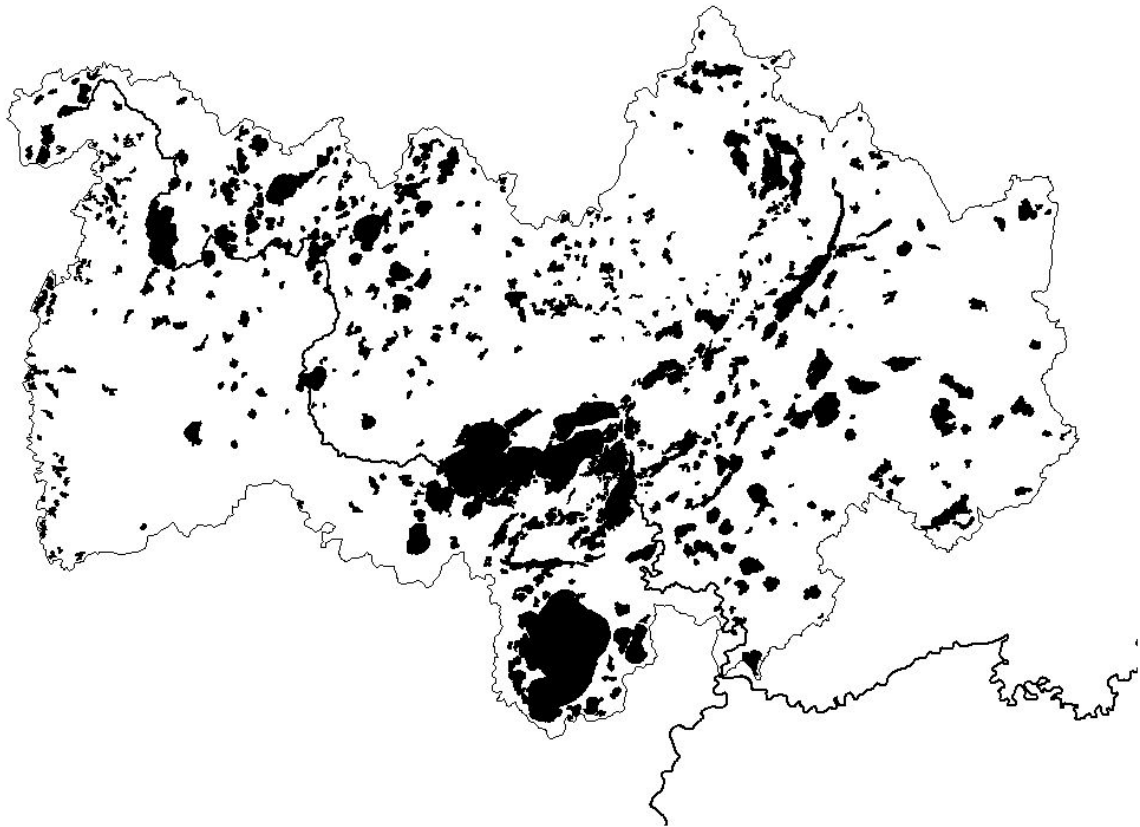


A Survey of the Landowners in the Pine River Watershed in 2006



A Cooperative Project  
of the  
Pine River Watershed Protection Foundation  
and  
Minnesota Department of Natural Resources



Table of Contents

LIST OF TABLES..... 3

LIST OF FIGURES..... 6

INTRODUCTION..... 7

STUDY AREA..... 7

METHODS..... 8

RESULTS ..... 9

DISCUSSION..... 15

RECOMMENDATIONS..... 16

ACKNOWLEDGEMENTS ..... 16

BIBLIOGRAPHY ..... 18

TABLES..... 20

FIGURES..... 74

APPENDIX A. PINE RIVER LANDOWNER SURVEY..... 77

APPENDIX B. COVER LETTER ACCOMPANYING LANDOWNER SURVEY..... 80

## List of Tables

- Table 1. Location of Landowners Property in the Final Mailings, by Governmental Unit, Survey of the Landowners in the Pine River Watershed, 2006
- Table 2. Location of Riparian Landowners Property in the Final Mailings, by Water Body, Survey of the Landowners in the Pine River Watershed, 2006
- Table 3. Returns by Governmental Unit, Survey of the Landowners in the Pine River Watershed, 2006
- Table 4. Non-Riparian Returns by Governmental Unit, Survey of the Landowners in the Pine River Watershed, 2006
- Table 5. Riparian Returns by Governmental Unit, Survey of the Landowners in the Pine River Watershed, 2006
- Table 6. Riparian Returns by Water Body, Survey of the Landowners in the Pine River Watershed, 2006
- Table 7. Returns by Location, Survey of the Landowners in the Pine River Watershed, 2006
- Table 8. Length of Ownership in Years, Survey of the Landowners in the Pine River Watershed, 2006
- Table 9. Returns by Residence Type and Length of Seasonal Use, Survey of the Landowners in the Pine River Watershed, 2006
- Table 10. Returns by Season of Use, Survey of the Landowners in the Pine River Watershed, 2006
- Table 11. Returns by Retirement Status, Survey of the Landowners in the Pine River Watershed, 2006
- Table 12. Returns by Property Use, Survey of the Landowners in the Pine River Watershed, 2006
- Table 13. Multiple Property Use Descriptions, Survey of the Landowners in the Pine River Watershed, 2006
- Table 14. Returns by Property Descriptions, Survey of the Landowners in the Pine River Watershed, 2006
- Table 15. Returns by Recreational Use, Survey of the Landowners in the Pine River Watershed, 2006
- Table 16. Returns by Issue Agreement, Survey of the Landowners in the Pine River Watershed, 2006
- Table 17. Returns by Information Dispersal, Survey of the Landowners in the Pine River Watershed, 2006
- Table 18. Area in Acres of Governmental Units in the Pine River Watershed
- Table 19. Returns by Location Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006
- Table 20. Length of Ownership in Years Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006
- Table 21. Returns by Residence Type and Length of Seasonal Use Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006
- Table 22. Returns by Season of Use Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Table 23. Returns by Retirement Status Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 24. Returns by Property Use Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 25. Multiple Property Use Descriptions Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 26. Returns by Property Descriptions Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 27. Returns by Recreational Use Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 28. Returns by Issue Agreement Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 29. Returns by Information Dispersal Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 30. Returns by Location Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 31. Length of Ownership in Years Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 32. Returns by Residence Type and Length of Seasonal Use Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 33. Returns by Season of Use Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 34. Returns by Retirement Status Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 35. Returns by Property Use Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 36. Multiple Property Use Descriptions Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 37. Returns by Property Descriptions Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 38. Returns by Recreational Use Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 39. Returns by Issue Agreement Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 40. Returns by Information Dispersal Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 41. Returns by Location Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 42. Length of Ownership in Years Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 43. Returns by Retirement Status Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006  
Table 44. Returns by Property Use Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Table 45. Multiple Property Use Descriptions Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Table 46. Returns by Property Descriptions Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Table 47. Returns by Recreational Use Comparing Full-time and Less than Full-time Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Table 48. Returns by Issue Agreement Comparing Full-time and Less than Full-time Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Table 49. Returns by Information Dispersal Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Table 50. Returns by Governmental Unit Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Table 51. Returns by Governmental Unit Comparing Retirement Status, Survey of the Landowners in the Pine River Watershed, 2006

Table 52. Returns by Governmental Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Table 53. Length of Ownership in Years by Governmental Unit, Survey of the Landowners in the Pine River Watershed, 2006

Table 54. Returns by Governmental Unit Comparing Length of Seasonal and Weekend Use, Survey of the Landowners in the Pine River Watershed, 2006

Table 55. Returns by Season of Use Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Table 56. Returns by Governmental Unit Comparing Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Table 57. Returns by Governmental Unit Comparing Property Descriptions, Survey of the Landowners in the Pine River Watershed, 2006

Table 58. Returns by Governmental Unit Comparing Information Dispersal, Survey of the Landowners in the Pine River Watershed, 2006

Table 59. Returns by Governmental Unit, Mean Importance of Recreational Use, Survey of the Landowners in the Pine River Watershed, 2006

Table 60. Returns by Governmental Unit, Number of Responses of Recreational Use, Survey of the Landowners in the Pine River Watershed, 2006

Table 61. Returns by Governmental Unit, Mean Issue Agreement, Survey of the Landowners in the Pine River Watershed, 2006

Table 62. Returns by Governmental Unit Comparing Issue Agreement Numbers, Survey of the Landowners in the Pine River Watershed, 2006

Table 63. Data for Respondents with Farms indicated as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Table 64. Data for Respondents with Resorts indicated as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Table 65. Recreational Use for Respondents indicating Farm as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Table 66. Recreational Use for Respondents indicating Resort as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Table 67. Returns by Issue Agreement for Respondents indicating Farm as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Table 68. Returns by Issue Agreement for Respondents indicating Resort as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

### **List of Figures**

Figure 1. Location of the Pine River Watershed in Minnesota.

Figure 2. Pine River Watershed with Sub-Watersheds

Figure 3. Governmental Units of the Pine River Watershed

# A Survey of the Landowners in the Pine River Watershed in 2006

by

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Division of Fish and Wildlife<sup>1</sup>

## Introduction

Founded in 1996, the Pine River Watershed Protection Foundation (PRWPF) was established in 1996 “to preserve, protect and enhance water quality and resources” within its watershed in Cass, Aitkin, Crow Wing, and Hubbard Counties. This is an ongoing effort of discovery and corrections of threats while increasing the appreciation of our water quality and working on its preservation. The Foundation accepts tax-deductible charitable contributions to its unrestricted endowment fund.

In 2005 a new direction of effort was initiated. This first was focused on the Crow Wing County Sewer District. In 2006 the Pine River Watershed Protection Foundation (PRWPF) steering committee established the following goals

- Build a representative steering committee
- Get resident input
- Create a vision statement and mission statement
- Develop a watershed management plan
- Build an organization to implement the plan

Discussion began in late 2005 and continued into early 2006 between the PRWPF and Department of Natural Resources (DNR). The discussions centered on how to get resident (i.e. landowner) input regarding the Pine River Watershed. One method agreed upon was the development of a mail survey to be sent to landowners of the watershed as a cooperative project of the two groups.

## Study Area

The Pine River Watershed<sup>2</sup> is located in north central Minnesota approximately 115 air miles north and west of Minneapolis (Figure 1). The Pine River is named from the translation of the Ojibwe name for the river (*Shingwako zibi*). The Pine River Watershed has a general east to west orientation. At the greatest distances the watershed is approximately 40 miles east to west and 30 north to south. The watershed is 785 square miles (502,184 acres) in size. The Pine River Watershed can be divided into five sub-watersheds<sup>3</sup> (Figure 2).

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<sup>1</sup> 1601 Minnesota Drive, Brainerd, Minnesota 56401

<sup>2</sup> In the hydrologic unit system created by the U.S. Geological survey a hydrologic unit code (HUC) identifies watersheds throughout the United States; the HUC for the Pine River Watershed is 7010105

<sup>3</sup> Daggett Brook, Little Pine River, Lower Pine River, South Fork Pine River and Upper Pine River

The Pine River includes parts of 4 counties (Aitkin, Cass, Crow Wing and Hubbard) and all or parts of 11 cities and 34 townships. The watershed includes all of seven cities<sup>4</sup> and six townships<sup>5</sup> (Figure 3). The total population of all the governmental units in the Pine River Watershed was 21,576 in 2000 or 28.1 people per square mile. The thirteen cities and townships entirely within the Pine River Watershed had a population of 6,896 in 2000 or 26.0 people per square mile.

There are 565 public water basins (lakes and wetlands) in the Pine River Watershed, which total 65,760 acres. There are 210 miles of permanent and intermittent streams, rivers and ditches in the Pine River Watershed. The Pine River has its headwaters in the northwest portion of the watershed. Variety Lake in Cass County is its headwater lake and from there flows generally south and east to Pine Mountain Lake near the city of Backus. The Pine River then flows generally east through a series of Cass County lakes (Bowen Lake, Lind Lake, Brockway Lake, Hattie Lake) before turning south, eventually entering Norway Lake near the city of Pine River. After leaving Norway Lake, the Pine River flows south and then east and enters Whitefish Lake on the west end of the Whitefish Chain of Lakes. The Pine River exits the eastern end of the Whitefish Chain of Lakes at Cross Lake. The U.S. Army Corps of Engineers dam on Cross Lake is the most significant water control structure in the entire watershed. Leaving Cross Lake the Pine River flows generally south, then east and then south again entering the Mississippi River approximately sixteen miles north and east of the city of Brainerd.

### Methods

The PRWPF desired public input to aid in identifying issues to be used in the landowner survey. A landowner survey input meeting was held February 16, 2006 in Pine River, Minnesota for this purpose.

A modified nominal group method was used to determine the issue areas that would be the basis for the questions to be included in the landowner's survey. There were twenty-eight people, including the facilitators, in attendance. All attendees were landowners in the Pine River Watershed, lived in close proximity to the Pine River Watershed, or were representatives of agencies, organizations and businesses with an interest in the Pine River Watershed. Invitees were known to the members of the steering committee as having community level interests.

Thirteen areas of interest were determined and compiled from specific issues and problems identified by the people attending. Voting prioritized the areas of interest. The areas of interest and the specific issues and problems from which they were derived were used to create the issue statements to be used in the survey.

The names and addresses of all the Cass and Crow Wing County landowners in the Pine River Watershed were obtained from the respective county auditors. Landowners

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<sup>4</sup> Backus, Chickamaw Beach, Crosslake, Emily, Fifty Lakes, Manhattan Beach, and Pine River

<sup>5</sup> Barclay, Gail Lake, Jenkins, Little Pine, Pine River and Timothy



in Aitkin and Hubbard Counties own less than 3 percent of the total area of the watershed (11923 acres). The Minnesota DNR owns nearly 93 percent of the Aitkin County portion of the Pine River Watershed (10742 of 11569 acres). There are 354 acres of the Pine River Watershed in Hubbard County. The landowner lists included a property location and description, and the name of the water body, if any, of each land parcel. The lists were edited to remove: 1) all county, state, township, city, federal and tribal land, 2) all property owned by a church or religious group and 3) all holdings of major timber interests (Potlach Corporation; Weyerhaeuser Corporation). The resulting list was further edited to remove duplicate names within a governmental unit (city, township). In instances where a landowner owned both riparian and non-riparian land in a governmental unit, the landowners name was retained as being riparian. If a landowner owned property in more than one governmental unit, the landowner name was retained for each different governmental unit. If the same landowners name were to be selected from different governmental units multiple survey would be sent. This would mean there would be no reduction in the number of surveys sent from any governmental unit. The resulting list included 15,610 names in the 45 governmental units. All landowners were assigned a random number. Each entry had a notation with respect to whether the land was riparian or non-riparian. There were 8,960 riparian entries (57.4 percent) and 6,650 non-riparian entries (42.6 percent). To generate statistically valid results ( $\pm 5\%$  at the 95% confidence level) a sample of 3,500 landowners in the watershed was needed. The sampling of the landowners was in the same ratio of riparian to non-riparian as occurred in the landowner list described. This resulted in a sample of 2,009 riparian and 1,491 non-riparian landowners. A sampling of each governmental unit was also made. The number of riparian and non-riparian landowners selected from each governmental unit was based on the ratio of each landowner type in each city and township to the total. For example, there were 393 non-riparian landowners in the City of Emily out of a total of 6,650 landowners in the entire watershed, or 5.9 percent. Multiplying this percentage (.059) by the number of non-riparian landowners to be sampled (1,491) results in 88 (87.9) non-riparian landowners in the City of Emily to be selected. This was done for each city and township by landowner type. The list of landowner names was sorted by city/township, riparian/non-riparian and by ascending random number order. From the resulting list, the names were selected by taking the number of names in terms of the random number order. Thus, for the City of Emily, the first 88 names in ascending random number order were chosen from all the non-riparian landowners in the city. Where the number of names in the city or township was very small (less than 10) a single name was selected from that city or township.

The individual landowner mailing consisted of an explanatory cover letter from the Pine River Watershed Steering Committee, a map of the watershed showing governmental units, the survey itself and self-addressed stamped return envelope. The return address was that of the Pine River Watershed Foundation.

## Results

A total of 3,501 names were selected for the mailing as described. There were 1,490 non-riparian landowners and 2,011 riparian landowners. A landowners name could be

listed in more than one city or township with the resulting possibility that they could receive more than one mailing. This occurred in the original mailing. There were 30 landowners who received 71 (22 riparian selections, 49 non-riparian selections) mailings (2.02%). The number of actual different names in the original mailing was 3,458. The mailings were made on May 12 and May 15, 2006. A number of the selected names were returned with undeliverable addresses. A second selection was made, in the same manner as the original selection, and subsequent mailings were made (May 18, 19, 22, 2006). A number of the mailings were ultimately returned as undeliverable even after this second set of mailings. There were a total of 8 undeliverable names and the total delivered mailings was 3493 (Table 1; Table 2). No attempt was made to make a further selection of names due to the late date of these undelivered letters.

A member of the Pine River Watershed Foundation Steering Committee collected the returned surveys from the post office and delivered them unopened to the author. Returns were accepted through June 30, 2006. A total of 1117 surveys were returned or 31.9 percent. There were 24 returns postmarked after the requested return date of June 15. Returns received after June 30, 2006 were not accepted for analysis.

Landowners returned surveys from each governmental unit in the original mailing except for two (Table 3). The two without returns were Center Township and Woodrow Township which had 3 and 1 surveys in the original mailing, respectively.

Non-riparian landowners returned surveys from each governmental unit in the original mailing except for three (Table 4). The three were Center Township, Woodrow Township, previously mentioned and Blind Lake Township. Respectively, there were 2, 1 and 15 surveys mailed to non-riparian landowners in these townships.

Riparian landowners returned surveys from each governmental unit in the original mailing except for two (Table 5). No riparian landowners returned surveys from Bungo Township or Center Township. There was only 1 survey mailed to a riparian owner in each of these two townships.

Surveys were mailed to riparian landowners on 187 water bodies (176 lakes and 11 streams), (Table 6). No riparian returns were received from landowners on 67 of these water bodies (63 lakes and 4 streams). Riparian returns (16) were also received from landowners on 4 lakes and 6 streams which were not listed in the original mailings. A total of 32 riparian respondents did not indicate the lake or stream the property bordered.

Riparian landowners returned surveys at a higher rate, 783 or 70.1 percent, than represented in the original mailing, 2006 or 57.4 percent (Table 7). Non-riparian landowners returned surveys at a lower rate, 302 or 27.0 percent than represented in the original mailing, 1487 or 42.6 percent. There were 32 surveys returned that did not indicate riparian/non-riparian status.

The mean length of land ownership was 20.7 years for the 1,059 surveys with a corresponding response (Table 8). This ranged from less than a year to 126 years. The

question was stated in the survey in a manner that the survey recipient could indicate the length of ownership as an individual or a family.

There were 1,071 surveys returned which indicated the residence type of the landowners (Table 9). There 416 responses for full-time residents, 343 for seasonal residents, and 312 for weekend residents. Seasonal and weekend residents were asked to indicate how long, in days, they used their property. A total of 311 seasonal respondents indicated a use of 92 days per year while 281 weekend respondents indicated they used their property 60 days per year. No definition of “seasonal” or “weekend” residence type was provided in the survey. There appeared to be considerable differences in the definitions among the respondents based on the range of use indicated. The seasonal responses ranged from 1 to 270 days of use per year while the weekend responses ranged from 1 to 240 days per year.

Seasonal and weekend residents were also asked to indicate the month(s) of the year when they used their property. For both residence types use was lowest in the winter months (December, January, February and March) and highest during the warmest months (June, July and August), (Table 10). The month of greatest use was July and that month with the least use was January.

