places that are in need of protection to ensure that Shamineau remains a beautiful Lake. At the same time the number of parcels with healthy practices has fallen below 50%.

**Recommendations:**

Why is protection against runoff important? It is important because runoff carries sediment, grass clippings, fertilizers, lawn chemicals, and pet fecal matter into the lake when it rains. The addition of these nutrients and contaminants contributes to increased algae growth. If left uncontrolled, the algae growth could become so great in warm weather that the lake would become undesirable for fishing, boating, and swimming. It could become as green as “pea soup.”

Buffers also provide habitat for fish and wildlife. By protecting the lake from sediment, runoff buffers protect critical spawning areas from being silted over. They provide shade on hot days for fish and food; bugs falling off plants into the lake. Wildlife also benefits from buffers, they provide shelter and resting places for turtles and waterfowl. Turtles like to sun themselves on logs. Ducks and other birds also appreciate this convenient resting spot.

Buffers can be beautiful. Native prairie grasses and flowers provide color all year long with golden grass in fall in winter and nesting habitat in spring. There are also many native shrubs that can provide color and beauty when densely planted. Shrubs can also be planted in conjunction with trees.

Some might object to this because they don’t think that there is a connection between what happens on the land and what happens in the water. However, allowing runoff to run directly into the lake from a lot is like fertilizing the lake. So just like our gardens and lawns, the more fertilizer runoff we allow the lake to receive, the greener it will be.

For those who have buffers, whether small or medium, we encourage you to make them wider to reduce the amount of runoff. For those who have natural shoreline, we recommend that you leave it as such as much as possible. It is understandable that you need access to the lake and dock but this could easily be limited to 25% of your frontage. Those who have rock rip-rap in conjunction with buffers or natural shoreline we would recommend keeping up the good work and if possible allow the vegetation to populate the rocked area as well.
We do not recommend that rip-rap be installed unless it is necessary to control erosion. Bio-logs should be considered as an alternative if the bank is undercutting. Bio-logs are cheaper, easier to install, and friendlier to the non-artificial look of a shoreline.

For those with non-vegetated shorelines, including lawn that extends to the edge of the water, rock rip-rap, and sand we recommend that these areas be vegetated with either riparian shrubs or native grasses. For example if you have a 100ft lot we recommend that you vegetate a 75ft x 30ft area along the lake. Leaving a 25ft by 30ft area that you can use as your dock access area or swimming area etc. With rock rip rap a buffer behind the existing rip-rap is recommended.

We recommend native grasses with wildflowers or native shrubs and trees be planted along the shoreline depending on your preferences. These plantings serve two purposes. First, the roots stabilize the shoreline to prevent erosion caused by wave action. However what they also do, that rock-rip-rip cannot, is slow runoff off before it gets to the lake, allowing particles to settle out before entering the lake. If the buffer is wide enough it may allow the water to soak into the ground, at which point the plants can utilize dissolved nutrients that are in the water before they get to the lake and are used by algae. Any buffer is better than no buffer at all.

Installing buffers can be as simple as not mowing the grass in the prescribed area and allowing the area the naturally re-vegetate itself. Resources are available with planting recommendations. The Minnesota Department of Natural Resources has a CD resource Restore your Shore that gives a wealth of information on species selection and site preparation. These buffers can be very beautiful while protecting the lake. We recommend that riparian areas on the lake lots be densely vegetated with grasses, wildflowers, native shrubs, and trees. Riparian buffers are cost shareable through the State Cost Share program, upon application, administered by Morrison Soil and Water Conservation District. Applications are received and prioritized based on erosion presence and other criteria. Retaining walls, decorative mulch, stones, and timbers are not cost-sharing.

If you have an area in your lot where all the water from your lot runs to one area and down to the lake, another great option, in addition to a buffer, is a rain garden. Rain gardens are areas that are constructed as a bowl with alternative soil types and flowers that like water. These gardens collect and hold water slowly releasing it into the ground.

We also encourage everyone to know the invasive species we have in Minnesota so that you can identify them, monitor them, treat them, and report them. About 3% of the parcels on the lake have purple loosestrife. Purple loosestrife is a highly invasive plant that if un-controlled, will take over cattail marshes, shallow lake areas, and natural shoreline. The best treatment for purple loosestrife is Rodeo a form of glyphosate (Round up) that will not harm fish or other aquatic species. Be sure to follow all label directions. Never treat aquatic plants without proper permits from DNR’s Aquatic Plant Management.

Although not specifically noted in the assessment ice ridges are present on Shamineau. These can be beneficial holding runoff and allowing it to soak into the ground before entering the lake. They can also prevent flooding by creating a natural dyke between the land around the lake and the lake itself. In the future they may even protect buildings and other personal property in the event that the lake should flood. It is not necessarily a good idea to remove ice ridges.

We are happy to inform you that at the time of the assessment we did not find any Eurasian water milfoil in our journey around the lake. We also found that Lake Shamineau is not impacted by any feedlots or farm fields.

**Conclusion:**

Overall Lake Shamineau’s shoreline is in fair to good condition. About half of the parcels are natural or buffered and the other half being un-natural and un-buffered. You, the landowners around the lake, will determine, by the land use decisions you make, what the future health of Lake Shamineau will become. Increasing the number of buffered lots will ensures that Shamineau will be a beautiful pristine lake for years to come. Developing more shoreline into sand blankets and rock rip-rap will do the opposite and continue to deteriorate the water quality.
We hope that you find our results and recommendations helpful in planning for the future of Lake Shamineau. If you have any questions please call any of our offices and we will either answer your questions or direct you to someone who can.

Morrison County Planning and Zoning
(320) 632-0170

Morrison Soil and Water Conservation District
(320) 616-2479

Minnesota DNR Waters
(320) 616-2450

Figure 1:

This is a great example of a small buffer with an area for access to the lake and dock. The buffer could be made wider so as to give greater protection to the Lake. This is a great start.
Here is an example of a steeper parcel with a good buffer and retaining wall while maintaining access to the lake.