Grand Lake Shoreland Assessment Summary 2011-2013

Funded by the Minnesota Department of Natural Resources

Assessment Conducted by the Sauk River Watershed District

Sauk River Watershed District

Grand Lake is a fully developed, recreational lake located two miles south of Rockville, MN. It has a surface area of 666 acres with a maximum depth of 34 feet. The lake is almost round in shape with little bottom structure (see Figure 1). Approximately 175 year round homes and seasonal cabins surround the lake. In 2005, the City of Rockville annexed this area into the city limits and installed a municipal sewer system around Grand Lake. The municipal sewer system aided in the change over from seasonal cabins to permanent residency, which has increased the use of the lake and the activity along the shoreline.

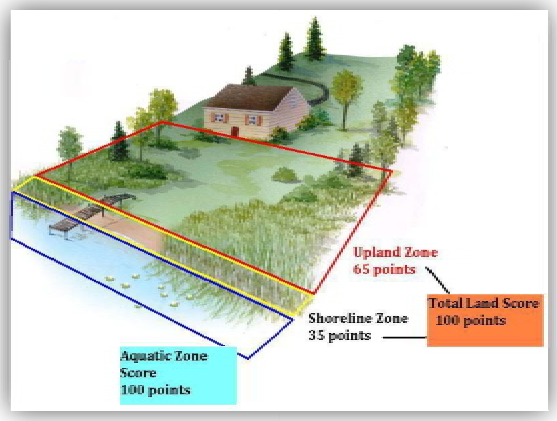
Figure 1 **Grand Lake near Rockville**

The Grand Lake Shoreland Assessment and Habitat Restoration Project involved conducting a full lakeshore assessment to determine existing shoreline habitat and potential restoration areas. The two primary goals for this project included: 1) demonstrating how the development of Grand Lake has impacted the area's natural habitat and 2) providing incentive dollars for residents to restore their lakeshore, to increase shoreland habitat and protect the shore from erosion.

The Grand Lake Shoreland Assessment and Habitat Restoration Project was comprised of four components:

1. Conducting the physical assessment along the shore of Grand Lake.
2. Mapping the assessment results.
3. Presenting the assessment results to the lakeshore residents to educate them on the impacts of their actions on critical habitat.
4. Hosting two educational workshops which include installing two shoreland restoration demonstration sites, and possibly two additional sites.

Figure 2 **Score Your Shore Diagram**



The Sauk River Watershed District (SRWD) began the shoreland assessment in the fall of 2011. Parcel data and available GIS map layers were utilized to create a set of field maps and spreadsheets to check off each parcel once it has been assessed.

The SRWD conducted the physical assessment in July 2012. The assessment consisted of individual site inspections from the lake (in a canoe) and documentation of each parcel. Property boundaries, habitat areas and landuse types were recorded. A GPS waypoint was recorded and later used to generate maps showing the assessment outcome. Each parcel was photographed to show its current condition. These photos were labeled with a parcel number for future reference.

The MNDNR Score Your Shore program was used by the SRWD to conduct the assessment and to generate an overall score for each parcel. Lakeshore lots were reviewed and scored for the three different zones along the shore: 1) upland 2) shoreline 3) aquatic (Figure 2). Each zone had different scoring criteria and total possible points (Figure 2), with a total of 200 possible points per parcel. A final score was calculated for each parcel on Grand Lake based on the results of the three zones, with the higher numbers representing larger amounts of critical habitat.

The second component of the project consisted of mapping the field data. Each parcel was mapped four times, one for each of the three zones and once for the final score. The purpose of maps was to show the results of the field assessment. The maps were then used to determine which sections of the lake needed restoration to support a healthy biological and physical connection between the water and the upland area. The results of the assessment are shown in Figures 3, 5, 6 and 7. The overall results are summarized in the table found on page 6.