Survey recipients were asked to indicate if at least one person in the household was retired. A total of 1,081 returned surveys responded to this question, with a nearly equal division (Table 11). There were 551 responses indicating a retired person in the household and 530 indicating all in the household still worked. There were 36 surveys that had no response to this question.

The recipients of the survey were asked to describe the use to which their property was put. Given four possible choices, they were allowed to chose as many as were appropriate. In total, 1,019 of the returned surveys indicated one or more property uses. Among the responses, residential use (932) was by far the greatest use indicated, followed by farm (23), resort (17) and commercial (9) (Table 12). Additionally there were 38 responses indicating two or three uses. The multiple responses included residential (36), farm (25), commercial (12) and resort (8) (Table 13).

The survey asked recipients to indicate what, if any type of dwelling was on their property. Among the 1094 surveys received with a response to this question, the greatest response was that there was a year around residence on the property (777) (Table 14). The next greatest response was that there was a seasonal dwelling on the property and that landowner had no plans to convert it (155). There were 66 responses indicating a seasonal dwelling with landowner plans for conversion. A total of 96 responses indicated that there was no dwelling on the property. Half of these responses (48) indicated the landowner had not plans to build a dwelling and half indicated the landowner did have plans for construction. In total, among the properties without a dwelling or with a seasonal dwelling, 114 of 317 or 36 percent indicated that landowners had construction plans.

Landowners receiving a survey were asked to indicate their *participation* in 14 different recreational activities. They were also requested to indicate the *importance* of these activities using a scale from 1 to 5 where 1 was of low importance and 5 of high importance. Recipients were asked to indicate non-participation with a “0”. Recipients were also given the opportunity to write in recreational activities not listed. In all, 1,082 of the respondents indicated participation in 1 or more recreational activities. The mean (average) number of recreational activities respondents indicated participation in was 9.5 (range 1 to 15). Among the 1,082 surveys with responses, the recreational activity receiving the greatest level of *participation* (1,037 or 95.8 percent) and the highest *importance* rating (4.48) was esthetics. Esthetics was defined in the survey as “enjoying the beauty of scenery, a sunrise/sunset, etc.” Recreational activities with the next greatest *participation* were fishing (970), birding/wildlife observation (954), swimming/wading (908) and recreational boating (897). Recreational boating was defined in the survey as “all boating other than those listed”. Mean rating scores for recreational activities with the next greatest *importance* were: recreational boating (3.95), birding/wildlife observation (3.94), swimming/wading (3.91) and fishing (3.78). The listed activities with the lowest level of *participation* were personal watercraft (403) and sailing (387). These activities also had the lowest level of *importance* at 2.39 and 2.36, respectively. There were 79 surveys indicating “other” recreational activities. There were 33 different activities listed. Only “relaxing/peace and quiet” was indicated 10 or more times.

A total of 24 issue statements were presented in the survey. Recipients were requested to indicate their level of agreement with the statement. The range of agreement was: 1 = strongly agree; 2 = somewhat agree; 3 = neither agree nor disagree; 4 somewhat disagree and 5 = strongly disagree. Recipients were asked to indicate they did not know with a “0”. A total of 1071 surveys received indicated a response (other than “don’t know”) to one or more of the issue statements (Table 16). The range in number of responses was from 1 to 24 with a mean of 19.5 responses. Two issue statements received more than 1000 rated (1 through 5) responses or greater than 90 percent response. The issue statement “**developmental growth needs to be guided to prevent future problems**” had 1010 rated responses. The issue statement “**local groups can be effective in maintaining or improving water quality**” received 1009 responses. The percentage of surveys not answering issues statements ranged from 4.5 to 5.6.

“**Developmental growth needs to be guided to prevent future problems**” had 90.4 percent rated responses with 73.2 percent rated “strongly agree” or “somewhat agree”. This issue had 5.3 percent rating it “don’t know” and a mean agreement of 1.89.

“**Local groups can be effective in maintaining or improving water quality**” had 90.3 percent rated responses with 73.8 percent rated “strongly agree” or “somewhat agree”. This issue had 4.8 percent rating it “don’t know” and a mean agreement of 2.0.

“**Sprawl and over development is an increasing problem**” had 89.1 percent rated responses with 67.0 percent rated “strongly agree” or “somewhat agree”. This issue had 5.7 percent rating it “don’t know” and a mean agreement of 2.10.

**“Wetlands are at risk from increasing development and changing landscapes”** had 88.6 percent rated responses with 71.1 percent rated “strongly agree” or “somewhat agree”. This issue had 7.4 percent rating it “don’t know” and a mean agreement of 1.95.

**“Reasonable accesses to water bodies are needed landscapes”** had 87.6 percent rated responses with 51.8 percent rated “strongly agree” or “somewhat agree”. This issue had 7.4 percent rating it “don’t know” and a mean agreement of 2.53.

**“Boat noise and traffic are increasing to problem levels”** had 87.3 percent rated responses with 49.3 percent rated “strongly agree” or “somewhat agree”. This issue had 8.5 percent rating it “don’t know” and a mean agreement of 2.6.

**“The current level of public information and education about lake and stream protection is adequate”** had 85.9 percent rated responses with 27.8 percent rated “strongly agree” or “somewhat agree”. This issue had 10.0 percent rating it “don’t know” and a mean agreement of 3.25.

**“Phosphorus in the runoff from shoreline and lawns is an important water quality problem”** had 84.6 percent rated responses with 72.1 percent rated “strongly agree” or “somewhat agree”. This issue had 11.3 percent rating it “don’t know” and a mean agreement of 1.81.

**“Too many landowners do not take proper care of their lakeshore”** had 82.8 percent rated responses with 49.6 percent rated “strongly agree” or “somewhat agree”. This issue had 13.1 percent rating it “don’t know” and a mean agreement of 2.43.

**“Watershed sources of phosphorus are an important water quality problem”** had 81.9 percent rated responses with 67.5 percent rated “strongly agree” or “somewhat agree”. This issue had 14.1 percent rating it “don’t know” and a mean agreement of 1.88.

**“Increased media coverage of watershed activities will improve watershed conditions”** had 81.6 percent rated responses with 50.5 percent rated “strongly agree” or “somewhat agree”. This issue had 14.0 percent rating it “don’t know” and a mean agreement of 2.43.

**“Inappropriate off highway vehicle (ATV, off road motorcycle, 4X4 Truck) use is negatively affecting wetlands conditions”** had 79.7 percent rated responses with 53.8 percent rated “strongly agree” or “somewhat agree”. This issue had 16.6 percent rating it “don’t know” and a mean agreement of 2.29.

**“More stakeholder involvement is needed to properly manage the watershed”** had 79.2 percent rated responses with 56.4 percent rated “strongly agree” or “somewhat agree”. This issue had 16.2 percent rating it “don’t know” and a mean agreement of 2.22.

**“The enforcement of shoreland rules is adequate to protect lakes and streams”** had 79.1 percent rated responses with 30.9 percent rated “strongly agree” or “somewhat agree”. This issue had 16.9 percent rating it “don’t know” and a mean agreement of 3.07.

**“There is adequate management to control the spread of non-native species”** had 77.7 percent rated responses with 19.7 percent rated “strongly agree” or “somewhat agree”. This issue had 18.3 percent rating it “don’t know” and a mean agreement of 3.53.

**“Land values and property rights are being negatively affected by shoreland and land use rules”** had 77.5 percent rated responses with 26.1 percent rated “strongly agree” or “somewhat agree”. This issue had 18.4 percent rating it “don’t know” and a mean agreement of 3.03.

**“The fisheries management activities of lakes and streams are appropriate”** had 73.3 percent rated responses with 36.3 percent rated “strongly agree” or “somewhat agree”. This issue had 22.7 percent rating it “don’t know” and a mean agreement of 2.83.

**“The existence of private land management practices would have positive impacts”** had 73.0 percent rated responses with 45.4 percent rated “strongly agree” or “somewhat agree”. This issue had 22.6 percent rating it “don’t know” and a mean agreement of 2.38.

**“Adequate monitoring is being done to identify water quality problems”** had 69.3 percent rated responses with 39.3 percent rated “strongly agree” or “somewhat agree”. This issue had 27.2 percent rating it “don’t know” and a mean agreement of 2.59.

**“Erosion and runoff from road ditches is a problem problems”** had 67.7 percent rated responses with 35.2 percent rated “strongly agree” or “somewhat agree”. This issue had 28.7 percent rating it “don’t know” and a mean agreement of 2.6.

**“Good buffer strips are present on lakes and streams to prevent erosion”** had 67.1 percent rated responses with 20.9 percent rated “strongly agree” or “somewhat agree”. This issue had 29.0 percent rating it “don’t know” and a mean agreement of 3.19.

**“Identified water quality problems are being corrected”** had 60.0 percent rated responses with 26.7 percent rated “strongly agree” or “somewhat agree”. This issue had 36.7 percent rating it “don’t know” and a mean agreement of 2.83.

**“Current inter-governmental coordination of ordinances and plans is adequate to protect the watershed”** had 57.8 percent rated responses with 20.5 percent rated “strongly agree” or “somewhat agree”. This issue had 39.1 percent rating it “don’t know” and a mean agreement of 3.01.

**“Canoe accesses and portages are not adequate”** had 54.7 percent rated responses with 13.1 percent rated “strongly agree” or “somewhat agree”. This issue had 42.0 percent rating it “don’t know” and a mean agreement of 3.27.

Survey recipients were asked to indicate the means by which they preferred to receive information about the results of this survey and future watershed planning efforts. The method most preferred among the surveys returned was by means of a newsletter (887)

followed by website (353) and newspaper (347) (Table 17). Meeting did not receive a high response rate (122).

Three questions allowed survey recipients to provide a written response. They were:

- What do you value most about living in the Pine River Watershed?
- Are there any watershed related topics that you would like to know more about?
- Are there other comments you would like to share with us?

There were 863, 203 and 404 responses to the questions, respectively. The responses will be lightly edited for clarity and modesty and reported as a separate report.

There are five significant sub-watersheds in the Pine River Watershed. The lakes and streams in each sub-watershed are readily identifiable in the surveys received. The non-riparian responses cannot be as easily placed within a sub-watershed. This results from the fact that recipients were asked only to identify their land location to a city or township. An analysis of each city and township indicated the amount of land within each sub-watershed (Table 18).

Comparisons of survey results for different identified groups were made (Tables 19 through 68).

Group	Tables
Cass and Crow Wing County	19 through 30
Riparian and Non-Riparian	31 through 40
Full time, Seasonal and Weekend Residence	41 through 49
Governmental Unit <sup>6</sup>	50 through 62
Farms	63,65,67
Resorts	64,66,68

### Discussion

The magnitude of response to the survey provides a set of data and information that will be useful to many interested parties. The large number of returned surveys means that statistically valid analyses can be conducted. This is especially true for the most important portion of the survey, the issue statements.

Comparing the number of surveys mailed and those received from riparian and non-riparian landowners indicates a disparate return rate. Non-riparian surveys were received at a lower rate than were mailed. Some caution will need to be exercised when using non-riparian data especially in comparison based on location.

The survey did not provide a definition for what seasonal or weekend resident meant. As such, there was a wide range of responses for each in terms of day per year of use. Both of these groups indicate a range of days of use annually from 1 to over 200. It would appear there is not really a difference in the two groups in the eyes of the survey

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<sup>6</sup> Limited to cities and townships with at least 30 responses or a return rate of 30 percent or more.

recipients. The data from the two groups could probably be combined when more robust analysis is needed.

### Recommendations

1. The results of this survey should be as widely dispersed as possible. The following are among the methods and techniques that should be applied to achieve this goal.

Mail an executive summary to all the landowners on the original mailing list. Offer a copy of the full report upon request.

Mail an executive summary to all cities, townships and governmental agencies within the watershed. Offer a copy of the full report upon request. A presentation of survey results specific to their individual interests should be offered.

Place a copy of the survey results on websites. Suggested locations include the DNR, Whitefish Area Property Owners Association (WAPOA) and Cass County Environmental Services.

Prepare informational pieces and provide them to local media.

2. The results of the survey should be used to guide the development of a watershed plan. The most important issues, as perceived by the survey recipients, should be given the greatest priority in the plan. These issues are:

Developmental growth needs to be guided to prevent future problems.

Wetlands are at risk from increasing development and changing landscapes.

Phosphorus in the runoff from shoreline and lawns is an important water quality problem.

Watershed sources of phosphorus are an important water quality problem.

3. Conduct additional detailed analyses of the results.

Provide detailed analyses to cities, townships and lake associations upon request.

Analyze data to determine differences related specifically to issue statements by locality.

4. Continue to seek means to connect with groups that may be underrepresented in the survey results, especially non-riparian landowners.



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## Tables

Table 1. Location of Landowners Property in the Final Mailings, by Governmental Unit, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	County	Riparian	Non Riparian	Total
Backus	Cass	10	29	39
Barclay Township	Cass	44	50	94
Beulah Township	Cass	17	11	28
Birch Lake Township	Cass	1	9	10
Blind Lake Township	Cass	10	15	25
Breezy Point	Crow Wing	129	287	416
Bull Moose Township	Cass	2	18	20
Bungo Township	Cass	1	28	29
Center Township	Crow Wing	1	2	3
Chickamaw Beach	Cass	17	9	26
Crooked Lake Township	Cass	223	30	253
Crosslake	Crow Wing	215	72	287
Deerfield Township	Cass	18	5	23
Emily	Crow Wing	162	88	250
Fairfield Township	Crow Wing	45	38	83
Fifty Lakes	Crow Wing	110	43	153
Gail Lake Township	Crow Wing	14	16	30
Hackensack	Cass	0	0	0
Hiram Township	Cass	7	10	17
Ideal Township	Crow Wing	267	90	357
Jenkins	Crow Wing	0	46	46
Jenkins Township	Crow Wing	55	34	89
Lake Edward Township	Crow Wing	37	6	43
Little Pine Township	Crow Wing	10	26	36
Loon Lake Township	Cass	0	1	1
Manhattan Beach	Crow Wing	12	8	20
Mission Township	Crow Wing	90	45	135
Moose Lake Township	Cass	0	1	1
Pelican Township	Crow Wing	83	20	103
Pequot Lakes	Crow Wing	0	12	12
Perry Lake Township	Crow Wing	13	9	22
Pine River	Cass	26	74	100
Pine River Township	Cass	11	122	133
Ponto Lake Township	Cass	130	30	160
Powers Township	Cass	143	61	204
Ross Lake Township	Crow Wing	50	17	67
Thunder Lake Township	Cass	4	4	8
Timothy Township	Crow Wing	12	27	39
Trelipe Township	Cass	12	9	21

Governmental Unit	County	Riparian	Non Riparian	Total
Walden Township	Cass	3	39	42
Wilson Township	Cass	22	45	67
Woodrow Township	Cass	0	1	1
TOTAL		2006	1487	3493

Table 2. Location of Riparian Landowners Property in the Final Mailings, by Water Body, Survey of the Landowners in the Pine River Watershed, 2006

County	Lake or Stream	Id No.	Number
Cass	Abe	110632	1
Cass	Ada	110250	38
Cass	Ada Brook	M-106-14	2
Crow Wing	Adney	180225	14
Crow Wing	Allen	180208	1
Cass	Andrus	110050	6
Crow Wing	Anna	180213	7
Crow Wing	Arrowhead	180366	6
Cass	Arvig Creek	M-106-12	4
Cass	Bass	110254	2
Crow Wing	Bass	180229	1
Crow Wing	Bass	180256	2
Crow Wing	Bass	180358	20
Crow Wing	Bertha	180355	15
Cass	Big Portage	110308	29
Crow Wing	Big Trout	180315	38
Cass	Blind	110155	3
Cass	Blind Lake Creek	M-106-14-1	1
Crow Wing	Blue	180211	12
Crow Wing	Bonnie	180259	3
Cass	Bowen	110350	4
Cass	Brookway	110366	3
Crow Wing	Buchite	180215	2
Crow Wing	Butterfield	180231	15
Cass	Clam	110349	2
Crow Wing	Clamshell	180356	17
Crow Wing	Clear	180364	10
Crow Wing	Clears	180420	1
Crow Wing	Clough	180414	3
Cass	Corset	110247	1
Cass	Cow	110345	1
Crow Wing	Cree Bay	180349	5
Cass	Crooked	110354	2
Crow Wing	Cross	180312	61
Cass	Dabill Creek	M-106-13-5	1

County	Lake or Stream	Id No.	Number
Crow Wing	Daggett	180271	28
Crow Wing	Dahler	180204	3
Crow Wing	Davis	180217	1
Cass	Deadman	110860	1
Cass	Deep Portage	110237	6
Crow Wing	Deer	180410	1
Cass	Deer	110446	1
Crow Wing	Dolney	180195	4
Crow Wing	Duck	180244	7
Crow Wing	Eagle	180296	30
Crow Wing	East Fox	180298	22
Cass	East Wood	180221	5
Cass	Egg	110005	1
Cass	Elbow	110858	1
Crow Wing	Emily	180203	8
Cass	Fawn	110362	3
Crow Wing	Fawn	180309	10
Cass	Five Point	110351	15
Cass	George	110101	4
Crow Wing	Goggle	180223	2
Crow Wing	Goodrich	180226	15
Crow Wing	Grass	180230	2
Crow Wing	Grass	180362	1
Crow Wing	Greenwood (Lizard)	180246	1
Crow Wing	Greer	180287	1
Cass	Hand	110242	19
Cass	Harriet	110255	4
Cass	Hattie	110232	26
Cass	Hay	110199	7
Cass	Hay Creek	M-106-11	3
Crow Wing	Hidden	180680	1
Cass	Hiram	110386	2
Cass	Horse	110339	2
Cass	Horseshoe	110229	9
Cass	Horseshoe	110358	12
Cass	Island	110102	8
Crow Wing	Island	180269	6
Crow Wing	Island	180183	21
Crow Wing	Island	180193	3
Crow Wing	Island	180365	3
Cass	Jackpine	110460	3
Crow Wing	Jail	180415	6
Cass	Johnson	110363	9
Cass	Jokela	110666	1

County	Lake or Stream	Id No.	Number
Crow Wing	Kego	180293	4
Crow Wing	Kimball	180361	26
Cass	Lawrence	110053	33
Cass	Leavitt	110053	20
Cass	Lind	110367	9
Crow Wing	Little Bass	180199	2
Crow Wing	Little Beaver	180279	1
Crow Wing	Little Pelican	180351	14
Crow Wing	Little Pine	180266	20
Crow Wing	Little Pine River	M-106-1	7
Crow Wing	Little Round	180357	1
Cass	Little Sand	110230	1
Cass	Lizotte	110231	3
Crow Wing	Lizzie	180416	2
Cass	Long	110454	1
Cass	Loon	110357	1
Crow Wing	Lougee	180342	13
Cass	Louise	110156	3
Crow Wing	Lower Hay	180378	28
Crow Wing	Lows	180180	6
Crow Wing	Lynch	180347	1
Crow Wing	Markee	180343	4
Crow Wing	Mary	180185	22
Crow Wing	McClain	180267	1
Crow Wing	Minnie	180210	3
Crow Wing	Mitchell	180294	14
Cass	Mitten	110114	1
Cass	Moorland	110057	1
Cass	Morrison	110006	6
Cass	Mud	110309	1
Crow Wing	Mud	180166	5
Cass	Mud Portage	110235	2
Cass	Mule	110047	4
Crow Wing	Nelson	180411	10
Cass	Norway	110307	22
Cass	Norway Brook	M-106-16	44
Crow Wing	O'Brien	180227	10
Crow Wing	Ossawinnamakee	180352	79
Crow Wing	Ox	180288	11
Cass	Ox Yoke	110355	13
Cass	Peewee	110340	1
Crow Wing	Pelican	180308	177
Crow Wing	Perry	180186	9
Cass	Pickerel	110352	6