Figure 3 **AQUATIC ZONE ASSESSMENT RESULTS**

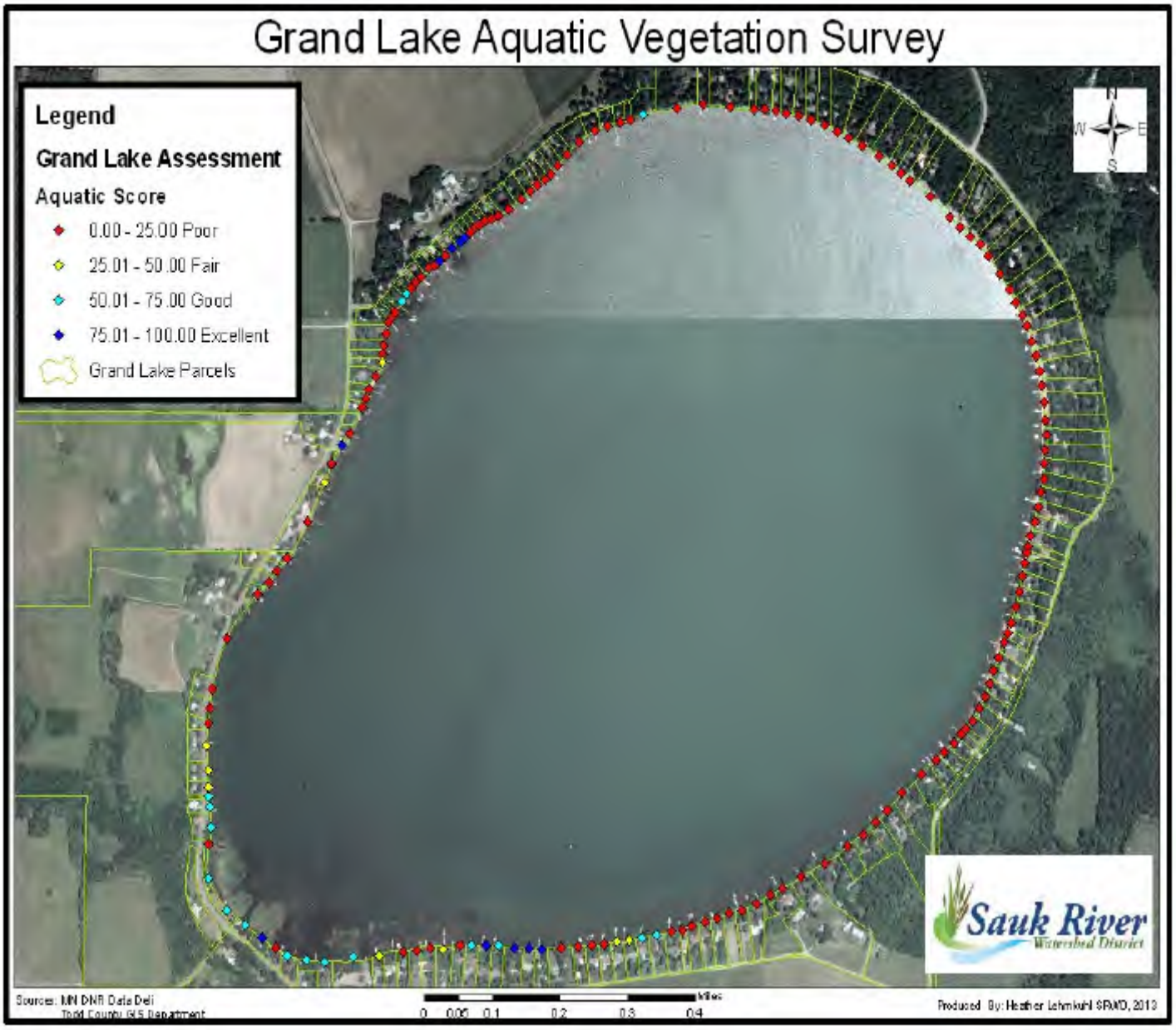
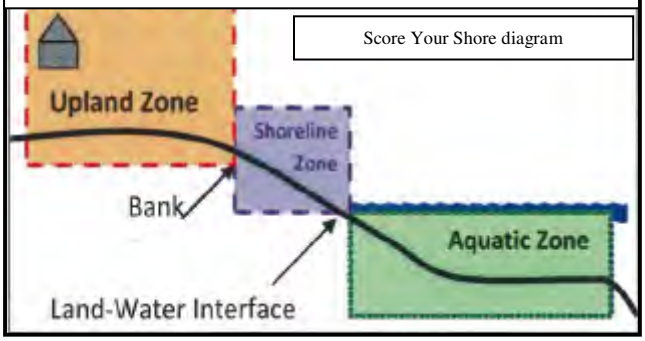
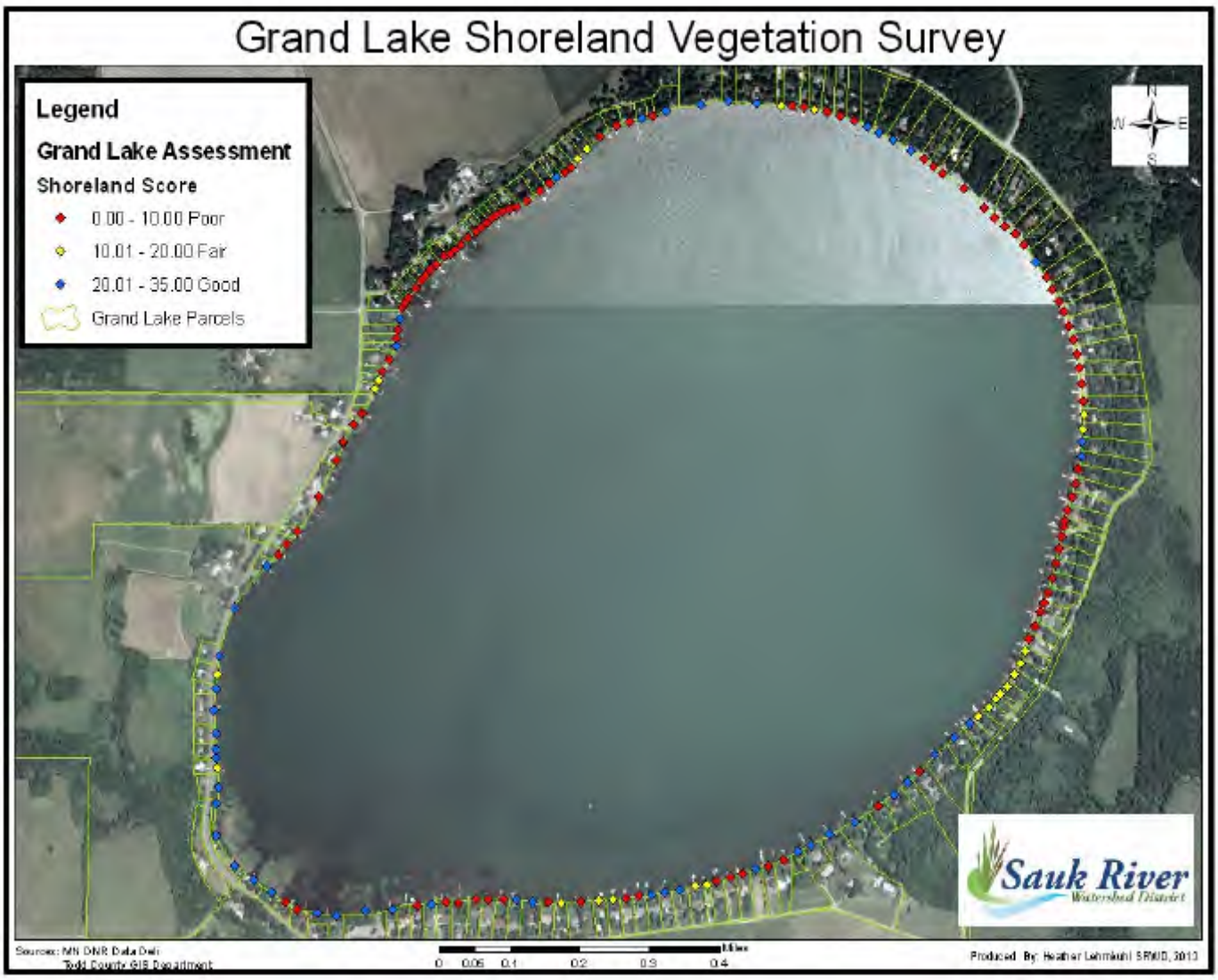