County	Lake or Stream	Id No.	Number
Crow Wing	Pickerel	180205	3
Cass	Pig	110341	1
Crow Wing	Pig	180354	16
Crow Wing	Pine	180261	10
Cass	Pine Mountain	110411	27
Cass	Pine River	M-106	13
Crow Wing	Pleasant	180278	1
Cass	Rainy	110356	14
Crow Wing	Rat	180344	1
Crow Wing	Rock	180282	1
Cass	Roosevelt	110043	95
Crow Wing	Ross	180165	13
Cass	Rush	110243	1
Crow Wing	Rush	180311	40
Crow Wing	Ruth	180212	40
Cass	Sanborn	110361	21
Crow Wing	Sand (Bass)	180299	2
Crow Wing	Sandbar	180251	59
Cass	Scribner	110441	1
Crow Wing	Shaffer	180348	2
Crow Wing	Simpson	180222	9
Cass	Smiley	110245	1
Crow Wing	Smokey Hollow	180220	13
Cass	Snake	110251	1
Cass	South Fork Pine River	M-106-13	9
Cass	South Haynes	110450	1
Cass	Spring Brook	M-106-4-2-1	1
Crow Wing	Square	180196	2
Crow Wing	Star	180359	7
Crow Wing	Stark	180169	1
Cass	Stevens	110116	3
Crow Wing	Stewart	180367	1
Cass	Stony Creek	M-106-17	1
Cass	Swede	110151	1
Cass	Swede	110368	3
Cass	Swede	110712	7
Cass	Sylvan	110246	11
Cass	Tamarack	110241	1
Crow Wing	Tamarack	180281	2
Cass	Tamarack	110249	1
Crow Wing	Tiff	180280	1
Crow Wing	Trout	180218	7
Cass	Twenty Six	110117	1
Crow Wing	Twin	180167	10



County	Lake or Stream	Id No.	Number
Cass	Two	110243	2
Cass	Unnamed	110713	1
Cass	Unnamed	110238	1
Cass	Unnamed	110338	1
Cass	Unnamed	110579	1
Cass	Unnamed	110601	3
Cass	Unnamed	110667	1
Cass	Unnamed	110864	1
Crow Wing	Unnamed	180197	2
Crow Wing	Unnamed	180228	1
Crow Wing	Unnamed	180295	2
Crow Wing	Unnamed	180413	1
Crow Wing	Upper Hay	180412	17
Cass	Variety	110463	3
Crow Wing	Velvet	180284	5
Cass	Washburn	110059	78
Crow Wing	West Fox	180297	19
Crow Wing	West Twin	180258	1
Crow Wing	Whitefish	180310	109
Cass	Wood (West Wood)	110222	7
Crow Wing	Young	180252	1

2006

Table 3. Returns by Governmental Unit, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Returns	Mailing	%
Backus	3	39	7.69
Barclay Township	37	94	39.36
Beulah Township	9	28	32.14
Birch Lake Township	7	10	70.00
Blind Lake Township	1	25	4.00
Breezy Point	90	416	21.63
Bull Moose Township	4	20	20.00
Bungo Township	3	29	10.34
Center Township	0	3	0.00
Chickamaw Beach	3	26	11.54
Crooked Lake Township	92	253	36.36
Crosslake	95	287	33.10
Deerfield Township	9	23	39.13
Emily	72	250	28.80
Fairfield Township	28	83	33.73
Fifty Lakes	47	153	30.72
Gail Lake Township	13	30	43.33
Hackensack			
Hiram Township	5	17	29.41
Ideal Township	139	357	38.94
Jenkins /Jenkins Township	43	135	31.85
Lake Edward Township	6	43	13.95
Little Pine Township	9	36	25.00
Loon Lake Township	1	1	100.00
Manhattan Beach	10	20	50.00
Mission Township	57	135	42.22
Moose Lake Township	1	1	100.00
Pelican Township	35	103	33.98
Pequot Lakes	1	12	8.33
Perry Lake Township	7	22	31.82
Pine River/Pine River Township	60	233	25.75
Ponto Lake Township	59	160	36.87
Powers Township	69	204	33.82
Ross Lake Township	27	67	40.30
Thunder Lake Township	6	8	75.00
Timothy Township	11	39	28.21
Trelipe Township	6	21	28.57
Walden Township	12	42	28.57
Wilson Township	15	67	22.39
Woodrow Township	0	1	0.00
Unstated	25		

Governmental Unit	Returns	Mailing	%
Total	1117	3493	31.98

Table 4. Non-Riparian Returns by Governmental Unit, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Returns	Mailed	%
Backus	2	29	6.90
Barclay Township	20	50	40.00
Beulah Township	3	11	27.27
Birch Lake Township	5	9	55.56
Blind Lake Township	0	15	0.00
Breezy Point	39	287	13.59
Bull Moose Township	3	18	16.67
Bungo Township	3	28	10.71
Center Township	0	2	0.00
Chickamaw Beach	1	9	11.11
Crooked Lake Township	10	30	33.33
Crosslake	16	72	22.22
Deerfield Township	2	5	40.00
Emily	6	88	6.82
Fairfield Township	6	38	15.79
Fifty Lakes	8	43	18.60
Gail Lake Township	7	16	43.75
Hackensack			
Hiram Township	1	10	10.00
Ideal Township	12	90	13.33
Jenkins /Jenkins Township	14	80	17.50
Lake Edward Township	2	6	33.33
Little Pine Township	3	26	11.54
Loon Lake Township	1	1	100.00
Manhattan Beach	2	8	25.00
Mission Township	13	45	28.89
Moose Lake Township	1	1	100.00
Pelican Township	6	20	30.00
Pequot Lakes	1	12	8.33
Perry Lake Township	2	9	22.22
Pine River/Pine River Township	47	196	23.98
Ponto Lake Township	13	30	43.33
Powers Township	14	61	22.95
Ross Lake Township	6	17	35.29
Thunder Lake Township	2	4	50.00
Timothy Township	5	27	18.52
Trelipe Township	2	9	22.22
Walden Township	8	39	20.51

Governmental Unit	Returns	Mailed	%
Wilson Township	9	45	20.00
Woodrow Township	0	1	0.00
Unstated	7		
Total	299	1487	20.11

Table 5. Riparian Returns by Governmental Unit, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Returns	Mailed	%
Backus	1	10	10.00
Barclay Township	17	44	38.64
Beulah Township	6	17	35.29
Birch Lake Township	2 <sup>7</sup>	1	200.00
Blind Lake Township	1	10	10.00
Breezy Point	51	129	39.53
Bull Moose Township	1	2	50.00
Bungo Township	0	1	0.00
Center Township	0	1	0.00
Chickamaw Beach	2	17	11.76
Crooked Lake Township	82	223	36.77
Crosslake	79	215	36.74
Deerfield Township	7	18	38.89
Emily	66	162	40.74
Fairfield Township	22	45	48.89
Fifty Lakes	39	110	35.45
Gail Lake Township	6	14	42.86
Hackensack			
Hiram Township	4	7	57.14
Ideal Township	127	267	47.57
Jenkins /Jenkins Township	29	55	52.73
Lake Edward Township	4	37	10.81
Little Pine Township	6	10	60.00
Loon Lake Township			
Manhattan Beach	8	12	66.67
Mission Township	44	90	48.89
Moose Lake Township			
Pelican Township	29	83	34.94
Pequot Lakes			
Perry Lake Township	5	13	38.46
Pine River/Pine River Township	13	37	35.13
Ponto Lake Township	46	130	35.38
Powers Township	55	143	38.46
Ross Lake Township	21	50	42.00

<sup>7</sup> 2 returns were indicated as riparian; the original mailing had only 1 riparian mailings

Governmental Unit	Returns	Mailed	%
Thunder Lake Township	4	4	100.00
Timothy Township	6	12	50.00
Trelipe Township	4	12	33.33
Walden Township	4 <sup>8</sup>	3	133.33
Wilson Township	6	22	27.27
Woodrow Township			
Unstated	18		
Total	818	2006	40.78

Table 6. Riparian Returns by Water Body, Survey of the Landowners in the Pine River Watershed, 2006

Lake/Stream and Identification No.	Returns	Mailing	%
Abe 110632	0	1	0.00
Ada 110250	16	38	42.11
Ada Brook	0	2	0.00
Adney 180225	4	14	28.57
Allen 180208	1	1	100.00
Andrus 110050	4	6	66.67
Anna 180213	1	7	14.29
Arrowhead 180366	4	6	66.67
Arvig Creek M-106-12	2	4	50.00
Bass 110254	1	2	50.00
Bass 180229	0	1	0.00
Bass 180256	0	2	0.00
Bass 180358	7	20	35.00
Behler Creek M-106-13-1	2		
Bertha 180355	8	15	53.33
Big Portage 110308	6	29	20.69
Big Trout 180315	15	38	39.47
Blind 110155	1	3	33.33
Blind Lake Creek M-106-14-1	0	1	0.00
Blue 180211	5	12	41.67
Bonnie 180259	3	3	100.00
Bowen 110350	1	4	25.00
Brookway 110366	0	3	0.00
Buchite 180215	0	2	0.00
Butterfield 180231	2	15	13.33
Clam 110349	1	2	50.00
Clamshell 180356	6	17	35.29
Clear 180364	5	10	50.00
Clears 180420	0	1	0.00

<sup>8</sup> 4 returns were indicated as riparian; the original mailing had only 3 riparian mailings

Lake/Stream and Identification No.	Returns	Mailing	%
Clough 180414	1	3	33.33
Corset 110247	0	1	0.00
Cow 110345	0	1	0.00
Cree Bay 180349	1	5	20.00
Crooked 110354	0	2	0.00
Cross 180312	27	61	44.26
Dabill Creek M-106-13-5	0	1	0.00
Daggett 180271	10	28	35.71
Daggett Brook	1		
Dahler 180204	1	3	33.33
Davis 180217	0	1	0.00
Deadman 110860	1	1	100.00
Deep Portage 110237	1	6	16.67
Deer 110446	0	1	0.00
Deer 180410	0	1	0.00
Dolney 180195	3	4	75.00
Duck 180244	0	7	0.00
Eagle 180296	9	30	30.00
East Fox 180298	6	22	27.27
East Wood 180221	0	5	0.00
Egg 110005	0	1	0.00
Elbow 110858	0	1	0.00
Emily 180203	7	8	87.50
Fawn 110362	1	3	33.33
Fawn 180309	3	10	30.00
Five Point 110351	7	15	46.67
George 110101	1	4	25.00
Goggle 180223	1	2	50.00
Goodrich 180226	11	15	73.33
Grass 180230	1	2	50.00
Grass 180362	0	1	0.00
Greenwood (Lizard) 180246	0	1	0.00
Greer 180287	0	1	0.00
Hand 110242	5	19	26.32
Harriet 110255	1	4	25.00
Hattie 110232	9	26	34.62
Hay 110199	0	7	0.00
Hay Creek M-106-11	3	3	100.00
Hay Creek M-106-12-1	1		
Hay Creek M-106-13-7	3		
Hidden 180680	0	1	0.00
Hiram 110386	2	2	100.00
Horse 110339	1	2	50.00
Horseshoe 110229	4	9	44.44

Lake/Stream and Identification No.	Returns	Mailing	%
Horseshoe 110358	5	12	41.67
Island 110102	1	8	12.50
Island 180183	8	21	38.10
Island 180193	0	3	0.00
Island 180269	2	6	33.33
Island 180365	2	3	66.67
Jackpine 110460	0	3	0.00
Jail 180415	2	6	33.33
Johnson 110363	5	9	55.56
Johnson Creek M-106-4-1-1	1		
Jokela 110666	0	1	0.00
Kego 180293	3	4	75.00
Kimball 180361	12	26	46.15
Lawrence 110053	16	33	48.48
Leavitt 110037	6	20	30.00
Lind 110367	2	9	22.22
Little Bass 180199	0	2	0.00
Little Beaver 180279	0	1	0.00
Little Pelican 180351	6	14	42.86
Little Pine 180266	9	20	45.00
Little Pine River M-106-1	6	7	85.71
Little Portage 110236	1		
Little Round 180357	1	1	100.00
Little Sand 110230	0	1	0.00
Lizotte 110231	0	3	0.00
Lizzie 180416	0	2	0.00
Long 110454	0	1	0.00
Loon 110357	0	1	0.00
Lougee 180342	2	13	15.38
Louise 110156	0	3	0.00
Lower Hay 180378	13	28	46.43
Lows 180180	1	6	16.67
Lynch 180347	1	1	100.00
Markee 180343	1	4	25.00
Mary 180185	11	22	50.00
McClain 180267	0	1	0.00
Meyer 180301	1		
Minnie 180210	1	3	33.33
Mitchell 180294	9	14	64.29
Mitten 110114	0	1	0.00
Moorland 110057	0	1	0.00
Morrison 110006	5	6	83.33
Mud 110309	0	1	0.00
Mud 180166	3	5	60.00

Lake/Stream and Identification No.	Returns	Mailing	%
Mud 180353	1		
Mud Portage 110235	0	2	0.00
Mule 110047	0	4	0.00
Nelson 180411	3	10	30.00
Norway 110307	8	22	36.36
Norway Brook M-1-6-16	9	44	20.45
O'Brien 180227	2	10	20.00
Ossawinnamakee 180352	34	79	43.04
Ox 180288	1	11	9.09
Ox Yoke 110355	6	13	46.15
Peewee 110340	1	1	100.00
Pelican 180308	60	177	33.90
Perry 180186	4	9	44.44
Pickerel 110352	2	6	33.33
Pickerel 180205	1	3	33.33
Pig 110341	0	1	0.00
Pig 180354	6	16	37.50
Pine 180261	4	10	40.00
Pine Mountain 110411	9	27	33.33
Pine River M-106	22 <sup>9</sup>	13	169.23
Pleasant 180278	1	1	100.00
Rainy 110356	4	14	28.57
Rat 180344	0	1	0.00
Rock 180282	0	1	0.00
Roosevelt 110043	34	95	35.79
Ross 180165	6	13	46.15
Rush 110243	0	1	0.00
Rush 180311	16	40	40.00
Ruth 180212	18	40	45.00
Sanborn 110361	10	21	47.62
Sand (Bass) 180299	0	2	0.00
Sandbar 180251	24	59	40.68
Scribner 110441	0	1	0.00
Shaffer 180348	1	2	50.00
Smiley 110245	0	1	0.00
Smokey Hollow 180220	5	13	38.46
Snake 110251	1	1	100.00
South Fork Pine River M-106-13	2	9	22.2
South Haynes 110450	1	1	100.00
Spring Brook M-106-4-2-1	1	1	100.00
Square 180196	0	2	0.00
Star 180359	3	7	42.86

<sup>9</sup> Respondents may have indicated Norway Brook or South Fork Pine River as Pine River



Lake/Stream and Identification No.	Returns	Mailing	%
Stark 180169	0	1	0.00
Stevens 110116	3	3	100.00
Stewart 180367	1	1	100.00
Stony 110240	1		
Stony Creek M-106-17	0	1	0.00
Swede 110151	0	1	0.00
Swede 110368	1	3	33.33
Swede 110712	2	7	28.57
Sylvan 110246	4	11	36.36
Tamarack 110241	0	1	0.00
Tamarack 110249	1	1	100.00
Tamarack 180281	1	2	50.00
Tiff 180280	1	1	100.00
Trout 180218	1	7	14.29
Twenty Six 110117	0	1	0.00
Twin 180167	3	10	30.00
Two 110243	1	2	50.00
Unnamed 110238	0	1	0.00
Unnamed 110338	0	1	0.00
Unnamed 110579	0	1	0.00
Unnamed 110601	0	3	0.00
Unnamed 110667	0	1	0.00
Unnamed 110713	0	1	0.00
Unnamed 110843	1		
Unnamed 110864	0	1	0.00
Unnamed 180197	0	2	0.00
Unnamed 180228	0	1	0.00
Unnamed 180295	0	2	0.00
Unnamed 180413	0	1	0.00
Upper Hay 180412	9	17	52.94
Variety 110463	3	3	100.00
Velvet 180284	2	5	40.00
Washburn 110059	30	78	38.46
West Fox 180297	4	19	21.05
West Twin 180258	0	1	0.00
Whitefish 180310	56	109	51.38
Wood (Simpson) 180222	5	16	31.25
Young 180252	0	1	0.00
Water Body Unstated	32		
Total	783	2006	57.43

Table 7. Returns by Location, Survey of the Landowners in the Pine River Watershed, 2006

Location	Returns	%	Mailing	%
Riparian	783	70.10	2006	57.43
Non-Riparian	302	27.04	1487	42.57
Not Stated	32	2.86		
	1117		3493	

Table 8. Length of Ownership in Years, Survey of the Landowners in the Pine River Watershed, 2006

Mean Ownership	Number	Range <sup>10</sup>
20.7	1059	0.5- 126

Table 9. Returns by Residence Type and Length of Seasonal Use, Survey of the Landowners in the Pine River Watershed, 2006

Residence Type	Number	Days of Use per Year		
		Mean	Number	Range
Full time	416			
Seasonal	343	92.1	311	1 - 270
Weekend	312	60.2	281	1 - 240
Not Stated	46			
	1117	77.0	592	1 - 270

Table 10. Returns by Season of Use, Survey of the Landowners in the Pine River Watershed, 2006

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Seasonal	86	91	97	174	297	331	334	332	315	241	130	94
Weekend	150	146	144	202	275	286	289	287	271	242	181	144
Both	236	237	241	376	572	617	623	619	586	483	311	238

Table 11. Returns by Retirement Status, Survey of the Landowners in the Pine River Watershed, 2006

Retirement Status	Number
Retired	551
Not Retired	530
Not Stated	36

<sup>10</sup> An arbitrary value of 0.5 was given to all respondents that indicated that they had purchased or obtained their property in 2006.