Figure 4 **Three Lakeshore Habitat Zones**



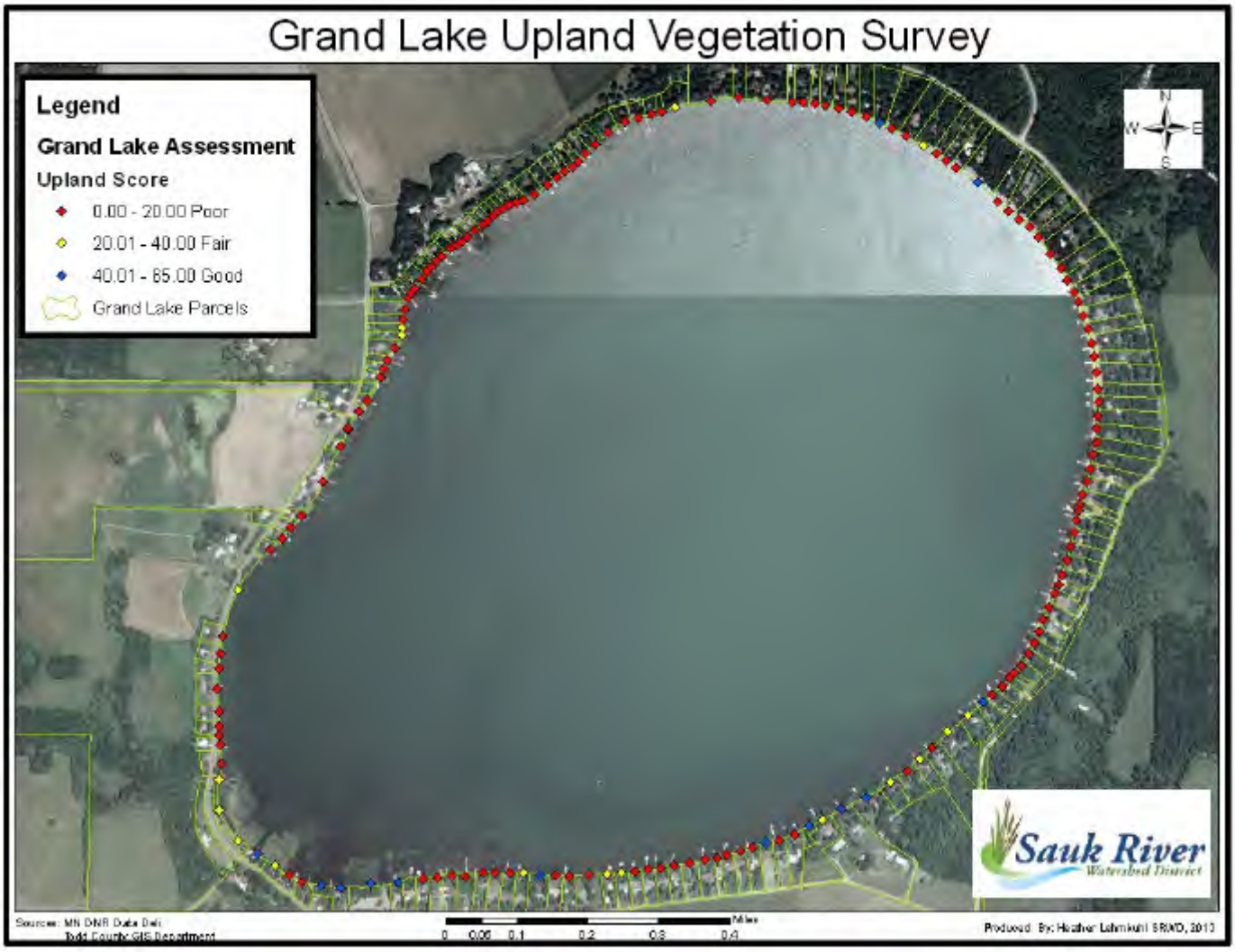
The MNDNR defined the aquatic zone as "the area that begins at the land-water edge and includes the lake area immediately adjacent to the lakeshore lot (Figure 4). It begins at the land-water interface and includes the shallow water where rooted aquatic plants grow. The Grand Lake parcels were assessed at the aquatic zone for emergent and floating-leaf plants, submergent plants, established plant beds, overhead woody habitat and downed woody habitat. The assessment results showed that out of the 100 possible points only 10 parcels had a score greater than 75, whereas 131 parcels scored 25 points or less. The remaining 34 parcels scored in the middle range. The 131 parcels, scoring 25 points or less, account for 14,646 feet of lakeshore, which is 75% of Grand Lake lakeshore. Therefore, 75% of Grand Lake's Aquatic Zone does not support a healthy aquatic habitat.