Table 12. Returns by Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Property Use	Number
Residential	932
Commercial	9
Resort	17
Farm	23
Multiple	38
Not Stated	98

Table 13. Multiple Property Use Descriptions, Survey of the Landowners in the Pine River Watershed, 2006

Property Use	Number
Residential	36
Commercial	12
Resort	8
Farm	25
Number of Responses <sup>11</sup>	38

Table 14. Returns by Property Descriptions, Survey of the Landowners in the Pine River Watershed, 2006

Property Description	Number
No dwelling, no plans to build	48
No dwelling, plans to build	48
Seasonal dwelling, no plans to convert	155
Seasonal dwelling, plans to convert	66
Year around residence	777
Not stated	23
Total	1117

<sup>11</sup> Since these were responses indicated 2 or 3 property uses they will not sum to this number

Table 15. Returns by Recreational Use, Survey of the Landowners in the Pine River Watershed, 2006

Recreational Activity	Mean Rating <sup>12</sup>	Number
Esthetics (e.g. enjoying the beauty of scenery, a sunrise/sunset, etc.)	4.48	1037
Other*	4.35	79
Recreational Boating (all boating other than those listed)	3.95	897
Birding / Wildlife Observation	3.94	954
Swimming / Wading	3.91	908
Fishing (summer / winter)	3.78	970
Water Skiing / Tubing	3.40	688
Hunting	3.40	663
Hiking / Biking	3.32	894
Snowmobiling	3.03	539
Canoeing / Kayaking	2.99	680
Golfing	2.80	680
Off highway vehicle riding (ATV, off road motorcycle, 4X4 Truck)	2.76	555
Personal Watercraft (jet skis)	2.39	403
Sailing	2.36	387

* Relaxing / peace and quiet	12	Highway cleanup	1
Gardening	9	Making maple syrup	1
Cross country skiing	7	Paddleboating	1
Camping	6	Picnicking	1
Campfires	5	Reading	1
Rock hunting	4	Rollerblading	1
Horseback riding	3	Scuba	1
Snowshoeing	3	Sharing cabin with friends	1
Target shooting	3	Sky skiing	1
Tree farming / forestry	3	Softball / baseball	1
Motorcycling	2	Spending time with family	1
Shopping	2	Stargazing	1
Tennis	2	Underwater video	1
Trapping	2	Wildflower observation	1
Card playing	1	Wildlife habitat management	1
Dining out	1	Wind surfing	1
Enjoying clear water	1		

<sup>12</sup> where 1 is of low importance and 5 is of high importance

Table 16. Returns by Issue Agreement, Survey of the Landowners in the Pine River Watershed, 2006

Issue	Rated Value:					N <sup>13</sup>	Mean	Mode	Median	Don't Know
	1	2	3	4	5					
Developmental growth needs to be guided to prevent future problems.	533	248	99	64	66	1010	1.89	1	1	57
Local groups can be effective in maintaining or improving water quality.	377	405	124	57	46	1009	2.00	2	2	51
Sprawl and over development is an increasing problem.	389	318	158	63	67	995	2.10	1	2	60
Wetlands are at risk from increasing development and changing landscapes.	476	284	102	56	72	990	1.95	1	2	79
Reasonable accesses to water bodies are needed.	226	321	226	98	107	978	2.53	2	2	78
Boat noise and traffic are increasing to problem levels.	219	307	202	143	104	975	2.60	2	2	91
The current level of public information and education about lake and stream protection is adequate.	63	233	217	296	150	959	3.25	4	3	106
Phosphorus in the runoff from shoreline and lawns is an important water quality problem.	497	271	87	36	54	945	1.81	1	1	120
Too many landowners do not take proper care of their lakeshore.	220	308	230	114	53	925	2.43	2	2	139
Watershed sources of phosphorus are an important water quality problem.	418	301	123	36	37	915	1.88	1	2	150
Increased media coverage of watershed activities will improve watershed conditions.	209	327	219	86	71	912	2.43	2	2	149
Inappropriate off highway vehicle (ATV, off road motorcycle, 4X4 Truck) use is negatively affecting wetlands	349	225	130	81	105	890	2.29	1	2	177
More stakeholder involvement is needed to properly manage the watershed.	210	386	207	49	33	885	2.22	2	2	171
The enforcement of shoreland rules is adequate to protect lakes and streams.	100	229	200	220	135	884	3.07	2	3	180
There is adequate management to control the spread of non-native species.	44	165	176	257	226	868	3.53	4	4	195
Land values and property rights are being negatively affected by shoreland and land use rules.	113	164	290	185	114	866	3.03	3	3	195
The fisheries management activities of lakes and streams are appropriate.	72	312	206	144	85	819	2.83	2	3	240
The existence of private land management practices would have positive impacts.	169	309	234	65	38	815	2.38	2	2	238
Adequate monitoring is being done to identify water quality problems.	137	281	182	112	61	774	2.59	2	2	289
Erosion and runoff from road ditches is a problem.	142	231	231	90	62	756	2.60	2	3	304
Good buffer strips are present on lakes and streams to prevent erosion.	60	160	211	210	108	749	3.19	3	3	306
Identified water quality problems are being corrected.	67	215	213	117	58	670	2.83	2	3	388
Current inter-governmental coordination of ordinances and plans is adequate to protect the watershed.	100	118	202	126	100	646	3.01	3	3	415
Canoe accesses and portages are not adequate.	53	85	237	117	119	611	3.27	3	3	443

<sup>13</sup> "Don't Know" responses are not included. "Don't Know" responses are not used to calculate the mean agreement.

Table 17. Returns by Information Dispersal, Survey of the Landowners in the Pine River Watershed, 2006

Information Dispersal Method	Number <sup>14</sup>
Newsletter	887
Newspaper	347
Meetings	122
Website	353
Other (e-mail)	1

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<sup>14</sup> Respondents could indicate as many methods as they wished.

Table 18. Area in Acres of Governmental Units in the Pine River Watershed

Governmental Unit <sup>15</sup>	County	Daggett Brook	Little Pine River	Lower Pine River	South Fork Pine River	Upper Pine River	Total
Backus City	Cass					383	383
Badoura Township	Hubbard					57	57
Barclay Township	Cass			2281		7330	9611
Beulah Township	Cass	7416	7772				15188
Birch Lake Township	Cass					1690	1690
Blind Lake Township	Cass	1075		2150		9034	12259
Breezy Point City	Crow Wing			7311			7311
Bull Moose Township	Cass				19426	178	19604
Bungo Township	Cass				18518		18518
Center Township	Crow Wing			252			252
Chickamaw Beach	Cass			114		1520	1634
Crooked Lake Township	Cass	23004					23004
Crosslake City	Crow Wing	2893		20723			23616
Deerfield Township	Cass				1910	13028	14938
Emily City	Crow Wing	7806	10424	4858			23088
Fairfield Township	Crow Wing		16783	3386			20169
Fifty Lakes City	Crow Wing	15196		6023			21219
Gail Lake Township	Crow Wing			7576		3992	11568
Hackensack City	Cass					1	1
Hiram Township	Cass					7110	7110
Ideal Township	Crow Wing			22343			22343
Jenkins City	Crow Wing			2729			2729
Jenkins Township	Crow Wing			8910			8910
Lake Edward Township	Crow Wing			1746			1746
Little Pine Township	Crow Wing	68	22828				22896
Loon Lake Township	Cass			144			144
Manhattan Beach City	Crow Wing			1141			1141
Mission Township	Crow Wing		780	13336			14116
Moose Lake Township	Cass				443		443
NW Aitkin Unorganized	Aitkin		11982				11982

<sup>15</sup> Shaded cells indicate the governmental unit with the largest land area in the subwatershed.

Governmental Unit <sup>15</sup>	County	Daggett Brook	Little Pine River	Lower Pine River	South Fork Pine River	Upper Pine River	Total
Pelican Township	Crow Wing			10026			10026
Pequot Lakes City	Crow Wing			1225			1225
Perry Lake Township	Crow Wing		4354	3200			7554
Pine River City	Cass			193	137	406	736
Pine River Township	Cass				16346	6663	23009
Ponto Lake Township	Cass					19757	19757
Powers Township	Cass					21385	21385
Ross Lake Township	Crow Wing		15635				15635
Thunder Lake Township	Cass	6205					6205
Timothy Township	Crow Wing	13		20598		2157	22768
Trelipe Township	Cass	29938					29938
Walden Township	Cass			1381	14499		15889
White Oak Township	Hubbard					289	289
Wilson Township	Cass			9266	363	390	10019
Woodrow Township	Cass					89	89
TOTAL		93614	90560	150910	71641	95460	502189



Table 19. Returns by Location Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Location	Cass	%	Crow Wing	%
Non-Riparian	147	37.1	148	21.7
Riparian	249	62.9	534	78.3
	396	100.0	682	100.0

Table 20. Length of Ownership in Years Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

County	Mean Ownership <sup>16</sup>	Number	Range
Cass	20.3	385	0.5-111
Crow Wing	20.9	667	0.5-126

Table 21. Returns by Residence Type and Length of Seasonal Use Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Residence Type		Number	Days of Use per Year		
Full time	Cass	178			
	Crow Wing	231			
	Cass & Crow Wing	409			
Seasonal	Cass	104	Mean <sup>17</sup>	Number	Range
	Crow Wing	237	103.3	95	2-270
		341	93.0	214	1-270
Weekend	Cass	110	58.6	105	3-200
	Crow Wing	201	61.5	175	1-240
		311			
Seasonal and Weekend Combined <sup>18</sup>	Cass	214	73.6	200	2-270
	Crow Wing	438	78.8	389	1-270

<sup>16</sup>The mean length of ownership was not significantly different at the 95 percent confidence level,  $z = -0.48$

<sup>17</sup> The mean days of use per year by seasonal residents was significantly greater at the 95 percent confidence level than for weekend residents for the comparisons: Cass County,  $z = 4.05$ ; Crow Wing County,  $z = 6.11$

<sup>18</sup> The mean days of use per year for seasonal and weekend resident combined was not significantly different between Cass County respondents and Crow Wing County respondents,  $z = -1.09$

Table 22. Returns by Season of Use<sup>19</sup> Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Cass	76	80	80	120	185	194	191	190	188	161	112	79
%	36.2	38.1	38.1	57.1	88.1	92.4	91.0	90.5	89.5	76.7	53.3	37.6
(N = 210)												
Crow Wing	148	145	147	243	372	407	415	413	382	307	186	147
%	34.9	34.2	34.7	57.3	87.7	96.0	97.9	97.4	90.1	72.4	43.9	34.7
(N = 424)												

Table 23. Returns by Retirement Status Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Retirement Status	Cass	Crow Wing
Retired	203	344
Not Retired	191	334
Not Stated	8	16

Table 24. Returns by Property Use Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Property Use	Cass	Crow Wing
Residential	328	596
Commercial	4	5
Resort	3	14
Farm	13	9
Multiple	21	17
Not Stated	33	53
	402	694

Table 25. Multiple Property Use Descriptions Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Property Use	Cass	Crow Wing
Residential	19	17
Commercial	7	5
Resort	2	4
Farm	17	10
Number of Responses <sup>20</sup>	21	17

<sup>19</sup> Seasonal and weekend respondents are combined

<sup>20</sup> Since these were responses indicated 2 or 3 property uses they will not sum to this number

Table 26. Returns by Property Descriptions Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Property Description	Cass	Crow Wing
No dwelling, no plans to build	16	31
No dwelling, plans to build	15	32
Seasonal dwelling, no plans to convert	58	96
Seasonal dwelling, plans to convert	25	40
Year around residence	284	487
Not stated	4	8
Total	402	694

Table 27. Returns by Recreational Use Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Recreational Activity	Cass		Crow Wing	
	Mean Rating	Number	Mean Rating	Number
Esthetics	4.44	374	4.50	655
Fishing (summer / winter)	3.85	348	3.73	615
Birding / Wildlife Observation <sup>21</sup>	4.07	350	3.86	596
<u>Recreational Boating</u>	3.67	298	4.08	591
<u>Swimming / Wading</u>	3.71	312	4.00	590
Hiking / Biking	3.31	315	3.32	571
Hunting	3.59	266	3.27	392
Golfing	2.41	213	2.98	462
Canoeing / Kayaking	3.06	232	2.94	443
Water Skiing / Tubing	3.17	210	3.49	471
Snowmobiling	2.86	175	3.09	356
Off highway vehicle riding	2.88	225	2.64	322
Personal Watercraft	1.96	112	2.55	287
Sailing	2.16	118	2.43	265
Other <sup>22</sup>	4.45	38	4.27	41
Total Responses		393		681

<sup>21</sup> Activities that are underlined indicate a significant difference in importance at the 95 percent confidence level when comparing Cass County and Crow Wing County respondents (recreational boating,  $z = -4.45$ ; birding,  $z = 2.62$ ; swimming,  $z = -3.37$ ; water skiing,  $z = -2.86$ ; hunting,  $z = 2.67$ ; golf,  $z = -5.07$  and personal watercraft,  $z = -3.72$ )

<sup>22</sup> See Table 15 for activities included in the "other" category

Table 28. Returns by Issue Agreement Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Issue	Cass		Crow Wing	
	Mean Agreement	Number	Mean Agreement	Number
<u>Monitoring</u> <sup>23</sup>	2.81	262	2.48	506
Boat noise and traffic	2.64	336	2.58	631
Canoe accesses	3.19	206	3.31	398
Inter-governmental coordination	3.09	222	2.97	416
Developmental growth	1.91	364	1.89	637
<u>Erosion</u>	2.48	284	2.68	467
Buffer strips	3.15	267	3.24	475
Water quality	2.93	212	2.79	451
Off highway vehicle	2.23	335	2.33	547
Media coverage of watershed activities	2.42	318	2.44	585
Land values and property rights	3.06	301	3.02	557
Local groups	2.05	359	1.97	640
Stakeholder involvement	2.23	306	2.22	571
Phosphorus in the runoff from shoreline	1.90	334	1.77	602
Reasonable accesses	2.54	353	2.53	616
Sprawl and over development	2.15	355	2.07	631
<u>Public information and education</u>	3.36	333	3.19	617
Enforcement of shoreland rules	3.08	306	3.06	570
Private land management practices	2.41	293	2.37	514
Fisheries management activities	2.91	300	2.79	511
Exotic species.	3.53	303	3.52	557
Landowners do not take proper care	2.38	317	2.46	599
Watershed sources of phosphorus	1.92	315	1.86	590
Wetlands are at risk	1.92	353	1.96	627
Total Responses		386		675

<sup>23</sup> Issues that are underlined indicate a significant difference in importance at the 95 percent confidence level when comparing Cass County and Crow Wing County respondents (monitoring,  $z = 3.64$ ; erosion,  $z = -2.34$  and information,  $z = 2.19$ )

Table 29. Returns by Information Dispersal Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Information Dispersal Method	Cass	Crow Wing
Newsletter	321	547
Newspaper	139	204
Meetings	44	76
Website	123	229
Other (e-mail)	1	0

Table 30. Returns by Location Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Location	Non-Riparian	%	Riparian	%
Cass	145	49.1	242	30.9
Crow Wing	150	50.8	541	69.1
	295	99.9	783	100.0

Table 31. Length of Ownership in Years Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

	Mean Ownership	Number	Range
Non-Riparian	17.9	284	0.5-100
Riparian	21.7 <sup>24</sup>	754	0.5-126

<sup>24</sup> The mean length of ownership by riparian owners was significantly different (longer) at the 95 percent confidence level than for non-riparian owners ( $z = -3.014$ )

Table 32. Returns by Residence Type and Length of Seasonal Use Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Residence Type		Number	Days of Use per Year		
			Mean	Number	Range
Full time	Non-Riparian	177			
	Riparian	231			
	Both	408			
Seasonal	Non-Riparian	47	89.8 <sup>25</sup>	38	1-210
	Riparian	286	92.8 <sup>26</sup>	263	3-270
	Both	333	92.5	301	1-270
Weekend	Non-Riparian	52	56.7	46	1-130
	Riparian	255	60.2	231	3-240
	Both	307	60.0	277	1-240
Seasonal and Weekend Combined	Non-Riparian	99	71.7	84	1-210
	Riparian	541	77.8	494	3-270
	Both	640	76.9	578	1-270

Table 33. Returns by Season of Use Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Non-Riparian	37	40	40	54	73	81	81	80	78	70	57	39
(N = 95)	% 38.9	42.1	42.1	56.8	76.8	85.3	85.3	84.2	82.1	73.7	60.0	41.0
Riparian	181	180	182	299	472	508	514	511	480	390	235	182
(N =528)	% 34.3	34.1	34.5	56.6	89.4	96.2	97.3	96.8	90.9	73.9	44.5	34.5

<sup>25</sup> Non-riparian seasonal mean days of use was significantly greater at the 95 percent confidence level than non-riparian weekend mean days of use (z=2.53)

<sup>26</sup> Riparian seasonal mean days of use was significantly greater at the 95 percent confidence level than riparian weekend mean days of use (z=7.02)

Table 34. Returns by Retirement Status Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Retirement Status	Non-Riparian	Riparian
Retired	132	406
Not Retired	161	360
Not Stated	2	17

Table 35. Returns by Property Use Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Property Use	Non-Riparian	Riparian
Residential	222	692
Commercial	7	2
Resort	0	21
Farm	17	5
Multiple	15	21
Not Stated	41	41

Table 36. Multiple Property Use Descriptions Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Property Use	Non-Riparian	Riparian
Residential	15	18
Commercial	4	8
Resort	1	5
Farm	12	12
Number of Responses <sup>27</sup>	15	21

Table 37. Returns by Property Descriptions Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Property Description	Non-Riparian	Riparian
No dwelling, no plans to build	26	20
No dwelling, plans to build	23	24
Seasonal dwelling, no plans to convert	16	135
Seasonal dwelling, plans to convert	8	57
Year around residence	222	540
Not stated	0	17
Total	295	783

<sup>27</sup> Since these were responses indicated 2 or 3 property uses they will not sum to this number

Table 38. Returns by Recreational Use Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Recreational Activity <sup>28</sup>	Non-Riparian		Riparian	
	Mean Rating	Number	Mean Rating	Number
Other <sup>29</sup>	4.48	21	4.31	58
<u>Esthetics</u>	4.29	269	4.56	750
Birding / Wildlife Observation	3.97	256	3.94	680
Hunting	3.88	203	3.19	448
Fishing (summer / winter)	3.83	238	3.77	714
Recreational Boating	3.52	190	4.07	691
Swimming / Wading	3.50	198	4.03	695
Hiking / Biking	3.33	220	3.31	658
Snowmobiling	3.22	129	2.96	398
<u>Off highway vehicle riding</u>	3.17	157	2.57	387
Water Skiing / Tubing	3.0	138	3.51	538
Canoeing / Kayaking	2.88	148	3.02	519
Golfing	2.77	154	2.82	513
Personal Watercraft	2.08	88	2.50	310
Sailing	2.03	76	2.44	305
Total Responses		287		774

<sup>28</sup> Activities that are underlined indicate a significant difference in importance at the 95 percent confidence level when comparing Non-Riparian and Riparian respondents (esthetics,  $z = -3.68$ ; hunting,  $z = 5.46$ , off highway vehicle riding,  $z = 4.09$ ; personal watercraft,  $z = -2.51$ ; recreational boating,  $z = -4.90$ ; sailing,  $z = -2.35$ ; swimming,  $z = -5.1$  and water skiing,  $z = -3.82$ )

<sup>29</sup> See Table 15 for activities included in the “other” category



Table 39. Returns by Issue Agreement Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Issue	Non-Riparian		Riparian	
	Mean Agreement	Number	Mean Agreement	Number
Monitoring <sup>30</sup>	2.70	190	2.56	571
Boat noise and traffic	2.59	225	2.60	731
<u>Canoe accesses</u>	2.88	147	3.39	451
Inter-governmental coordination	2.88	176	3.06	457
Developmental growth	1.95	263	1.88	726
Erosion	2.68	222	2.58	520
Buffer strips	3.19	190	3.19	546
Water quality	2.70	169	2.87	489
Off highway vehicle	2.33	240	2.29	631
Media coverage of watershed activities	2.54	241	2.40	651
<u>Land values and property rights</u>	2.89	216	3.09	635
Local groups	2.09	259	1.97	728
<u>Stakeholder involvement</u>	2.34	234	2.17	634
Phosphorus in the runoff from shoreline	1.91	241	1.78	686
<u>Reasonable accesses</u>	2.18	259	2.67	699
Sprawl and over development	2.01	255	2.13	718
Public information and education	3.27	240	3.24	700
Enforcement of shoreland rules	3.04	227	3.08	639
Private land management practices	2.35	214	2.38	585
Fisheries management activities	2.82	213	2.85	592
Exotic species.	3.40	218	3.57	634
Landowners do not take proper care	2.43	227	2.44	679
Watershed sources of phosphorus	2.03	232	1.83	665
Wetlands are at risk	2.0	268	1.93	701
Total Responses		281		767

<sup>30</sup> Issues that are underlined indicate a significant difference in importance at the 95 percent confidence level when comparing non-riparian and riparian respondents (canoe access,  $z=-4.67$ ; stakeholder involvement,  $z=2.19$  and reasonable accesses,  $z=-5.49$ )