Figure 5 **SHORELAND ZONE ASSESSMENT RESULTS**



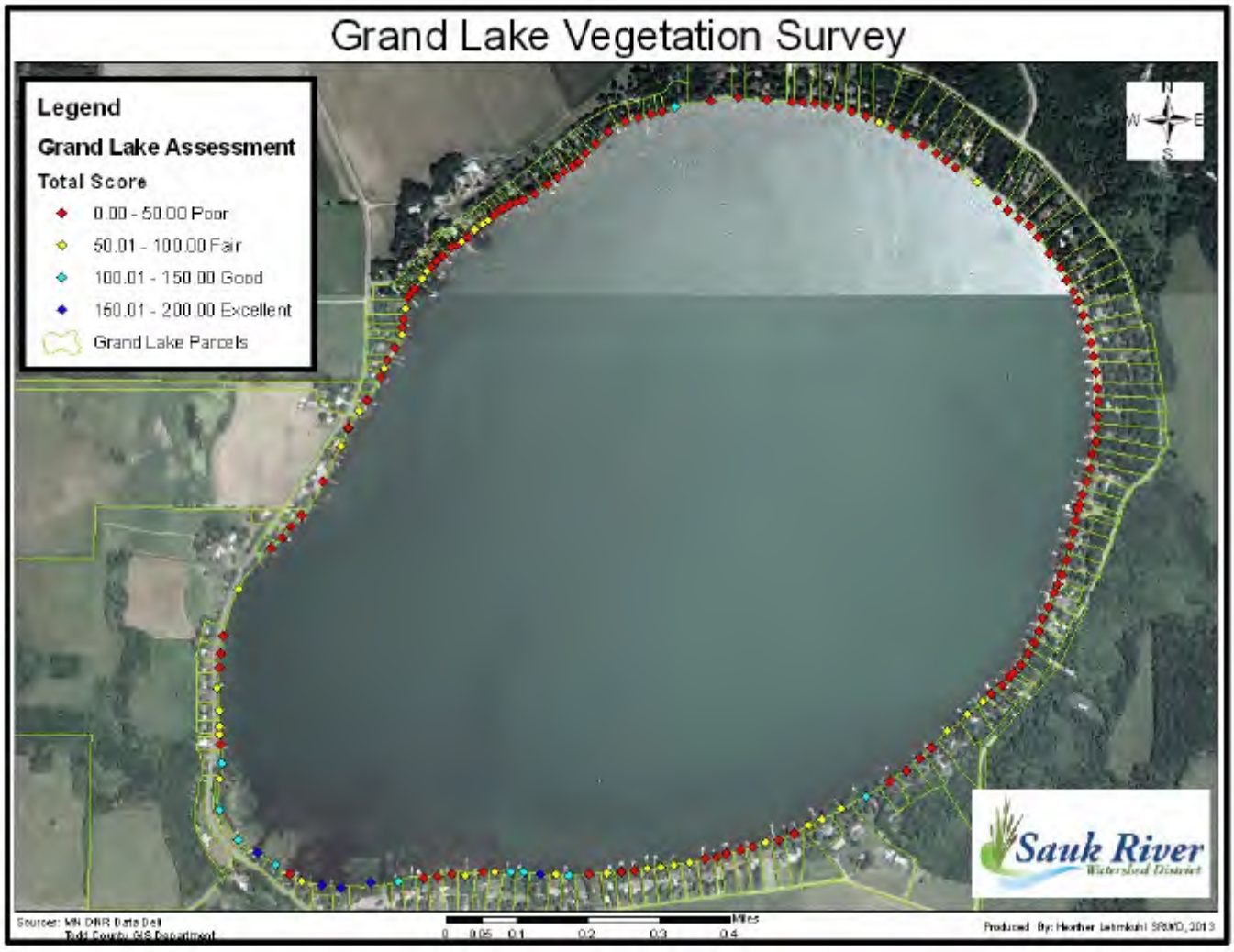
The shoreline zone is defined as the portion of the lakeshore zone between the upland and the water (Figure 4). This zone begins at the bank top and extends to the land-water interface linking the upland and aquatic ecosystems. The shoreland zone works as a buffer which provides a natural shield against erosion and prevents nutrients and other unwanted runoff substances from reaching the water. The SRWD assessed each parcel for evidence of trees, shrubs and overall ground cover. Points were issued based on the percentage of the lot that was occupied by each type of cover. The shoreline zone had a total score of 35 points. Figure 5 identifies 49 parcels with a score of 20 or greater and 97 parcels scoring less than 10. The remaining 29 parcels scored in the middle range (10.1-20.1). The 97 parcels having less than 10 points each make up 9,628 feet of lakeshore, which is 49.3% of the total lakeshore. This indicates that only 50% of the lakeshore of Grand Lake has an established shoreland habitat.