Table 40. Returns by Information Dispersal Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Information Dispersal Method	Non-Riparian	Riparian
Newsletter	225	641
Newspaper	113	228
Meetings	22	96
Website	71	274
Other (e-mail)	0	1

Table 41. Returns by Location Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Location	Full-time	%	Seasonal	%	Weekend	%
Non-Riparian	177	43.4	47	14.1	52	16.9
Riparian	231	56.6	286	85.9	255	82.1

Table 42. Length of Ownership in Years Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Resident Status	Mean Ownership <sup>31</sup>	Number	Range
Full-time	20.2	399	0.5-98
Seasonal	24.6	326	1-126
Weekend	17.0	302	0.5-83

Table 43. Returns by Retirement Status Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Resident Status	Retired	Not Retired
Full-time	246	157
Seasonal	204	135
Weekend	86	222
	536	514

<sup>31</sup> The mean length of ownership by seasonal owners was significantly different (longer) at the 95 percent confidence level than for full-time owners ( $z = -3.15$ ) and weekend owners ( $z=5.096$ ); the mean length of ownership by full-time owners was significantly different (longer) at the 95 percent confidence level than for weekend owners ( $z=2.33$ );

Table 44. Returns by Property Use Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Property Use	Full-time	Seasonal	Weekend
Residential	360	293	269
Commercial	5	0	3
Resort	2	9	12 <sup>32</sup>
Farm	15	2	3
Multiple	27	10	1
	409	314	2885

Table 45. Multiple Property Use Descriptions Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Property Use	Full-time	Seasonal	Weekend
Residential	26	9	1
Commercial	10	2	
Resort	5	3	
Farm	17	7	1
Number of Responses <sup>33</sup>	27	10	1

Table 46. Returns by Property Descriptions Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Property Description	Full-time	Seasonal	Weekend
No dwelling, no plans to build	<u>7</u> <sup>34</sup>	11	16
No dwelling, plans to build	<u>7</u>	15	16
Seasonal dwelling, no plans to convert	<u>2</u>	94	59
Seasonal dwelling, plans to convert	<u>2</u>	26	38
Year around residence	395	195	181
Total	413	341	310

<sup>32</sup> Probably means seasonal residence

<sup>33</sup> Since these were responses indicated 2 or 3 property uses they will not sum to this number

<sup>34</sup> Underlined entries are problematic responses

Table 47. Returns by Recreational Use Comparing Full-time and Less than Full-time Resident<sup>35</sup> Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Recreational Activity <sup>36</sup>	Full-time		Less than Full-time	
	Mean Rating	Number	Mean Rating	Number
Esthetics	4.49	387	4.48	629
Other <sup>37</sup>	4.44	27	4.31	52
Recreational Boating	3.74	305	4.09	576
Swimming / Wading	3.70	307	4.05	582
Birding / Wildlife Observation	4.16	365	3.80	568
Fishing (summer / winter)	3.85	347	3.74	601
Water Skiing / Tubing	3.04	204	3.57	471
Hiking / Biking	3.37	326	3.30	549
Hunting	3.68	259	3.23	391
Canoeing / Kayaking	2.98	225	3.00	442
Snowmobiling	3.10	193	2.99	333
Golfing	2.87	216	2.77	450
Off highway vehicle riding	2.83	210	2.73	333
Personal Watercraft	2.17	123	2.50	272
Sailing	2.27	124	2.40	256
Total Responses		402		343

<sup>35</sup> Less than full-time residents are seasonal and weekend residents combined.

<sup>36</sup> Activities that are underlined indicate a significant difference in importance at the 95 percent confidence level when comparing full-time and less than full-time residents (birding,  $z=4.67$ ; hunting,  $z=3.70$ ; personal watercraft,  $z=-2.04$ ; recreational boating,  $z=-3.79$ ; swimming,  $z=-3.95$ ; and water skiing,  $z=-4.56$ )

<sup>37</sup> See Table 15 for activities included in the "other" category

Table 48. Returns by Issue Agreement Comparing Full-time and Less than Full-time Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Issue	Full-time		Less than Full-time	
	Mean Agreement	Number	Mean Agreement	Number
Exotic species.	3.52	330	3.53	520
Buffer strips	3.27	299	3.14	436
Public information and education	3.25	360	3.24	580
Canoe accesses	3.16	228	3.35	373
Enforcement of shoreland rules	3.16	338	3.02	526
Inter-governmental coordination	3.05	273	2.99	360
<u>Fisheries management activities</u>	2.93	313	2.76	489
<u>Land values and property rights</u>	2.91	324	3.09	523
Water quality	2.84	274	2.80	380
Monitoring <sup>38</sup>	2.65	305	2.55	454
<u>Erosion</u>	2.47	313	2.69	430
<u>Boat noise and traffic</u>	2.45	357	2.69	600
<u>Reasonable accesses</u>	2.42	365	2.60	591
Media coverage of watershed activities	2.39	349	2.47	543
Private land management practices	2.36	317	2.40	480
<u>Landowners do not take proper care</u>	2.33	345	2.49	559
Stakeholder involvement	2.21	345	2.22	522
<u>Off highway vehicle</u>	2.15	358	2.41	510
Local groups	2.04	377	1.97	609
<u>Sprawl and over development</u>	2.00	373	2.16	600
Wetlands are at risk	1.91	379	1.98	587
Watershed sources of phosphorus	1.88	345	1.89	550
Phosphorus in the runoff from shoreline	1.85	362	1.80	561
Developmental growth	1.80	387	1.94	601
Total Responses		402		643

<sup>38</sup> Issues that are underlined indicate a significant difference in importance at the 95 percent confidence level when comparing full-time and less than full-time residents respondents (noise,  $z=-2.86$ ; erosion,  $z=-2.57$ ; off highway vehicles,  $z=-2.76$ ; land values,  $z=-2.07$ ; reasonable accesses,  $z=-2.13$ ; sprawl,  $-2.02$ ; fisheries management,  $z= 2.0$ ; landowners do not take proper care of their lakeshore,  $z= -2.06$ )

Table 49. Returns by Information Dispersal Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Information Dispersal Method	Full-time	Seasonal	Weekend	Less than Full-time
Newsletter	322	269	261	530
Newspaper	194	84	61	145
Meetings	63	33	25	58
Website	95	123	128	151
Other (e-mail)	0	1	0	1

Table 50. Returns by Governmental Unit<sup>39</sup> Comparing Non-Riparian and Riparian Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Non Riparian	Riparian	Unstated	Number
Barclay Township	20	17	0	37
Beulah Township	3	6	0	9
Birch Lake Township	5	2	0	7
Breezy Point	39	51	0	90
Crooked Lake Township	10	80	2	92
Crosslake	16	79	0	95
Deerfield Township	2	7	0	9
Emily	6	65	1	72
Fairfield Township	6	21	1	28
Fifty Lakes	8	36	3	47
Gail Lake Township	7	5	1	13
Hiram Township	1	4	0	5
Ideal Township	12	126	1	139
Jenkins /Jenkins Township	14	29	0	43
Manhattan Beach	2	8	0	10
Mission Township	13	41	3	57
Pelican Township	6	29	0	35
Perry Lake Township	2	5	0	7
Pine River/Pine River Township	47	12	1	60
Ponto Lake Township	13	44	1	58
Powers Township	14	55	0	69
Ross Lake Township	6	21	0	27
Thunder Lake Township	2	3	1	6
Timothy Township	5	6	0	11
	259	752	15	1026

<sup>39</sup> Only those units with 30 or more returns or a 30 percent or more return

Table 51. Returns by Governmental Unit Comparing Retirement Status, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Retired	Working	Unstated	Number
Barclay Township	20	17	0	37
Beulah Township	5	4	0	9
Birch Lake Township	1	6	0	7
Breezy Point	39	49	2	90
Crooked Lake Township	51	41	0	92
Crosslake	44	45	6	95
Deerfield Township	5	4	0	9
Emily	32	38	2	72
Fairfield Township	12	16	0	28
Fifty Lakes	18	29	0	47
Gail Lake Township	7	6	0	13
Hiram Township	1	4	0	5
Ideal Township	83	54	2	139
Jenkins /Jenkins Township	22	19	2	43
Manhattan Beach	7	3	0	10
Mission Township	28	28	1	57
Pelican Township	22	13	0	35
Perry Lake Township	5	2	0	7
Pine River/Pine River Township	30	29	1	60
Ponto Lake Township	26	31	1	58
Powers Township	39	28	2	69
Ross Lake Township	9	17	1	27
Thunder Lake Township	4	2	0	6
Timothy Township	4	7	0	11
	514	492	20	1026

Table 52. Returns by Governmental Comparing Full-time, Seasonal and Weekend Resident Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Full Time	Seasonal	Weekend	Unstated	Number
Barclay Township	23	5	5	4	37
Beulah Township	2	3	4	0	9
Birch Lake Township	3	0	4	0	7
Breezy Point	23	30	24	13	90
Crooked Lake Township	22	31	38	1	92
Crosslake	32	32	29	2	95
Deerfield Township	3	0	6	0	9
Emily	21	19	31	1	72
Fairfield Township	11	9	7	1	28
Fifty Lakes	14	16	16	1	47
Gail Lake Township	6	3	4	0	13
Hiram Township	0	0	5	0	5
Ideal Township	44	56	37	2	139
Jenkins /Jenkins Township	22	15	5	1	43
Manhattan Beach	2	2	5	1	10
Mission Township	21	23	12	1	57
Pelican Township	18	14	3	0	35
Perry Lake Township	3	0	4	0	7
Pine River/Pine River Township	45	9	4	2	60
Ponto Lake Township	18	23	17	0	58
Powers Township	29	22	17	1	69
Ross Lake Township	4	7	0	16	27
Thunder Lake Township	1	1	4	0	6
Timothy Township	3	5	2	1	11
	370	325	283	48	1026



Table 53. Length of Ownership in Years by Governmental Unit, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Years			Number
	Owned	Responses	Unstated	
Barclay Township	21.4	35	2	37
Beulah Township	30.4	9	0	9
Birch Lake Township	24.9	7	0	7
Breezy Point	16.6	85	5	90
Crooked Lake Township	20.9	91	1	92
Crosslake	17.7	92	3	95
Deerfield Township	16.8	8	1	9
Emily	19.8	69	3	72
Fairfield Township	18.3	28	0	28
Fifty Lakes	19.7	46	1	47
Gail Lake Township	22.7	12	1	13
Hiram Township	19.6	5	0	5
Ideal Township	25.9	134	5	139
Jenkins /Jenkins Township	19.8	43	0	43
Manhattan Beach	25.9	10	0	10
Mission Township	22.0	53	4	57
Pelican Township	23.7	33	2	35
Perry Lake Township	31.1	7	0	7
Pine River/Pine River Township	13.8	56	4	60
Ponto Lake Township	20.8	54	4	58
Powers Township	21.0	67	2	69
Ross Lake Township	14.6	27	0	27
Thunder Lake Township	30.7	6	0	6
Timothy Township	37.0	8	3	11
	20.7	985	41	1026

Table 54. Returns by Governmental Unit Comparing Length of Seasonal and Weekend Use<sup>40</sup>, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Days/Year	Number
Barclay Township	78.9	9
Beulah Township	72.1	7
Birch Lake Township	25.0	4
Breezy Point	88.5	44
Crooked Lake Township	79.6	65
Crosslake	77.7	59
Deerfield Township	38.5	6
Emily	83.7	43
Fairfield Township	63.5	13
Fifty Lakes	67.5	30
Gail Lake Township	82.2	5
Hiram Township	65.0	5
Ideal Township	89.1	83
Jenkins /Jenkins Township	109.4	17
Manhattan Beach	35.8	6
Mission Township	86.7	31
Pelican Township	56.4	16
Perry Lake Township	20.0	2
Pine River/Pine River Township	115.7	11
Ponto Lake Township	53.5	36
Powers Township	76.2	38
Ross Lake Township	55.1	22
Thunder Lake Township	164.0	5
Timothy Township	57.9	7
		564

<sup>40</sup> Seasonal and weekend data are combined

Table 55. Returns by Season of Use<sup>41</sup> Comparing Cass and Crow Wing County Respondents, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Number	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Barclay Township	10	3	3	3	6	9	9	9	9	8	6	5	4
Beulah Township	6	3	3	3	4	5	6	6	6	5	5	5	2
Birch Lake Township	4	1	1	1	0	1	2	0	1	3	3	4	1
Breezy Point	52	16	15	17	25	43	50	50	50	45	34	16	14
Crooked Lake Township	68	33	37	34	48	64	66	66	65	64	62	44	34
Crosslake	60	26	26	28	32	52	57	59	59	53	42	30	26
Deerfield Township	6	3	3	3	5	6	5	5	5	5	6	5	4
Emily	49	22	23	23	32	41	45	46	46	42	34	28	22
Fairfield Township	16	4	4	3	9	14	14	15	15	14	10	7	4
Fifty Lakes	32	12	12	11	22	29	30	32	32	31	25	16	13
Gail Lake Township	6	3	3	3	3	6	6	6	6	6	4	4	3
Hiram Township	5	3	3	1	3	4	5	5	5	5	4	5	2
Ideal Township	91	31	29	26	45	78	90	91	91	81	63	33	28
Jenkins /Jenkins Township	20	5	6	8	14	18	20	20	20	20	16	9	7
Manhattan Beach	6	3	2	2	4	5	6	6	6	5	5	3	1
Mission Township	33	7	6	7	18	31	33	33	33	32	27	11	8
Pelican Township	16	3	3	2	9	14	15	16	15	14	9	4	3
Perry Lake Township	2	0	0	0	1	2	1	1	1	1	2	1	0
Pine River/Pine River Township	13	1	1	4	7	13	13	12	12	13	9	3	2
Ponto Lake Township	39	11	10	9	17	31	33	34	33	33	25	13	10
Powers Township	38	9	9	12	18	36	37	35	36	34	27	13	11
Ross Lake Township	22	11	10	10	16	22	22	22	22	21	19	13	12
Thunder Lake Township	5	5	5	5	5	5	5	5	5	5	5	5	5
Timothy Township	7	2	3	3	4	5	6	6	5	6	7	6	3
	606												

<sup>41</sup>Seasonal and weekend respondents are combined

Table 56. Returns by Governmental Unit Comparing Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Number	Residential	Commercial	Resort	Farm	Multiple	Unstated
Barclay Township	37	30	1	1	1	1	3
Beulah Township	9	9	0	0	0	0	0
Birch Lake Township	7	1	1	0	1	2	2
Breezy Point	90	71	0	4	1	2	12
Crooked Lake Township	92	79	0	1	1	5	6
Crosslake	95	84	0	2	1	1	7
Deerfield Township	9	8	0	0	1	0	0
Emily	72	66	1	0	0	0	5
Fairfield Township	28	25	0	1	0	0	2
Fifty Lakes	47	37	1	0	1	2	6
Gail Lake Township	13	9	0	1	1	1	1
Hiram Township	5	5	0	0	0	0	0
Ideal Township	139	127	0	3	1	5	3
Jenkins /Jenkins Township	43	35	2	0	1	3	2
Manhattan Beach	10	8	0	1	0	0	1
Mission Township	57	52	0	1	0	1	3
Pelican Township	35	31	0	1	0	1	2
Perry Lake Township	7	5	1	0	0	1	0
Pine River/Pine River Township	60	54	0	0	0	3	3
Ponto Lake Township	58	44	0	2	1	2	9
Powers Township	69	60	1	0	1	2	5
Ross Lake Township	27	22	0	3	0	0	2
Thunder Lake Township	6	5	0	0	0	0	1
Timothy Township	11	7	0	0	1	0	3
	1026	874	8	22	13	32	76

Table 57. Returns by Governmental Unit Comparing Property Descriptions, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Number	No Dwelling No plans	No Dwelling Plans	Seasonal Dwelling No Plans	Seasonal Dwelling Plans	Year Around Dwelling	Unstated
Barclay Township	37	2	1	4	2	27	1
Beulah Township	9	0	0	1	1	7	0
Birch Lake Township	7	1	1	2	0	3	0
Breezy Point	90	7	11	7	5	58	2
Crooked Lake Township	92	4	3	12	11	62	0
Crosslake	95	3	3	10	4	74	1
Deerfield Township	9	1	0	2	1	5	0
Emily	72	4	3	14	1	50	0
Fairfield Township	28	1	5	4	1	17	0
Fifty Lakes	47	1	2	6	6	31	1
Gail Lake Township	13	2	0	1	0	10	0
Hiram Township	5	0	0	2	1	2	0
Ideal Township	139	1	2	21	9	105	1
Jenkins /Jenkins Township	43	1	1	3	2	36	0
Manhattan Beach	10	0	0	4	0	5	1
Mission Township	57	2	1	6	6	6	36
Pelican Township	35	2	1	8	1	23	0
Perry Lake Township	7	1	0	2	0	4	0
Pine River/Pine River Township	60	1	0	3	2	2	52
Ponto Lake Township	58	3	5	13	3	33	1
Powers Township	69	0	2	13	4	50	0
Ross Lake Township	27	2	2	6	2	15	0
Thunder Lake Township	6	1	0	1	0	4	0
Timothy Township	11	3	1	2	0	5	0
	1026	43	44	147	62	634	96

Table 58. Returns by Governmental Unit Comparing Information Dispersal, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Newsletter	Newspaper	Meetings	Website	Other
Barclay Township	32	9	3	7	0
Beulah Township	7	2	3	3	0
Birch Lake Township	7	3	0	2	0
Breezy Point	60	36	8	26	0
Crooked Lake Township	80	31	12	43	0
Crosslake	73	31	10	30	0
Deerfield Township	9	5	2	4	0
Emily	55	15	7	29	0
Fairfield Township	24	6	3	10	0
Fifty Lakes	38	13	3	26	0
Gail Lake Township	8	2	1	3	0
Hiram Township	3	1	0	0	0
Ideal Township	117	44	22	42	0
Jenkins /Jenkins Township	34	16	6	12	0
Manhattan Beach	8	1	0	1	0
Mission Township	46	17	5	21	0
Pelican Township	27	10	4	15	0
Perry Lake Township	7	2	1	1	0
Pine River/Pine River Township	44	29	9	10	0
Ponto Lake Township	43	17	4	19	1
Powers Township	55	22	10	18	0
Ross Lake Township	24	3	3	6	0
Thunder Lake Township	4	2	0	3	0
Timothy Township	9	3	0	1	0
	814	320	116	332	1

Table 59. Returns by Governmental Unit, Mean Importance of Recreational Use, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Number	Bird	Canoe	Esthetics	Fishing	Golf	Hike/Bike	Hunt	OHV/ATV	Pers Water	Rec Boat	Sail	Snowmobile	Swim/Wade	Water Ski	Other
Barclay Township	34	3.94	3.25	4.25	3.71	2.37	3.27	3.52	2.00	1.50	3.36	1.77	2.56	3.21	2.56	5.00
Beulah Township	8	3.17	2.67	4.13	3.88	3.00	3.50	3.80	3.67	2.00	4.40	2.50	3.00	3.71	3.67	
Birch Lake Township	7	4.29	1.75	4.43	4.40	2.50	3.00	4.71	4.25	1.00	3.50	1.00	3.00	2.20	1.67	
Breezy Point	84	3.78	2.55	4.48	3.96	3.49	3.36	2.65	2.48	2.70	4.18	2.38	3.08	4.01	3.53	4.50
Crooked Lake Township	92	4.03	2.78	4.41	4.09	2.25	3.01	3.76	3.09	1.88	3.94	2.32	3.19	3.83	3.47	4.59
Crosslake	94	3.64	2.85	4.36	3.76	3.20	3.28	3.30	2.84	2.96	4.21	2.50	3.75	4.00	3.67	3.25
Deerfield Township	9	4.29	1.50	4.63	4.11	2.20	3.57	3.78	2.86	2.00	2.67	1.00	1.80	2.71	3.25	5.00
Emily	72	4.15	3.15	4.64	3.94	2.98	3.34	3.67	3.03	2.05	4.03	2.41	2.78	3.97	3.29	4.25
Fairfield Township	28	4.33	2.60	4.58	3.74	2.69	3.16	4.00	3.46	3.00	4.04	2.33	3.46	4.09	3.86	5.00
Fifty Lakes	47	3.95	2.94	4.50	3.89	2.47	3.33	3.31	2.30	2.00	4.02	2.29	2.90	4.07	3.39	4.40
Gail Lake Township	12	3.83	3.17	3.73	3.58	2.40	3.38	3.83	3.30	3.00	3.50	2.33	3.00	4.00	3.14	4.00
Hiram Township	5	4.00	3.00	4.75	4.20	2.50	4.50	4.20	3.50	1.50	3.40	3.00	4.00	3.50	4.33	3.00
Ideal Township	138	3.77	2.99	4.59	3.42	2.89	3.27	2.70	1.86	2.52	4.25	2.51	2.82	4.11	3.57	4.00
Jenkins /Jenkins Township	43	4.03	2.56	4.48	3.54	3.27	3.53	3.96	3.15	2.22	3.85	2.22	2.82	3.77	3.53	5.00
Manhattan Beach	9	3.43	2.50	4.78	4.00	2.71	2.13	2.25	1.00	3.29	4.56	3.50	3.40	3.78	3.43	5.00
Mission Township	56	3.80	3.09	4.48	3.67	2.67	3.41	3.24	3.00	2.71	3.96	2.61	3.22	3.83	3.53	4.71
Pelican Township	34	4.04	3.22	4.69	3.66	2.50	3.32	2.69	2.07	2.07	4.04	2.63	3.00	4.29	3.25	
Perry Lake Township	7	4.00	4.67	4.57	4.00	3.50	3.80	3.83	3.00	3.00	4.00	1.50	3.50	4.00	4.00	
Pine River/Pine River Township	59	4.33	3.20	4.40	3.83	3.38	3.67	3.53	3.07	2.50	3.48	2.09	3.10	3.53	2.77	5.00
Ponto Lake Township	58	3.68	3.19	4.46	3.49	2.32	3.33	2.86	2.44	2.22	3.63	2.67	2.78	3.98	3.33	4.33
Powers Township	68	4.33	3.17	4.56	3.95	2.32	3.36	3.50	2.65	1.75	3.62	2.00	2.56	4.02	3.14	4.20
Ross Lake Township	27	4.00	3.42	4.52	4.12	2.83	3.46	3.72	2.94	2.00	4.08	2.17	3.00	4.14	3.14	4.50
Thunder Lake Township	6	4.00	4.00	4.67	3.83	2.33	2.67	3.00	3.00	3.33	3.60	2.50	2.75	3.60	3.00	
Timothy Township	10	3.63	2.33	4.33	3.00	3.50	3.38	4.33	3.00	1.50	2.75	1.00	2.50	3.13	2.83	

1007

Table 60. Returns by Governmental Unit, Number of Responses of Recreational Use, Survey of the Landowners in the Pine River Watershed, 2006

Governmental Unit	Bird	Canoe	Esthetics	Fishing	Golf	Hike/Bike	Hunt	OHV/ATV	Pers Water	Rec Boat	Sail	Snowmobile	Swim/Wade	Water Ski	Other
Barclay Township	33	24	32	28	19	30	23	17	10	25	13	16	29	18	1
Beulah Township	6	3	8	8	2	4	5	3	1	5	2	2	7	3	
Birch Lake Township	7	4	7	5	4	7	7	4	1	2	1	3	5	3	
Breezy Point	68	47	80	75	63	69	43	31	37	67	32	38	72	60	4
Crooked Lake Township	79	58	87	87	48	79	66	57	26	82	28	48	83	60	17
Crosslake	83	65	90	82	71	79	47	44	50	87	36	55	81	69	4
Deerfield Township	7	2	8	9	5	7	9	7	2	6	2	5	7	4	1
Emily	67	53	70	64	46	59	45	38	21	58	22	32	65	48	4
Fairfield Township	24	20	26	27	16	25	14	13	6	24	6	13	23	14	2
Fifty Lakes	43	32	46	44	36	42	36	30	20	43	21	31	42	36	5
Gail Lake Township	12	6	11	12	5	8	12	10	6	8	3	7	7	7	1
Hiram Township	4	4	4	5	4	4	5	4	2	5	2	3	4	3	1
Ideal Township	120	99	134	125	104	116	74	57	64	129	69	74	129	108	6
Jenkins /Jenkins Township	39	27	42	39	26	36	26	20	18	39	18	17	35	30	1
Manhattan Beach	7	4	9	9	7	8	4	2	7	9	2	5	9	7	1
Mission Township	46	35	54	52	36	51	33	29	24	50	23	36	48	34	7
Pelican Township	28	18	32	32	20	25	16	14	14	27	16	17	31	24	
Perry Lake Township	7	3	7	6	2	5	6	2	1	5	2	2	4	3	
Pine River/Pine River Township	48	20	55	46	26	36	32	27	10	33	11	20	34	22	3
Ponto Lake Township	56	43	56	57	37	49	37	32	23	49	21	27	51	36	6
Powers Township	63	41	66	64	37	55	44	40	20	58	20	27	56	37	5
Ross Lake Township	26	19	27	26	12	24	18	17	8	24	6	13	22	14	4
Thunder Lake Township	6	3	6	6	6	6	5	5	3	5	4	4	5	3	
Timothy Township	8	3	9	8	6	8	6	5	4	8	1	4	8	6	
	887	633	966	916	638	832	613	508	378	848	361	499	857	649	73



Table 61. Returns by Governmental Unit, Mean Issue Agreement, Survey of the Landowners in the Pine River Watershed, 2006

Issue	Barclay Township	Beulah Township	Birch Lake Township	Breezy Point	Crooked Lake Township	Crosslake	Deerfield Township	Emily	Fairfield Township	Fifty Lakes	Gail Lake Township	Hiram Township
Monitor	2.89	2.80	3.75	2.11	2.67	2.57	2.50	2.45	3.19	2.57	3.17	2.50
Noise	3.07	2.38	3.17	2.85	2.60	2.22	3.00	2.85	2.38	2.78	3.00	2.75
Canoe	3.10	3.33	3.60	3.21	3.41	3.46	4.20	3.32	3.26	3.59	2.50	3.50
Coordination	2.78	4.20	2.60	2.87	3.14	2.94	3.17	3.08	3.11	3.04	2.14	2.50
Growth	1.91	2.17	2.29	2.28	1.92	2.00	1.38	1.84	1.96	1.98	1.67	1.67
Erosion	2.55	1.67	2.67	2.85	2.60	2.75	2.25	2.51	3.00	2.62	2.64	4.00
Buffer	3.04	3.50	2.80	2.94	3.28	3.14	2.88	3.06	3.05	3.19	3.22	3.00
Water	3.05	2.80	3.33	2.33	2.88	2.76	1.67	3.02	3.20	2.97	3.14	3.00
OHV	1.97	1.83	2.33	2.48	2.47	2.41	1.25	2.53	2.42	2.26	3.09	3.25
Media	2.52	2.33	3.33	2.73	2.59	2.58	2.14	2.32	2.42	2.68	2.91	2.50
Values	3.16	3.50	3.33	2.85	3.03	3.29	3.50	2.95	3.08	3.25	2.90	3.33
Local	2.48	1.33	2.50	2.06	2.03	2.03	2.00	2.09	2.04	1.91	2.36	2.25
Stakeholder	2.33	2.20	2.50	2.37	2.07	2.18	2.00	2.15	2.29	2.16	2.73	3.25
Phosphorus	2.00	1.71	1.50	1.93	1.91	1.73	1.86	1.60	1.72	1.86	1.90	2.25
Access	2.38	2.38	2.43	2.34	2.65	2.79	2.56	2.57	2.52	2.48	2.44	2.75
Sprawl	2.41	1.63	2.43	2.53	2.45	1.99	2.00	1.94	2.11	2.13	2.08	2.67
Information	3.40	3.43	3.00	2.97	3.24	3.20	3.25	3.38	3.19	3.25	3.60	3.50
Enforcement	2.81	3.50	2.67	2.68	2.99	3.11	3.29	3.33	2.92	3.21	3.44	3.00
Private	2.50	2.50	2.33	2.47	2.43	2.35	2.50	2.45	2.05	2.20	2.00	3.00
Fish	3.00	2.50	3.00	2.52	2.95	2.84	2.43	2.88	2.71	2.92	2.78	2.25
Exotics	3.48	3.57	3.33	3.43	3.68	3.54	3.86	3.55	3.79	3.59	3.33	2.50
Lakeshore	2.48	1.71	3.00	2.71	2.41	2.37	1.71	2.29	2.41	2.41	2.30	2.50
Watershed	2.07	1.57	1.67	2.19	1.99	1.89	1.33	1.78	1.84	1.93	1.57	2.25
Wetlands	1.90	1.25	2.00	2.40	2.14	1.95	2.00	1.94	2.08	2.07	1.91	2.80

Issue	Ideal Township	Jenkins/Jenkins Township	Manhattan Beach	Mission Township	Pelican Township	Perry Lake Township	Pine River/Pine River Township	Ponto Lake Township	Powers Township	Ross Lake Township	Thunder Lake Township	Timothy Township
Monitor	2.54	2.50	2.71	2.22	2.63	2.80	3.05	2.54	2.90	2.25	2.33	2.00
Noise	2.11	2.74	2.44	3.04	2.47	2.86	2.59	2.46	2.38	3.12	3.40	2.67
Canoe	3.14	3.26	3.50	3.58	3.06	3.50	2.65	3.45	2.86	4.20	3.75	3.50
Coordination	3.10	3.07	3.33	2.90	3.35	2.50	3.21	3.27	3.05	2.07	2.25	2.00
Growth	1.66	1.71	1.89	2.06	1.35	1.86	1.81	2.08	1.69	1.88	3.20	1.86
Erosion	2.35	2.79	1.86	3.11	2.57	3.00	2.27	2.58	2.19	3.18	3.75	1.50
Buffer	3.34	3.52	3.43	3.42	3.60	3.20	3.15	3.16	3.23	3.38	3.50	3.25
Water	2.78	2.58	3.17	2.83	2.96	3.00	2.97	3.00	3.14	2.79	2.67	2.50
OHV	1.93	2.35	3.00	2.47	1.88	2.29	2.24	2.10	2.07	2.43	2.60	2.00
Media	2.30	2.05	2.17	2.61	1.86	2.60	2.33	2.18	2.21	2.50	2.00	2.00
Values	3.08	2.67	3.17	3.07	2.64	2.86	3.03	2.93	3.14	3.13	3.00	2.83
Local	1.93	1.85	1.75	2.06	1.47	1.57	2.02	1.85	2.02	2.04	2.20	1.33
Stakeholder	2.13	2.03	2.38	2.58	1.77	2.60	2.44	2.17	2.14	2.42	2.50	1.60
Phosphorus	1.67	1.84	1.25	1.85	1.50	2.14	1.98	1.90	1.83	2.09	2.50	1.33
Access	2.60	2.50	2.78	2.57	2.32	2.86	2.06	2.70	2.79	2.28	2.50	2.14
Sprawl	1.87	2.08	2.11	2.17	1.77	2.43	1.86	2.19	1.92	2.19	2.60	2.14
Information	3.23	3.37	3.57	2.98	3.37	3.50	3.48	3.46	3.37	3.04	2.80	2.00
Enforcement	3.16	3.14	3.38	3.02	3.29	3.17	3.48	2.93	3.29	2.84	2.50	3.00
Private	2.30	2.44	2.20	2.74	1.91	2.40	2.50	2.32	2.11	2.41	2.33	2.67
Fish	2.83	2.92	3.25	2.85	2.54	2.75	2.98	2.74	2.89	2.90	4.00	2.00
Exotics	3.50	3.68	3.71	3.46	4.04	3.33	3.49	3.76	3.45	3.23	3.00	3.00
Lakeshore	2.33	2.53	2.89	2.48	2.29	2.67	2.13	2.71	2.07	2.76	2.40	2.33
Watershed	1.67	1.79	2.00	1.82	1.55	1.67	1.95	2.00	1.70	2.38	1.50	1.43
Wetlands	1.76	1.88	2.00	1.94	1.29	2.14	1.84	1.96	1.60	2.17	2.25	2.20

Table 62. Returns by Governmental Unit Comparing Issue Agreement Numbers, Survey of the Landowners in the Pine River Watershed, 2006

Issue	Barclay Township	Beulah Township	Birch Lake Township	Breezy Point	Crooked Lake Township	Crosslake	Deerfield Township	Emily	Fairfield Township	Fifty Lakes	Gail Lake Township	Hiram Township
Monitor	19	5	4	62	66	74	4	51	21	28	6	2
Noise	29	8	6	73	87	90	8	66	26	46	9	4
Canoe	21	3	5	42	44	57	5	44	19	32	8	4
Coordination	18	5	5	52	51	62	6	37	18	26	7	2
Growth	34	6	7	76	85	91	8	67	27	45	12	3
Erosion	29	6	6	54	65	65	8	53	17	34	11	2
Buffer	24	6	5	51	67	70	8	51	20	32	9	2
Water	20	5	3	51	49	72	3	41	15	30	7	2
OHV	31	6	6	64	75	81	8	58	24	39	11	4
Media	31	6	6	71	74	83	7	59	24	44	11	4
Values	25	6	6	66	79	85	8	55	24	36	10	3
Local	33	6	6	79	88	91	8	69	27	46	11	4
Stakeholder	30	5	6	71	71	82	6	62	24	43	11	4
Phosphorus	32	7	6	71	80	86	7	67	25	44	10	4
Access	32	8	7	74	84	89	9	61	27	42	9	4
Sprawl	29	8	7	74	82	91	9	62	27	46	13	3
Information	30	7	5	75	83	88	8	65	26	44	10	4
Enforcement	26	6	6	68	73	80	7	58	25	42	9	3
Private	24	6	6	62	74	75	6	55	22	35	8	4
Fish	27	8	5	62	78	68	7	49	21	37	9	4
Exotics	27	7	6	68	68	78	7	56	24	39	9	4
Lakeshore	29	7	7	70	83	87	7	63	27	44	10	4
Watershed	29	7	6	70	75	88	6	63	25	43	7	4
Wetlands	30	8	7	77	81	91	8	66	26	45	11	5
Total Responses	34	8	7	82	91	95	9	71	28	47	13	5

Issue	Ideal Township	Jenkins /Jenkins Township	Manhattan Beach	Mission Township	Pelican Township	Perry Lake Township	Pine River/Pine River Township	Ponto Lake Township	Powers Township	Ross Lake Township	Thunder Lake Township	Timothy Township
Monitor	110	34	7	45	24	5	37	37	50	20	3	4
Noise	134	39	9	52	30	7	41	48	65	26	5	6
Canoe	84	27	4	31	18	4	26	31	35	15	4	2
Coordination	89	27	6	40	20	2	28	33	37	14	4	2
Growth	132	41	9	50	31	7	52	53	64	25	5	7
Erosion	89	34	7	37	21	4	41	36	48	22	4	4
Buffer	94	31	7	43	25	5	34	37	48	21	4	4
Water	95	31	6	41	25	5	30	32	37	14	3	4
OHV	107	37	7	49	24	7	45	50	61	21	5	4
Media	117	39	6	51	28	5	45	45	56	26	5	7
Values	113	36	6	46	28	7	36	41	57	23	4	6
Local	130	39	8	54	30	7	49	52	64	26	5	6
Stakeholder	111	38	8	50	26	5	41	41	57	19	4	5
Phosphorus	119	38	8	52	30	7	45	49	59	23	4	6
Access	127	38	9	54	31	7	48	50	63	25	4	7
Sprawl	131	40	9	52	30	7	50	53	62	26	5	7
Information	127	38	7	54	30	6	46	46	59	24	5	7
Enforcement	114	37	8	48	28	6	42	44	55	25	4	6
Private	98	36	5	46	22	5	36	44	53	22	3	6
Fish	104	39	8	48	24	4	41	39	53	20	4	6
Exotics	117	34	7	50	25	6	43	46	53	22	4	6
Lakeshore	121	36	9	50	28	6	38	45	56	25	5	6
Watershed	117	38	9	51	29	6	43	48	54	24	4	7
Wetlands	126	42	9	52	31	7	50	53	63	24	4	5
Total Responses	138	43	9	55	33	7	57	54	67	27	5	8

Table 63. Data for Respondents with Farms indicated as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Condition	Number	Condition	Value
Cass County	28	Years owned	Average 32.7
Crow Wing County	20		
Unstated	1		
	49		
			Range 2-100
Riparian	17	Days per Year	Average 67.9
Non-Riparian	29		
Unstated	2		
	48		
			Range 20-200
Full-time	32	No dwelling, no plans to build	4
Seasonal	9	No dwelling, plans to build	4
Weekend	4	Seasonal dwelling, no plans to change	3
Unstated	3	Seasonal dwelling, plans to change	2
	48	Year around dwelling	33
		Unstated	3
Not Retired	17		48
Retired	26		
Unstated	5	Newsletter	32
	48	Newspaper	20
		Meetings	6
		Website	13

Table 64. Data for Respondents with Resorts indicated as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Condition	Number	Condition	Value	
Cass County	7	Years owned		
Crow Wing County	18		Average	23.0
Unstated	0		Number	23
	25		Range	1-100
Riparian	23	Days per Year		
Non-Riparian	1		Average	76.7
Unstated	1		Number	12
	25		Range	40-180
Full-time	7	No dwelling, no plans to build	0	
Seasonal	9	No dwelling, plans to build	0	
Weekend	9	Seasonal dwelling, no plans to change	8	
Unstated	0	Seasonal dwelling, plans to change	2	
	25	Year around dwelling	15	
		Unstated	0	
Not Retired	12		25	
Retired	11			
Unstated	2	Newsletter	18	
	25	Newspaper	9	
		Meetings	1	
		Website	12	

Table 65. Recreational Use for Respondents indicating Farm as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Recreational Activity	Mean Rating	Number
Other <sup>42</sup>	4.75	8
Esthetics	4.54	39
Hunting	4.47	36
Birding / Wildlife Observation	4.36	39
Fishing (summer / winter)	3.75	32
Swimming / Wading	3.68	28
Hiking / Biking	3.56	36
Canoeing / Kayaking	3.30	23
Recreational Boating	3.17	24
Off highway vehicle riding	3.03	31
Sailing	2.89	9
Snowmobiling	2.79	19
Water Skiing / Tubing	2.68	19
Golfing	2.38	21
Personal Watercraft	1.90	10
Total Responses		45

Table 66. Recreational Use for Respondents indicating Resort as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Recreational Activity	Mean Rating	Number
Esthetics	4.61	23
Swimming / Wading	4.32	22
Recreational Boating	4.23	22
Fishing (summer / winter)	3.87	23
Water Skiing / Tubing	3.72	18
Golfing	3.56	18
Birding / Wildlife Observation	3.40	20
Canoeing / Kayaking	3.29	17
Hiking / Biking	3.29	21
Personal Watercraft	3.23	13
Hunting	3.0	9
Off highway vehicle riding	3.0	9
Snowmobiling	3.0	14
Sailing	2.40	10
Other	-	-
Total Responses		25