Figure 6 **UPLAND ZONE ASSESSMENT RESULTS**



The upland zone includes the majority of the lakeshore lot, beginning at the top of the bank and extending landward to the house or cabin on the lot (Figure 4). This terrestrial zone is the primary habitat for many upland and semi-aquatic species and is essential for their survival. It provides the critical habitat for nesting, feeding and growth. When upland zones around lakes are developed for residential homes or cabins, trees and other vegetation are removed to open a site for buildings. Generally at this time an area of land adjacent to the building is also cleared for a manicured lawn. The upland zone of each parcel on Grand Lake was assessed for tree cover, shrub cover and ground cover. The highest possible score for the upland zone was 65 points. Thirteen parcels scored greater than 40 points, 22 parcels scored in the middle range and 140 parcels scored less than 20 points. The 140 parcels scoring less than 20 points cover 14,324 feet, or 73.3% of lakeshore on Grand Lake. This indicates that the majority of the total lakeshore does not have an established upland habitat for terrestrial and semi-aquatic species.

Figure 7 **CUMULATIVE RESULTS FOR ALL ZONES**



Each site assessment included the entire length of the lakeshore lot. Parcels were given a GPS location which was recorded and linked to its parcel number. Each parcel was photographed with a parcel number linked to the picture. A master spreadsheet was generated which included all field notes and scores recorded for each parcel. The score data was sorted in four different ways: 1) aquatic zone score 2) shoreland zone score, 3) upland zone score and 4) total score. Ranges were created to generate the maps shown in Figures 3, 5, 6 and 7. Each range was given a "condition" label (excellent, good, fair and poor) to better define the scores. The highest cumulative score recorded was one parcel having a score of 175 out of the 200 possible points. The lowest score was a zero, which was recorded for nine parcels. The table shown below breaks down the total score of all 175 parcels and the percentage of the lakeshore that is impacted by these levels of habitat conditions.

Grand Lake Shoreline Assessment Overall Results			
Number of parcels	**Total linear feet of shoreline**	**Total Score out of 200 possible points**	**Percentage of Total Lakeshore**
82	**7,235**	**0-25**	**37%**
40	**4,943**	**26-50**	**25.3%**
14	**2,369**	**56-75**	**12.1%**
22	**2,262**	**76-100**	**11.6%**
11	**1,810**	**101-150**	**9.3%**
6	**928**	**156-200**	**4.7%**

Grand Lake is one of the few lakes within the Sauk River Watershed District (SRWD) that is not on the State's 303d list of impaired waters and needs to be protected to prevent impairment. One way to protect the lake is by having a stable lakeshore and a native vegetative buffer between the lake and the upland areas. A proactive approach would be to protect Grand Lake's water quality and fisheries by restoring the manicured lakeshore lots into native vegetation. The restored habitat will reinforce the shoreline and provide a buffer between the affects of human activity and the lake. Increased native vegetation along the shoreline of Grand Lake will enhance aquatic and terrestrial habitat thereby improving the health and diversity of wildlife in and out of the water. Unlike the shallow root systems found in lawn grasses, native plants have deep-root systems that will hold the soil in place and increase bank stabilization during high water levels. The "buffer zone" also enables filtration of run-off from the upper watershed area preventing pollutants and sediment from entering the water. Protecting the water quality of Grand Lake will support vigorous sport fisheries, sustain property values and enhance tourism, which can provide strong economic benefits to the local community.