<sup>42</sup> See Table 15 for activities included in the “other” category

Table 67. Returns by Issue Agreement for Respondents indicating Farm as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Issue	Mean Agreement	Number
Monitoring	2.72	32
Boat noise and traffic	2.53	32
Canoe accesses	2.88	24
Inter-governmental coordination	2.57	30
Developmental growth	2.05	42
Erosion	2.66	38
Buffer strips	3.34	29
Water quality	2.54	28
Off highway vehicle	2.43	40
Media coverage of watershed activities	2.65	40
Land values and property rights	2.89	36
Local groups	2.05	42
Stakeholder involvement	2.43	37
Phosphorus in the runoff from shoreline	2.10	40
Reasonable accesses	2.47	38
Sprawl and over development	2.15	40
Public information and education	3.02	41
Enforcement of shoreland rules	3.10	39
Private land management practices	2.46	39
Fisheries management activities	2.79	33
Exotic species.	3.49	35
Landowners do not take proper care	2.69	39
Watershed sources of phosphorus	2.26	38
Wetlands are at risk	2.14	44
Total Responses		45



Table 68. Returns by Issue Agreement for Respondents indicating Resort as a Property Use, Survey of the Landowners in the Pine River Watershed, 2006

Issue	Mean Agreement	Number
Monitoring	2.28	18
Boat noise and traffic	2.96	24
Canoe accesses	3.86	14
Inter-governmental coordination	2.93	15
Developmental growth	1.52	25
Erosion	2.65	20
Buffer strips	3.29	17
Water quality	3.07	15
Off highway vehicle	2.14	21
Media coverage of watershed activities	2.05	21
Land values and property rights	3.16	19
Local groups	1.27	22
Stakeholder involvement	2.0	20
Phosphorus in the runoff from shoreline	1.52	21
Reasonable accesses	2.64	22
Sprawl and over development	2.13	24
Public information and education	3.36	22
Enforcement of shoreland rules	3.16	19
Private land management practices	2.22	18
Fisheries management activities	2.7	20
Exotic species.	3.45	20
Landowners do not take proper care	2.40	20
Watershed sources of phosphorus	1.50	20
Wetlands are at risk	1.95	22
Total Responses		25

## Figures

Figure 1. Location of the Pine River Watershed in Minnesota

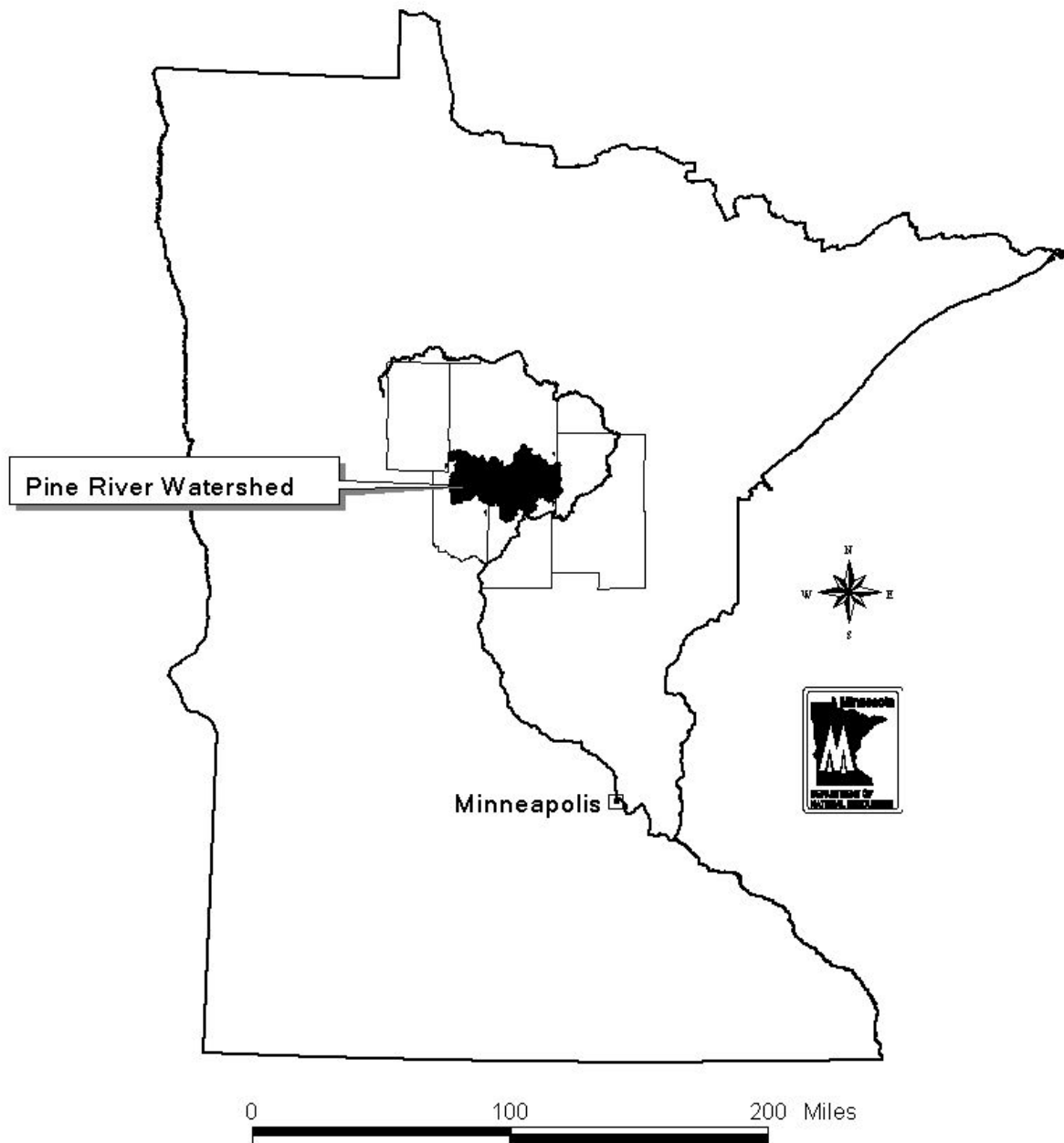


Figure 2. Pine River Watershed with Sub-Watersheds

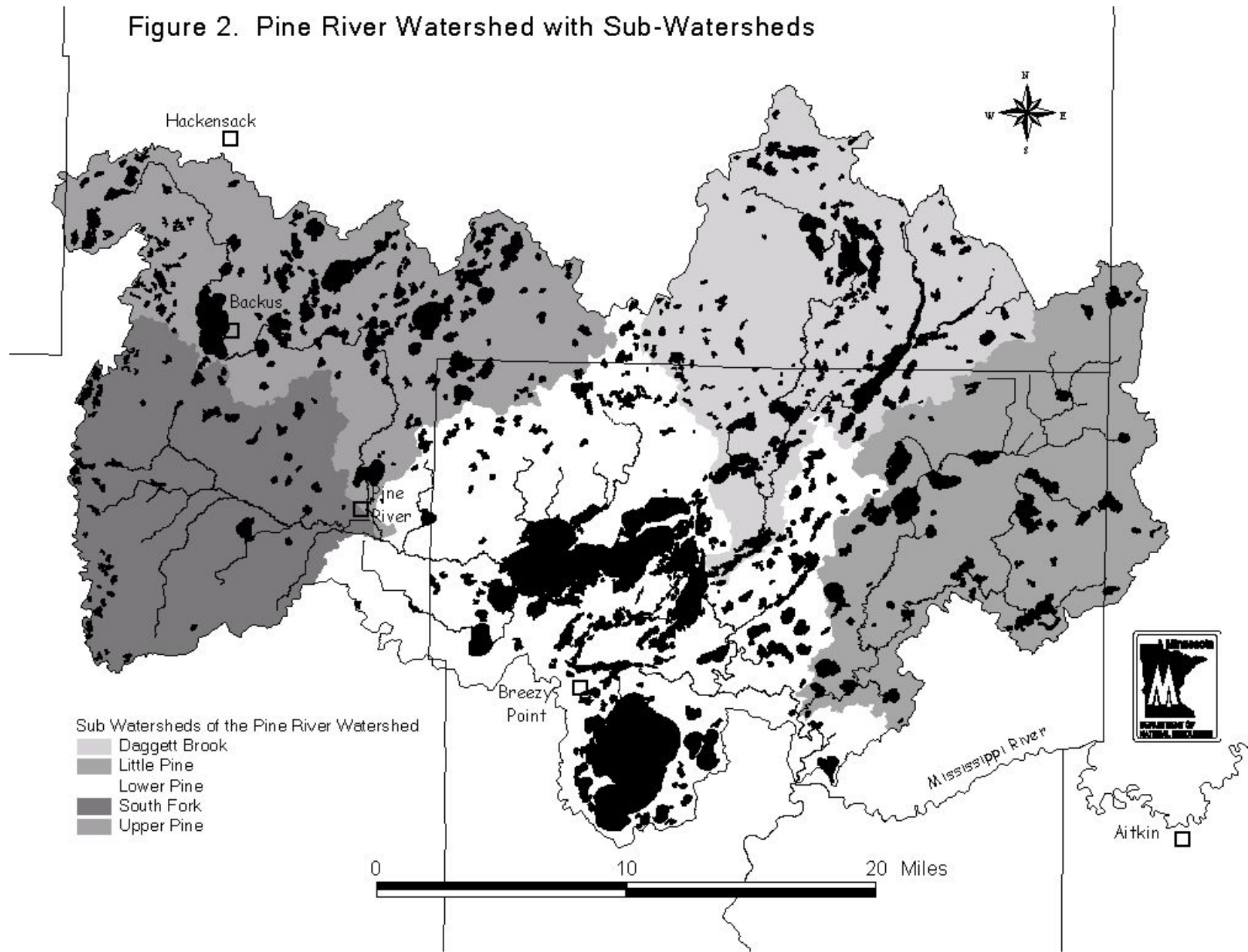
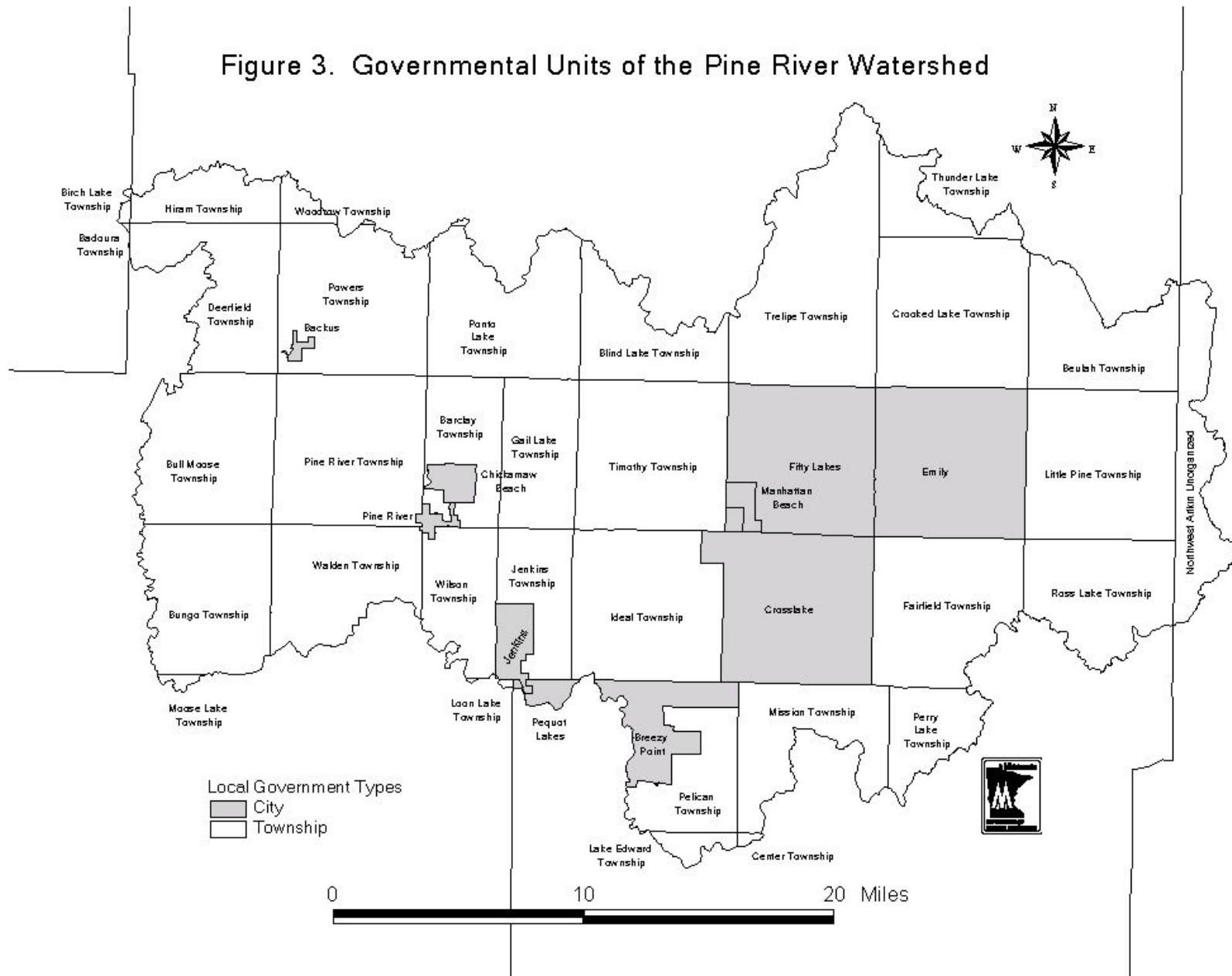


Figure 3. Governmental Units of the Pine River Watershed



**Appendix A. Pine River Landowner Survey**

1. My Pine River Watershed property is in \_\_\_\_\_ Township / City (*See map*)

2. My Pine River Watershed property is not on a lake or river.   
 My Pine River Watershed property is on

3. I (*My family*) purchased / obtained my (our) property in \_\_\_\_\_ (*year*).

4. I am a: Full time  Seasonal resident  Weekend resident

5. ***As a seasonal or weekend resident***, I use my property approximately \_\_\_\_\_ days per year.

6. ***As a seasonal or weekend resident***, I use my property in the months of (*Circle all that apply*):

January February March April May June July August September October November December

7. At least one of the primary owners of this  Yes  No

8. The principal use of my property is: Residential  Resort   
 (*Check all that apply*) Farm

9. My property is best described as:

No dwelling and no plans to build	<input type="checkbox"/>
No dwelling with plans to build in the future	<input type="checkbox"/>
Seasonal / warm weather dwelling and no plans to convert	<input type="checkbox"/>
Seasonal / warm weather building with plans to convert to year	<input type="checkbox"/>
Dwelling suitable for year around use.	<input type="checkbox"/>

10. How important is your participation in these recreational activities? Please circle a number from “1” to “5” ***for all activities that you participate in***. A “1” indicates low importance and a “5” indicates high importance. If you do not participate in an activity please circle “0”

Birding / wildlife observation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canoeing /kayaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Esthetics ( <i>e.g. enjoying the beauty of scenery, a sunrise or sunset, etc.</i> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fishing (summer / winter) ( <i>select either or both by circling your response</i> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Golf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hiking / Biking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hunting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Off highway vehicle riding ( <i>ATV, off road motorcycle, 4X4 Truck</i> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal watercraft ( <i>jet skis</i> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreational boating ( <i>all boating other than those listed</i> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sailing	1	2	3	4	5	0
Snowmobiling	1	2	3	4	5	0
Swimming / wading	1	2	3	4	5	0
Water skiing / tubing	1	2	3	4	5	0
Other activity ( <i>specify</i> ) _____	1	2	3	4	5	0

11. What do you value most about living in the Pine River Watershed?

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12. *With respect to the Pine River Watershed and/or the lake/river you own property on* to what extent do you agree with each of the following statements? *Please circle your response.*

- 1 Strongly agree                      2 Somewhat agree                      3 Neither agree or  
4 Somewhat disagree                5 Strongly disagree                    0 Don't know

a. Adequate monitoring is being done to identify water quality problems.	1	2	3	4	5	0
b. Boat noise and traffic are increasing to problem levels.	1	2	3	4	5	0
c. Canoe accesses and portages are not adequate.	1	2	3	4	5	0
d. Current inter-governmental coordination of ordinances and plans is adequate to protect the watershed.	1	2	3	4	5	0
e. Developmental growth needs to be guided to prevent future problems.	1	2	3	4	5	0
f. Erosion and runoff from road ditches is a problem.	1	2	3	4	5	0
g. Good buffer strips are present on lakes and streams to prevent erosion.	1	2	3	4	5	0
h. Identified water quality problems are being corrected.	1	2	3	4	5	0
i. Inappropriate off highway vehicle (ATV, off road motorcycle, 4X4 Truck) use is negatively affecting wetlands	1	2	3	4	5	0
j. Increased media coverage of watershed activities will improve watershed conditions.	1	2	3	4	5	0
k. Land values and property rights are being negatively affected by shoreland and land use rules.	1	2	3	4	5	0
l. Local groups can be effective in maintaining or improving water quality.	1	2	3	4	5	0
m. More stakeholder involvement is needed to properly manage the watershed.	1	2	3	4	5	0
n. Phosphorus in the runoff from shoreline and lawns is an important water quality problem.	1	2	3	4	5	0
o. Reasonable accesses to water bodies are needed.	1	2	3	4	5	0
q. Sprawl and overdevelopment is an increasing problem.	1	2	3	4	5	0
r. The current level of public information and education about lake and stream protection is adequate.	1	2	3	4	5	0
s. The enforcement of shoreland rules is adequate to protect lakes and streams.	1	2	3	4	5	0
t. The existence of private land management practices would have positive impacts.	1	2	3	4	5	0

u. The fisheries management activities of lakes and streams are appropriate.	1	2	3	4	5	0
v. There is adequate management to control the spread of non-native species.	1	2	3	4	5	0
w. Too many landowners do not take proper care of their lakeshore.	1	2	3	4	5	0
x. Watershed sources of phosphorus are an important water quality problem.	1	2	3	4	5	0
y. Wetlands are at risk from increasing development and changing landscapes.	1	2	3	4	5	0

13. What is the best way for you to receive information about the results of this survey and future watershed planning efforts? *(Circle all that apply)*

Newsletter      Newspaper      Meetings      Internet website

14. Are there any watershed related topics that you would like to know more about?

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15. Are there other comments you would like to share with us?

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*Thank you for your participation in our survey.*

## Appendix B. Cover Letter Accompanying Landowner Survey

May 23, 2006

To Property Owners of the Pine River watershed

A group of property owners from across the Pine River watershed are re-energizing efforts started in 1996 that began an effort to protect the Pine River watershed. Last year we focused our efforts at helping the establishment of the Crow Wing County Sewer District. We are now expanding our efforts to include the entire watershed. Presently, we are involved in two activities. First, continue building a team of property owners that represent all areas within the watershed and secondly getting resident input on the issues that need to be addressed.

The enclosed survey is designed to get property owner input. Because the Pine River watershed is so large, 500,000 acres and 30,000 plus residents we plan to send the survey to a sample of 3000 property owners. The sample will be a random selection of property owners from all areas of the watershed. This input will be used by the Steering Committee to formulate a Pine River Watershed Management Plan and establish an organizational structure that will be successful at addressing the issues identified. A map of the Pine River Watershed is on the back of this letter for your convenience.

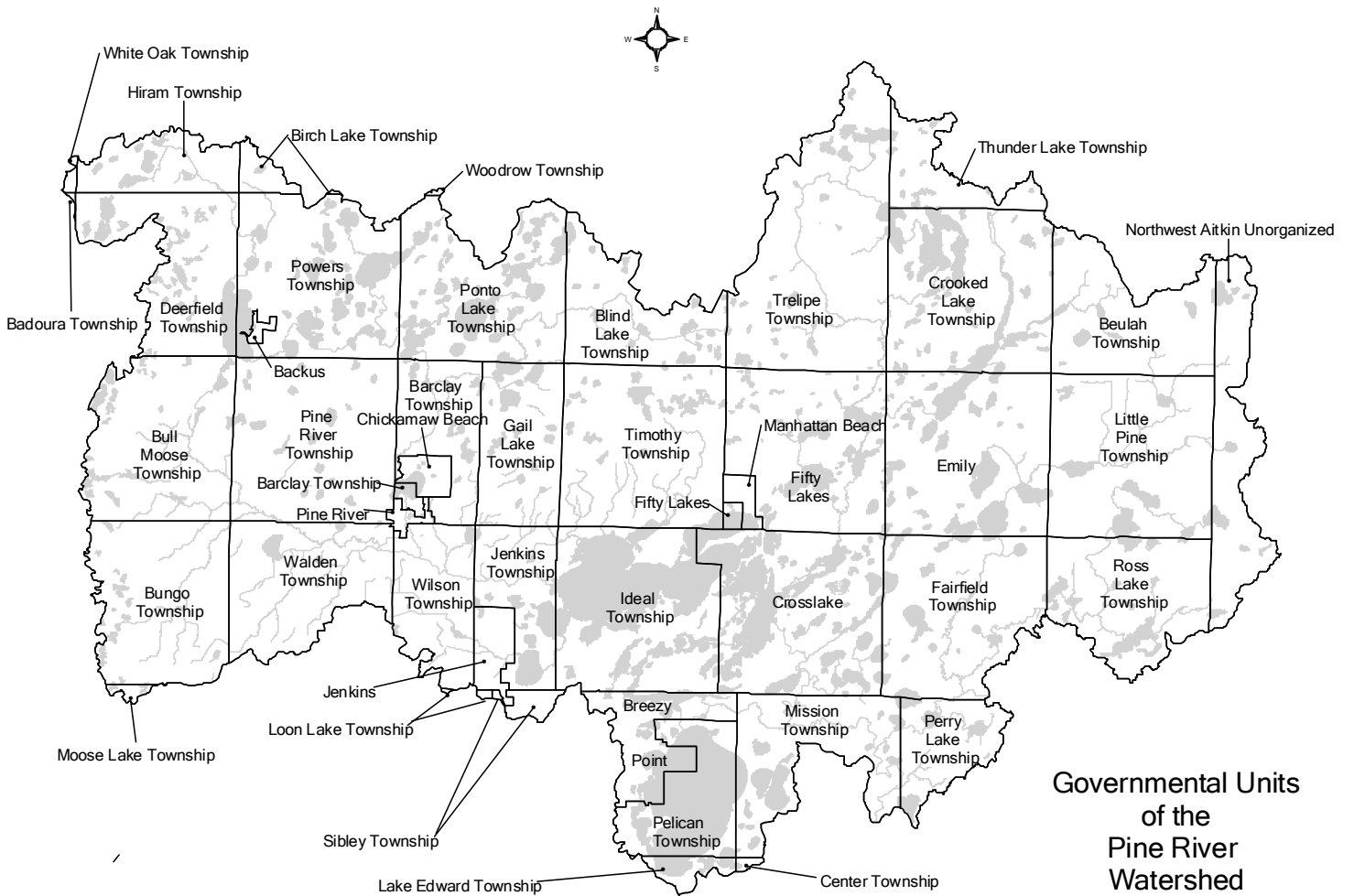
Your participation in the survey is critical to insuring that the most important issues are identified. We want to have confidence that the plan we create and the actions we take meet the vision that all the residents have for the recreational enjoyment and commercial interests of our area while balancing the needs of our environment. The survey will be handled in a manner where your anonymity will be preserved.

We plan to communicate the results of the survey to all organizations and residents in the watershed through open meetings, letters and the local press. Please use the enclosed, stamped envelope to return the survey by June 15<sup>th</sup>, 2006. If you have questions about the survey or the efforts in forming our team please contact Ron Meyer (218-543-6246), Jack or Judy Wallschlaeger (218-543-6257).

Sincerely,

Pine River Watershed  
Steering Committee





**Governmental Units  
of the  
Pine River  
Watershed**



## Figures

Figure 1. Location of the Pine River Watershed in Minnesota

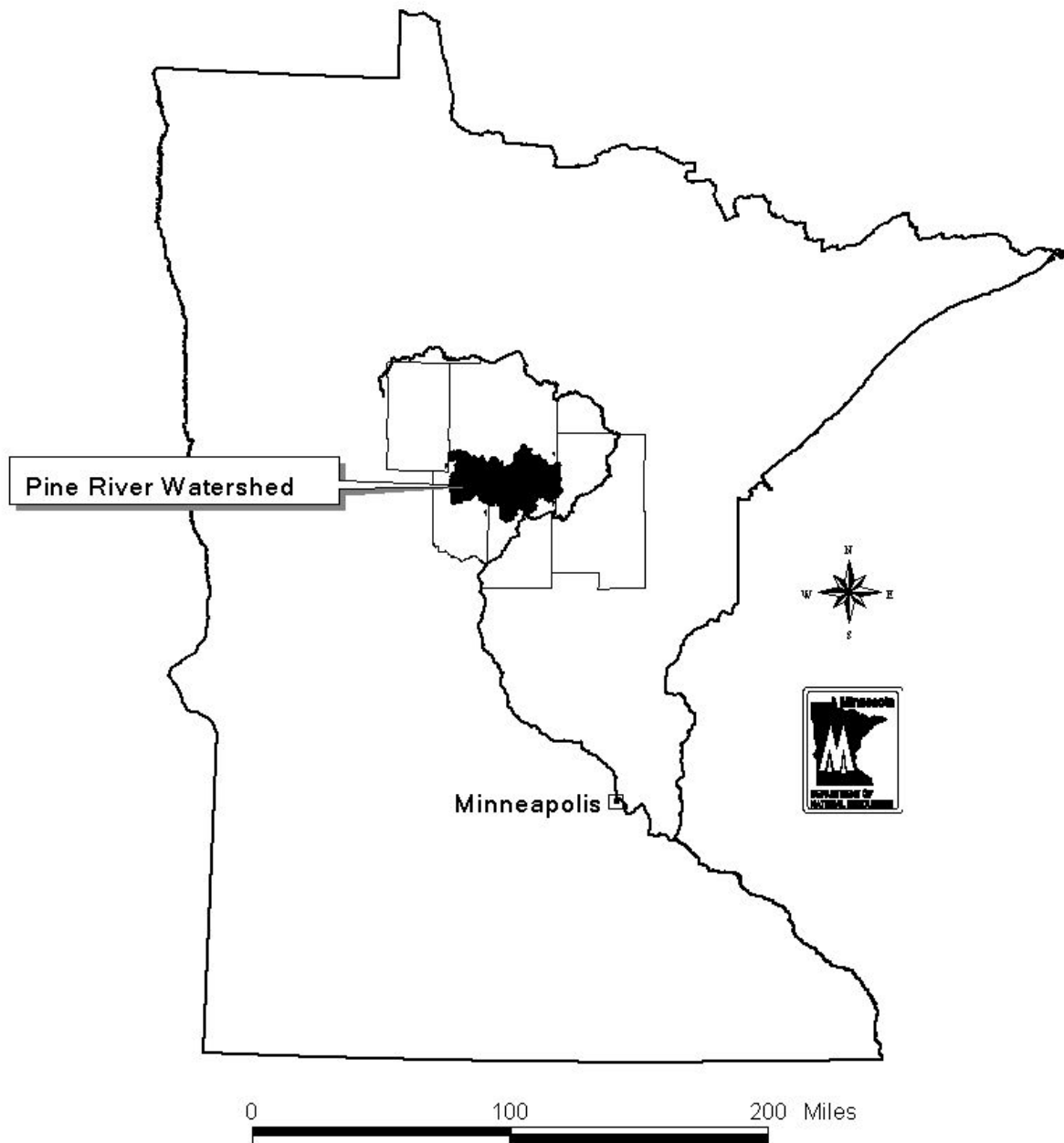


Figure 2. Pine River Watershed with Sub-Watersheds

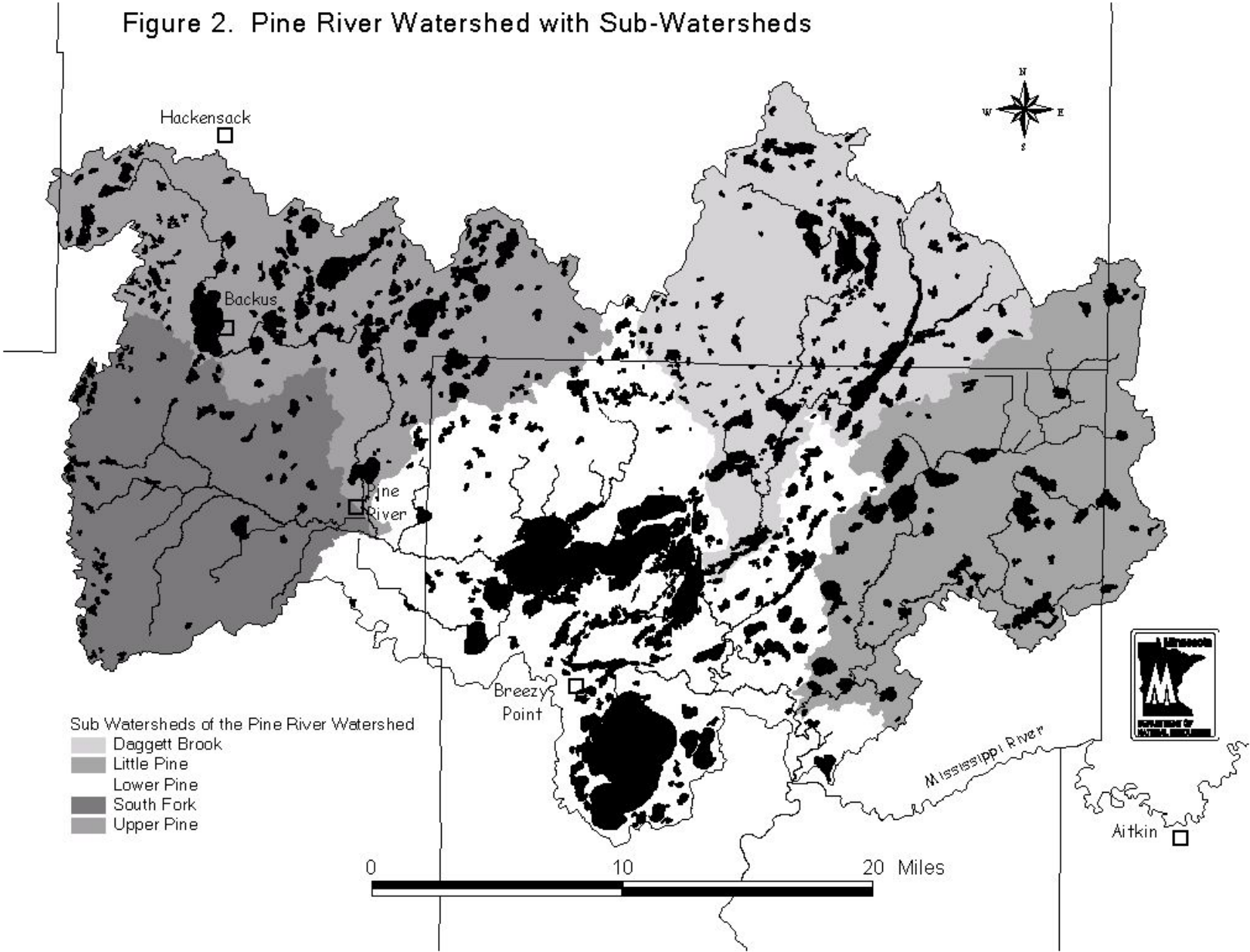
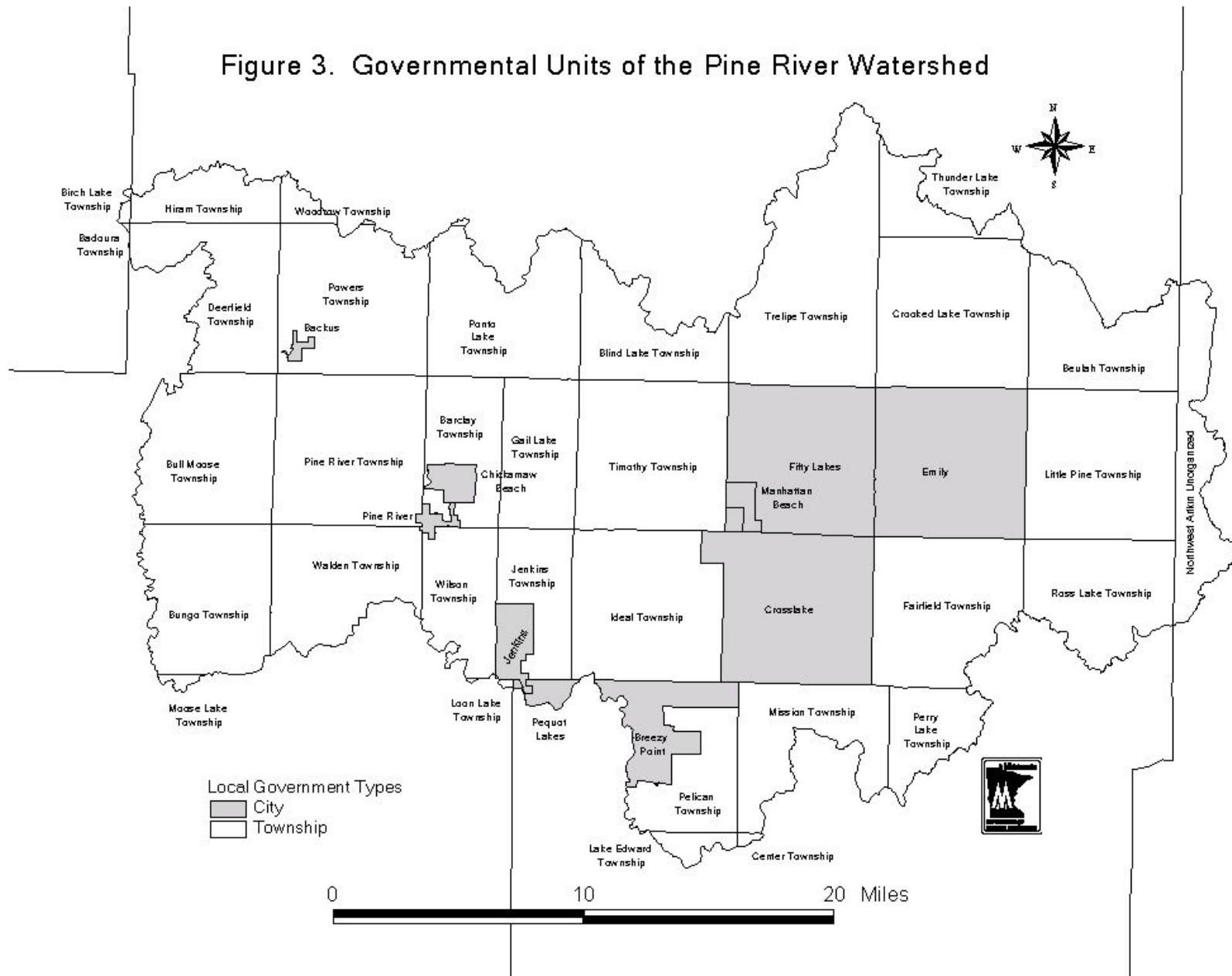
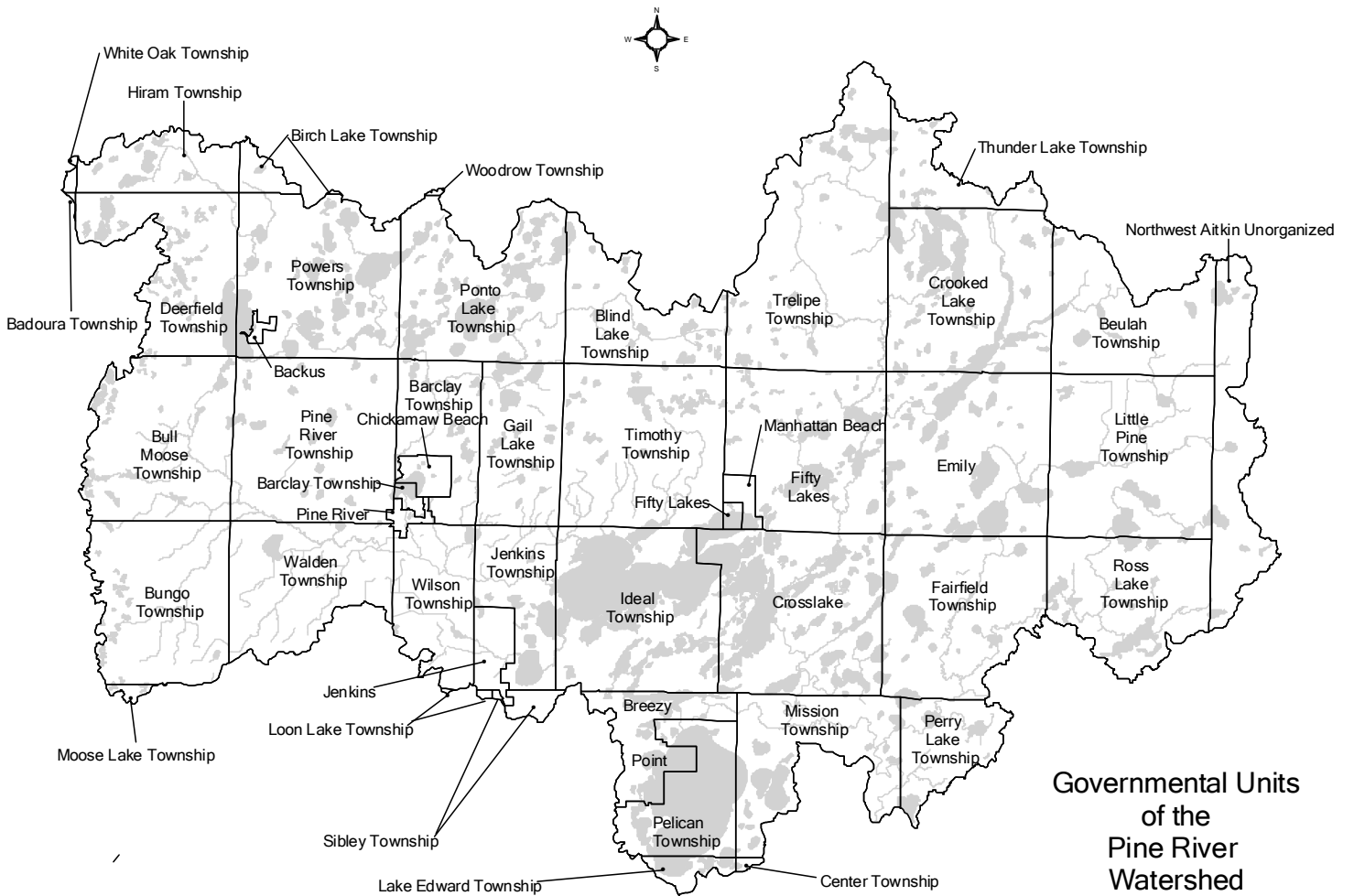


Figure 3. Governmental Units of the Pine River Watershed





**Governmental Units  
of the  
Pine River  
Watershed**

